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ABSTRACT

A CRITICAL STUDY OF ASSET VALUATION AND INCOME DETERMINATION UNDER THE NEW UNIFORM UAR (EGYPT) ACCOUNTING SYSTEM RELATIVE TO THE OBJECTIVES OF ECONOMIC PLANNING

By

Abd-Elhay A. Marie

In December, 1966, the Central Accounting Administration of the UAR issued a uniform accounting system (UARUS) to be used by all economic units in the public sector, with the exception of banks and insurance companies. Since the UAR is a mixed economy (market-planned) and almost all investment in fixed capital is determined by the Central Plan and undertaken by the government, the UARUS was intended to provide the necessary information to facilitate planning, plan follow-up, and control at all organizational levels of the economy (the Enterprise, the General Organization, the Ministry, and the National Planning Board). This study examines the underlying theoretical support and rationale behind the UARUS, and evaluates the relevance and appropriateness of information provided by it to the objectives and needs of economic planning and central control. The theoretical framework of the study and the guiding principles of the analysis undertaken are extracted from the theory of economic planning, comparative economic

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systems, managerial economics, and current developments in accounting theory.

The function of accounting is found to be broader, the reliance on accounting information for resource allocation and administration is found to be heavier, and the need for accuracy is found to be more pressing in a planned socialist than in a market capitalist economy.

The rules provided by the UARUS for valuation of inventories and depreciation of fixed assets are examined and found to be at variance with the objectives of economic planning. Alternative methods for inventory valuation and cost of production determination are formulated by this student to conform with economic concepts and are shown to be potentially superior in inducing greater functional efficiency of the firm in utilizing scarce resources. It is also argued in the study that these alternatives are practical and cardinally measurable within the limits of reasonable cost and effort. An alternative depreciation scheme, found to be consistent with the objectives of an economic policy aiming at surplus agricultural labor absorption in industry, is discussed in the study and recommended. The scheme provides for higher rates of capital accumulation in labor intensive industries than in capital intensive industries.

The set of financial statements made mandatory as to form and content by the UARUS is examined and found to be more informative and comprehensive as to coverage and



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detail of economic activities than what is currently available in other countries considered in the study. Being based on historical cost concepts, information provided by the UARUS also suffers from the many shortcomings of such concepts. Three valuation bases for balance sheet items- the current cash value, the running value, and the budgeted value- are discussed and favored for their potential in inducing greater efficiency in resource allocation and administration. The Current Operations Account intended to provide the main link between social and micro accounting is found to be less effective than it can be and an alternative account is designed and recommended.

Some of the other main conclusions reached are: (1) accounting information based on economic principles and specially classified in accordance with the objectives of economic policy are much more critical to the satisfactory functioning of a planned socialist than they are to a market capitalist economy, (2) the functional efficiency of the firm is a more accurate indicator of the degree of optimality achieved in the process of intrafirm resource allocation and administration than total efficiency. This is not however to de-emphasize the importance of the latter, (3) the UARUS does not provide adequately for the measurement of functional efficiency, (4) intrafirm allocative efficiency is equally as important as interfirm allocative efficiency, (5) the UARUS does not provide adequately for the measurement and inducement of intrafirm allocative

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efficiency because of its emphasis on control from without and its neglect of control from within, (6) depreciation being considered as a process of cost allocation by the UARUS, should more appropriately be considered as a tool of economic policy, and (7) a tendency toward comprehensive uniformity of accounting is observed in planned economies; the more centralized the economy, the more uniform is microaccounting and the more integrated it is with social accounting.

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Abd-Elhay A. Marie

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Accounting and
Financial Administration

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ACKNOWLEDGEMENTS

I wish to express my gratitude to Professor Herbert E. Miller, my dissertation chairman, for his valuable advice, knowledgeable comments, persistent encouragement, and fatherly understanding. I needed all of these too often and his kindness has made me always feel welcomed.

Grateful acknowledgement is also due Professors Floyd Windal and Victor Smith, my committee members, for their helpful advice, comments, and suggestions. Their discussion of chapter III with me has resulted in significant improvement to its quality.

Sincere appreciation and grateful acknowledgement are due the UAR Government and Cairo University for making my graduate study possible in the first place. Without the UAR Government mission granted me for five years, this dissertation would never have come into being. Regardless of how hard I can try, I will never be able to repay all the good that my country has done for me.

Grateful acknowledgement is also due Michigan State University's Graduate School of Business for generous financial support.

Mrs. Ruth Terrill, a former teacher of Bay Port, Michigan, has edited the first draft for punctuation and

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spelling. Her efforts are gratefully acknowledged and sincerely appreciated.

I would also like to thank my dear friends, Mohamed and Yousif H. Badawy of the Egyptian General Organization for Chemical Industries, for the help they have generously offered me in collecting and sending some information about the UAR Uniform Accounting System.

As for my wife Nadia and my daughter Sonia, I would like to ask for forgiveness for not being the kind of husband and father such a wonderful pair should have. Their patience, love and understanding have made it possible for me to concentrate on research and writing without a reciprocal arrangement on my part. For this I am grateful and willing to pay!



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CHAPTER I

OBJECTIVES OF THE STUDY

1.1. Introduction

In December, 1966, the Central Accounting Administration (CAA) of the United Arab Republic (UAR),¹ issued a uniform system of accounts to be used by all economic units under public ownership or public supervision commencing with the fiscal year 1967-1968 (July 1, 1967 to June 30, 1968), with the exception of banks and insurance companies due to the difference in the nature of their activities. Also a postponement of application of the system upon the request of the appropriate minister supervising a branch of industry was to be granted for one fiscal year to economic units under his supervision.

At present, the ownership of the public sector in the UAR extends to cover almost all industrial activities, banking and insurance, foreign trade, the wholesale trade, and a significant portion of retail trade. Agriculture, small craft industry, some small business concerns, and the bulk of retail trade are left to private ownership,

¹The Uniform Accounting System (Cairo, U.A.R.: Elbalagk Press, Dec. 1966); in Arabic.

though regulated by the government.² It is, therefore, apparent that the application of the Uniform Accounting System (UARUS) is mandatory on almost all economic units in the economy, with the above-noted exception of banks and insurance companies, and with the exception of privately-owned economic units and whose volume of activities constitutes a small portion of the total industrial and commercial activities.

The current economic organization of the UAR is discussed in Hansen and Marzouk, and the relevant parts to this study are discussed in Chapter II.

The objectives of the UARUS are also stated in Chapter II. The system is organized in three volumes. The first volume contains the main skeleton of the system and is divided into two parts: The first deals with the objectives of the system, methodology used in its preparation, and the areas of economic activities subject to its applicability. The second part is in four chapters: the first chapter deals with the uniform chart of accounts to

²The ownership of the public sector has undergone a process of expansion. It was started in 1956 by the nationalization of the Suez canal which was followed by the nationalization of British and French Companies. In 1960 the Misr Bank and its affiliated companies were nationalized. In 1961, 44 companies and establishments were nationalized and public ownership of not less than 50% of the capital of another 82 was imposed. In 1963 many of these 82 companies were nationalized. In following years other industrial and commercial concerns and the wholesale trade were nationalized. For a more thorough description of the process of nationalization and method of compensation in the UAR, see Bent Hansen and Girgis Marzouk, Development and Economic Policy in the UAR (Egypt), (Amsterdam: North Holland, 1965) pp. 19-21, 166-171, and 197-203.



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to be followed; the second deals with principles, rules, procedures, terminology, and definitions to be applied; the third describes the number, type and format of financial statements and supporting tables; and the fourth chapter describes physical, financial and cash budgeting, the rules to be followed in their preparation and the formats to be used.

The second volume contains five appendices: The first contains depreciation rates. The second provides the principles and rules to be followed in exercising financial control. The third deals with properties and definitions of periodic and analytical information concerning production capacities, quantity and quality of output, employment, commodity input requirements, various financial ratios and efficiency indices, and other information required to be provided by the economic unit to higher administrative and economic organs. The fourth prescribes and describes the special purpose records to be kept by economic units. The fifth appendix contains documents concerning the preparation, authorization, and issuance of the UARUS.

The third volume describes three standardized methods for classifying economic activities along with appropriate numbering systems: by type of industry, by kind of commodity, and by nature of occupation.

1.2. Purpose and Scope of the Study

This study undertakes to examine the relevance, appropriateness, and sufficiency of the economic information,

that will be provided as a result of the application of the UARUS, to the needs of economic planning and the proper administration and control of economic activities. In particular, the principles and rules of asset valuation and income determination provided by the system are examined and evaluated relative to the objectives of the system. Comparisons with other available and possible alternatives are made to show their possible superiority and/or inferiority in the achievement of the desired objectives of providing economic information for proper economic planning, and efficient economic management of the firm and the economy. The impact of central economic planning and control on accounting practices is also examined and the study, therefore, is somewhat involved in comparative economic systems. Such involvement is necessary to document conclusions reached with regard to the UARUS with the experiences of other countries in securing the necessary information for economic planning and centralized control of economic activities. The influence of social accounting on microaccounting under the setting of a market-capitalist, a market-planned, and a non-market-planned economic organizations is also examined. In short, the purpose of this study is to inquire as to which type of economic information is desirable for the objectives of efficient resource allocation and administration under various kinds of social economic organization; as to whether accounting can provide such information; and as to what extent the information



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provided by the UARUS is expected to satisfy these objectives. Accordingly, the study is organized into the following chapters:

Chapter II examines the objectives of accounting under variant economic organizations of a society. Three levels of accounting objectives are distinguished: primary, intermediate, and ultimate objectives, and differences as to boundaries and method of realization of each of these levels in a market and a planned economy are discussed. Objectives of the UARUS are then examined and some characteristics of the UAR economic organization that are relevant to the study are given. Lastly, a criterion by which alternative accounting and economic methods are judged in the rest of the study is stated.

Chapter III deals with the valuation of material inputs and outputs and with the valuation of inventories for the purpose of capital maintenance, income determination, and the measurement of management efficiency in carrying on various productive functions. Accounting concepts of inventory valuation are compared to the appropriate economic concepts. The latter concepts are chosen after a brief discussion of the Marxist and Neo-classical theory of value is given to determine which concepts are more relevant to the UAR. The chapter deals with such problems as utilization cost of materials, allocation of production accomplishments to various productive efforts, the development of an index to measure the perceptive efficiency of management, and cost calculation for price determination.



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Chapter IV discusses the problem of depreciation as a measure of capital consumption and as an instrument of economic policy. The deficiencies of the UARUS recommended depreciation methods with regard to the achievement of these objectives are spotlighted. Comparisons with other countries are made to the extent considered relevant.

Chapter V examines the function and meaning of financial statements in planned economies as compared to market economies. The adequacy of the information content of such statements, under the rules of the UARUS, for satisfying the objectives of the system is then evaluated. An appendix is provided for the chapter including the formats of financial statements provided by the UARUS.

Chapter VI examines the relationships between social accounting and microaccounting under the setting of market-capitalist, market-planned and non-market-planned economies. Uniformity in microaccounting is discussed to the extent relevant to the subject of the chapter. A brief outline of the UAR Social System of Accounts is also included.

Chapter VII states the conclusions reached from the study, recommendations, and suggestions for further research.

1.3. Theoretical Framework and Methodology

This study is theoretical. It draws its framework from the theory of economic planning, managerial economics, comparative economic systems and accounting. A study of economic planning provides the socio-economic objectives

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and general economic policies that are desirable in the UAR economy. A study of comparative economic systems supplies the criterion on the basis of which the appropriate economic objectives and policies are chosen to fit the particularities of the economy. A study of managerial economics provides the working techniques for the application of policies and realization of objectives at various organizational levels of the economy. Accounting provides the information necessary to make possible the use of such economic techniques, within the framework of the general economic policies, to realize specific economic objectives. Accounting provides information on how the objectives can be realized, what objectives have been realized, and how efficiently objectives have been realized.

Accordingly, the study is mainly a library research project in an attempt to bring these fields together. The ultimate objective is to evaluate the adequacy of accounting information in its present form to satisfy the diverse objectives of economic planning, and to suggest, where suitable, alternative types of information. The UAR economy is the center of the inquiry, although other types of socio-economic organization are considered where it was found to be appropriate.

The bibliography at the end of the study gives an indication as to the extent of library research undertaken.

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1.4. Significance of the Study

The greatest contribution of this study is for the UAR. A comparison between what is being done to what should be done provides a better guide for choice between alternatives than if such choice is based on past experience alone. The adequacy of the UARUS in satisfying its' objectives depends on many factors, some of which, as will be seen, are not compatible with the others. The process of selection from among these factors of those considered most important makes use of both practical and theoretical considerations. This study contributes to the understanding of the selection process and its underlying theoretical and practical support and rational.

The study also contributes to economic knowledge in the area of comparative economic systems insofar as such knowledge is related to accounting. It is, therefore, a new type of contribution in the area of international accounting as related to international economics.

The study can also be considered a source information on the UAR economy and the UAR accounting practices.

CHAPTER II

OBJECTIVES OF ACCOUNTING UNDER VARIANT ECONOMIC ORGANIZATIONS: OBJECTIVES OF THE U.A.R. UNIFORM ACCOUNTING SYSTEM

2.1. Introduction

Accounting is a purposive and evolutionary discipline and is influenced by the environment within which it operates. A quarter of a century ago George O. May conceived of this evolutionary characteristic when he wrote:

Accounting Conventions should be well conceived in relation to at least three things: first, the uses of accounts; second, the social and economic concept of time and place; and, third, the modes of thought of the people.¹

Fifteen years later, May's thoughts were reflected in a "Report to the Council of the Special Committee on Research Program of the American Institute of CPAs" that says:

They (Postulates of Accounting) necessarily are derived from the economic and political environment and from the modes of thought and customs of all segments of the business community.²

This chapter undertakes to examine the effects of differences in the social, political, and economic environments within which accounting functions on its objectives. Two extremes of economic organization, a free market

¹Financial Accounting: A Distillation of Experience (New York: The Macmillan Co., 1961), p. 3.

²Journal of Accountancy, CVI (Dec. 1958), p. 63.

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capitalist economy and a soviet type (planned) economy will be examined for this purpose. Based on scrutiny, the objectives of the U.A.R. Uniform Accounting System³ will then be evaluated.

2.2. Objectives of Accounting Under Variant Economic Organizations:

It will be helpful if the objectives of accounting are conceived as forming an hierarchy of levels. Each level describes means for the attainment of ends of a higher level and constitutes ends to be attained by means of a lower level. In effect, three levels of accounting's objectives will be recognized: primary, intermediate, and ultimate.⁴ The primary objectives of accounting are mainly to provide a record and organization of history and can best be expressed in the words of Professor Moonitz as:

The function of accounting is (1) to measure the resources held by specific entities; (2) to reflect the claims against and interest in those entities; (3) to measure the changes in those resources, claims, and interests; (4) to assign the changes to specific periods of time; and (5) to express the foregoing in terms of money as a common denominator.⁵

The intermediate objectives of accounting are to abstract, analyze, organize, summarize, and report from this

³(UARUS) will be used hereafter for the U.A.R. Uniform Accounting System.

⁴See Manley Jones, Executive Decision Making (Homewood, Illinois: Richard D. Irwin, Inc., 1962) for his hierarchical classification of goals. pp. 5-24.

⁵Accounting Research Study No. 1 (New York: AICPAs, 1961) p. 23.



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recorded history those elements of data and information pertinent to the achievement of the ultimate objectives. The ultimate objectives aim at the assistance in making two types of economic decisions dealing with scarce economic resources: allocative and operative decisions. Allocative decisions deal with inter-economic-unit allocation of resources and operative decisions deal with intra-economic-unit allocation and employment of resources.

These three levels are not independent nor are they mutually exclusive. Rather they are dependent, inclusive, and almost impossible to separate. My desire to treat them separately is the result of my conviction that environmental influences on them tend to increase as we go from a lower to a higher level. That is, higher level objectives are more apt to be influenced by economic and political ideologies than lower level objectives. This is due to the fact that at higher levels, objectives tend to be more general and, therefore, take account of the greater number of variations in the economic and political environment. On lower levels, objectives are more specific, more detailed, and their achievement falls essentially within the domain of common techniques. On higher levels, the achievement of objectives is constrained by socio-political ideologies and underlying theory of sociopolitical economy. For example, the achievement of the primary objectives of accounting requires little more than knowledge of the rules of double entry bookkeeping. On the other hand, the achievement of its ultimate objectives



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requires knowledge of the adopted concept of economic efficiency, the adopted measures of such efficiency, and the nature of the economic organization within which such concepts and measures are employed. As an example, compare the Marxist concept and the Neo-classical concept of economic efficiency. The first is based on the social necessary labor theory of value, the second is based on the theory of marginal utility and the price theory of value. The first economizes basically on labor inputs, the second economizes equally on inputs of all factors of production. The first maximizes basically material outputs, the second maximizes utility derived from material and non-material outputs, etc. The result is a concept and a measure of economic efficiency which is substantially different in Marxist economic thought than its counterpart in Neo-classical economic thought. The ultimate objectives of accounting, though aiming at facilitating the efficient allocation and employment of economic resources in both cases, will differ as to the substance and measures of efficiency they aim to achieve under Marxism and Neo-classicalism.

The success of accounting in serving its ultimate objectives will, therefore, depend--among others--on two main factors: (1) Idiosyncrasy of the decision relative to the socio-political-economic environment, the decision level in the economic organization, and the degree of certainty or uncertainty involved, (2) Characteristics of the decision maker which include: degree of freedom accorded

him in making the decision, his relative position in the hierarchy of the social economic organization, his ideology, and the nature of performance incentives and methods of performance measurement.

2.2.1. Idiosyncrasy of the Decision and Characteristics of the Decision-Maker in a Market Economy:

All variations of economic organizations fall on a continuum according to the degree of economic freedom or economic control allowed in the organization. The two extremes of the continuum representing economic freedom and economic control are known as pure capitalistic market and pure socialist planned economic systems respectively. Under each of these two systems there are definite and clearly identifiable characteristics on the basis of which the economic organization of the society is basically built. In this subsection, the first extreme will be examined; the second will be considered in the next subsection.

The first extreme is also known as a free market economy. Its ideal organization precludes the interference of political and social forces with economic principles. It never existed outside economic textbooks for (among others) one good reason: politics is to economics as spices are to Italian foods. It adds more flavor and enjoyment, however expensive it might be. Of course, other important factors justify interference of political and social forces with economic principles. Most important of these are the unrealistic assumptions upon which a perfect market economy



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is theoretically construed.⁶ The essential feature of this type of economic organization in practice, however, is that a majority of the problems of economizing are still left to the market to provide the solution. The presumption is that the market forces will function to insure the optimality of economic decisions. This presumed optimality is based (among others) on two critical assumptions of supreme interest to us. The first, is the assumption of perfection of knowledge; the second, is the assumption of economic rationality.

For perfection of knowledge, three conditions must exist: certainty of the cost and outcomes of available alternatives for resource allocation, the finiteness of their number, and, the free availability of this knowledge to all members of the society by virtue of their being the owners of its economic resources. Economic rationality requires (among others) a maximizing behavior on the part of all members of the society and the additivity of the results of this behavior.

The ultimate objectives of accounting under these conditions are to contribute to the perfection of knowledge in the market and help the individual owners of resources maximize their behavior. Accounting accomplishes these objectives by providing information on available alternatives

⁶See for example the elucidating article of Hollis B. Chenery, "Comparative Advantage and Development Policy", American Economic Review, LI (March, 1961), pp. 18-51.



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for resource allocation, helping the efficient employment of already allocated resources, and reporting on the efficiency of such employment. Its contribution to the last is in essence its contribution to the first and the circuit is closed. Accordingly, accounting is divided on the micro-level into financial and managerial accounting. The former provides the owners of economic resources with information about investment opportunities and alternative returns in these opportunities on the basis of which they make their allocative decisions; the latter provides management with necessary information for the efficient employment of resources allocated to the economic unit they are entrusted to manage. The ultimate objectives of accounting in a market economy, therefore, are two-fold: to contribute to the proper functioning of the market in the allocation of the economic resources of the society to the most desirable means of production, and to insure the highest output from these means through their efficient employment.

This role of accounting in serving the functioning of the free market is displayed by professor Chambers artistically in his definition:

Accounting is a systematic method of retrospective and contemporary monetary calculation the purpose of which is to provide a continuous source of financial information as a guide to future action in markets⁷

⁷R. J. Chambers, Accounting Evaluation and Economic Behavior (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1966), p. 102.

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This definition, however, tends to place its emphasis on financial accounting and consequently on inter-firm allocative decisions rather than managerial accounting and intra-firm operative decisions. Edwards and Bell recognize the importance of the two types of decisions, with an apparent tendency toward emphasis on operative decisions, in their statement

The principal purpose to be achieved by collection of accounting data (other than prevention of fraud and theft and the like) is to provide useful information for the evaluation of past business decisions and the methods used in reaching these decisions. Evaluation in turn has two facets: (1) evaluation by management in order to make the best possible decisions for action in uncertain future; (2) evaluation of management, or more broadly of the performance of the individual firm, by stockholders, creditors . . . regulatory agencies of the Government and other interested outsiders in order that they, too, may make better judgment with respect to the activities of the firm.⁸

This multiple objective of accounting is more elaborately expressed by the American Accounting Association's Committee on A Statement of Basic Accounting Theory which states:

The objectives of accounting are to provide information for the following purposes:

1. Making decisions concerning the use of limited resources . . .
2. Effectively directing and controlling an organization's human and material resources.

⁸E. O. Edwards and Philip W. Bell, The Theory and Measurement of Business Income (Berkeley and Los Angeles: University of California Press, 1965), p. 271.

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3. Maintaining and reporting on the custodianship of resources.
4. Facilitating social functions and controls.⁹

One important characteristic of economic decisions, in a market economy, is suggested by the discussion up to this point. This is, the point of departure in making economic decisions is the laws of the market, however modified by political attitudes and social norms. The laws of the market guide the maximizing behavior and accounting information is designed to help the appropriate functioning of these laws. For example, an essential mechanism for the appropriate functioning of the market is a price system based on the laws of supply and demand. In his Accounting Theory Professor Paton¹⁰ quoted Mitchel as saying in this connection:

Prices render possible the rational direction of economic activity by accounting. For accounting is based upon the principle of representing all heterogenous commodities, services and rights with which a business enterprise is concerned in terms of money price.¹¹

Paton goes further to say:

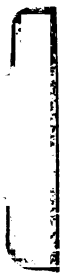
This suggests a significant role of accounting. Accounting by making price data available . . . is perhaps the principal instrument by which the directors of business are enabled to conduct their affairs rationally. Accounting is a means by which the complex data of the market, as they attach to the particular business, are translated into effective managerial criteria.¹²

⁹p. 4.

¹⁰(A.S.P. Accounting Studies Press, Ltd., 1962), p. 7.

¹¹Business Cycles, pp. 31-37.

¹²Ibid., p. 7.



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The level of the decision in the economic organization also has an effect on the orientation of accounting. In a market economy, allocative and operative decisions dealing with economic resources are made by the individual owners and managers of these resources respectively. Consequently, accounting information is mainly oriented to the service of these individual owners and managers. The environmental conditions impose a boundary on the services of accounting and focus the prime attention on the individual firm as the major accounting entity. The result is that the services of accounting are virtually limited to the micro-level. Reporting on the collective economic activities of the industry or a larger collectivity is not a prime objective of accounting, if it is an objective at all.

A third characteristic of the decision is the magnitude and effect of its outcome. Decisions that are made in the present are guided by the results of past decisions and will probably influence decisions to be made in the future. In addition, decisions that are made by one firm may probably affect the functioning of other firms either directly or indirectly and the efficiency of the decision should be ideally measured, from the society's point of view, by its aggregate outcome. A quotation from a well-known article by Tibor Scitovsky demonstrates this point:

Profits are a sign of disequilibrium . . .
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to investment in that industry; and investment
in turn, tends to eliminate the profits that

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have called it forth. This far, then, investment tends to bring equilibrium nearer. The same investment, however, may raise . . . profits in other industries; and to this extent it leads away from equilibrium . . . The profits in industry B created by the lower price of factor A, call for investment and expansion in industry B, one result of which will be an increase in industry B's demand for industry A's product. This in turn will give rise to profits and call for further investment and expansion in A; and equilibrium is reached only when successive doses of investment and expansion in the two industries have led to the simultaneous elimination of investment in both. It is only at this stage that . . . the amount of investment profitable in industry A is also the socially desirable amount. The amount is clearly greater than that which is profitable at the first stage before industry B has made its adjustment. We can conclude, therefore, that when an investment gives rise to pecuniary external economies, its private profitability understates its social desirability.¹³

This quotation indicates the possibility of conflict between what is socially desirable and what is privately profitable. Accounting, in a market economy, does not provide for social optimality. It is by virtue of the demands and limitations imposed on accounting by the nature of the economic organization that it is primarily oriented to serve private aspirations of the individual owners and managers of economic resources.

The second factor that influences the objectives of accounting and therefore its functioning deals with the characteristics of the decision maker. As was pointed out above, decisions that involve the use of accounting assistance are of two types: allocative decisions and operative

¹³"Two Concepts of External Economy", The Journal of Political Economy, LXII (April, 1954), pp. 148-9.

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decisions. Accordingly, we can distinguish between two categories of decision makers: those who make decisions concerning the allocation of economic resources that they own, and those who make economic decisions concerning the proper employment of economic resources entrusted to them. In a market economy, the first group includes a great majority of all members of the society by virtue of their being the owners of its economic resources. Out of this group we are mainly interested in those who own material resources specially in the form of investible capital in any form. This group represents, for our purposes, the first category of decision makers. They make the inter-firm allocative decisions of the investible resources of the society; they make these decisions in most cases individually and not collectively; they form the highest level of decision makers (at least in theory) with respect to decisions dealing with economic resources they own and therefore, exercise full authority in this regard; they are subject to a minimum control from the government in this respect; they represent a heterogenous group with regard to education, experience, social and political beliefs and attitudes, and economic position in the society; and most important, they all base their decisions to a variable extent on accounting information. In effect we find the objectives of financial accounting, for example, stated in terms of "interested parties" such as stockholders, creditors, etc., which form the above mentioned diversity



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of decision makers.¹⁴ Thus, with respect to financial accounting, we virtually reach the same conclusions reached before, the individual firm is the major accounting entity without regard to interrelationships between independent firms and the accounting statements are oriented to reflect the private maximum rather than the social optimum. In addition no provisions are made for possible inter-firm aggregation of data in accounting techniques and methodologies employed.

It was observed, however, that this group of "interested parties" is heterogenous on many counts, although one set of financial statements is presented for them all. No wonder, then, that the efficiency of the economic decision that each member of the group reaches varies with variations of factors characteristic to his personality, and aside from the information content of the accounting statements.

The second group consists of those who make the operative decisions concerning the employment of the economic resources of the society. They are called managers and their functions are based on the science of management. Some of their characteristics are important for this study. One of these is the degree of freedom allowed them in making decisions and the source and magnitude of their

¹⁴See for example, Eldon S. Hendriksen, Accounting Theory (Homewood, Ill.: Richard D. Irwin, Inc., 1965) p. 82.



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authority; the second, is the decision criterion that normally guides their administrative behavior.

In an economic system based on private ownership of its means of production, as the economy grows and industrializes, the number of small owners of its resources increases and at the same time tend to lose their power of decision. Since intelligent decisions are based upon knowledge, power of decision goes with such knowledge to those who retain it, to the managers.¹⁵ Within the individual firm, this knowledge often accords management full authority of decision. Management within the firm is normally organized in an hierarchy and the degree of decision freedom depends, however, on the hierarchical level; at higher levels full authority is accorded and limitations increase as we go down the levels of the hierarchy.

With regard to the decision criterion, it also depends on the hierarchical level in the organization. The criterion on the highest level stems from the ultimate objectives which generally include a satisfactory rate of returns, however, that is defined. The ultimate objectives and, therefore, the ultimate decision criteria are usually set by the highest level of management in the hierarchy and consequently impose the limits within which decisions at lower levels are to be made. Whatever criteria are

¹⁵See John K. Galbraith, The New Industrial State (Boston: Houghton Mifflin Co., 1967), pp. 87-88.

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used, what is important is that they are determined by management to be used by management of the individual firm. One important result is cor equential; the decision criteria used to determine the efficient employment of the resources of the economy are variable between firms and industries. What is a pertinent and relevant accounting to one firm is not, therefore, necessarily pertinent and relevant to any of the others.

In summary, in a market economy, the objectives of accounting are conditioned and structured to satisfy the demands and limitations of the market economic organization. These demands and limitations are, in essence, by laws of the environment and delineate what objectives accounting should serve and what methodologies accounting should follow. The objectives, as we have seen, are to contribute to and facilitate the appropriate functioning of the market, and the environment within which these objectives are to be achieved results in the following:

1. The major accounting entity is the individual enterprise and no inter-firm interdependencies are accounted for. Consequently, no provisions for possible aggregation of data for social purposes are made.

2. Accounting information serve two major groups of beneficiaries: individual owners of economic resources and individual managers of these resources. Overall social benefits are not major concerns of accounting.



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3. Decision criteria are variable between firms and industries. Consequently, accounting techniques and methodologies are variable between firms and industries.

4. Prices of factors of production and of commodities produced are set by the individual owners and managers respectively in accordance with the conditions of market supply and demand which presumably reflect their scarcity on a trial and error basis.¹⁶ Accounting information is invaluable in price setting for both factors of production and commodities produced and, therefore, is decisive in considering which commodities to produce and which factors to use.

5. The most important measure of rational conduct in doing business is profit and is, therefore, the most important performance measurement criterion. Consequently, the most important single purpose of accounting is the measurement of profit and profitability.

2.2.2. Idiosyncrasy of the Decision and Characteristics of the Decision Maker in a Planned Socialist Economy:

The second extreme of economic organization is known as a centrally planned socialist economy. Some generalizations about this type of economy are pertinent at this point. The first generalization is a consequence of what

¹⁶See footnote 24, p. 29, for an explanation of this statement.

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Nove¹⁷ has called the "Liquidationist" attitude to economics and is of the effect that, as a general rule, no provisions are made for free market forces in the economic organization of the society. Nove cited Bukharin's expression of this attitude in the following:

Political economy is a science . . . of the unorganized national economy. Only in a society where production has anarchistic character, do laws of social life appear as "natural", "spontaneous" laws, independent of the will of individuals and groups, laws acting with the blind necessity of the law of gravity. Indeed as soon as we deal with an organized national economy, all the basic "problems" of political economy, such as price, value, profit, etc., simply disappear. Here the relations between men are no longer expressed as "relations between things," for here the economy is regulated not by the blind forces of the market and competition, but by the consciously carried out plan . . . The end of capitalist and commodity society signifies the end of political economy.¹⁸

Of course, Bukharin has been proven wrong by eminent political economists of his own faith.¹⁹ For example,

¹⁷Alec Nove, The Soviet Economy (New York: Frederick Preager, 1966), p. 280.

¹⁸Ekonomika perekhodnovo (Moscow, 1920). Translation cited by Nove from Adams Kaufman "The origin of political economy of socialism", Soviet Studies (January 1953), pp. 273 ff., Nove, Ibid., p. 281.

¹⁹Of course this stand was not taken only by Bukharin. E. Preabrazhenski and others took a similar stand. Preabrazhenski writes "we counterpose to commodity production socialist planned production; to the market the accounting of socialist society; to value and price the labor cost of production, to the commodity the product", New Economics (Moscow: 1926). Translated from Russian (Oxford: Oxford University Press, 1965), p. 162. And he wrote "The science of collectively organized production would replace the theory of political economy", Novaya Ekonomika (Moscow, 1926), p. 19. Cited by Nove op cit., p. 282. And Stalin in his Economic Problems of Socialism wrote: "The problems

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applicability of the law of value for the socialist economy of the Soviet Union has been under dispute for a long period of time. But Nove, reporting on a conference on this law held early in 1957, said

At this conference, the majority held that Stalin has been wrong in confining the law of value and the designation "commodity" to consumers' goods and the products of cooperatives, that goods circulating within the state sector were also commodities, and that the law of value has general application throughout the economy.²⁰

of rational organization of production forces, the planning of the national economy, etc., are not the subject of political economy, but the subject of economic policy of directing (i.e. political) organs", cited by Nove, Ibid., p. 284.

²⁰Nove, Ibid., p. 286, for further discussions of this opposing view see for example, Maurice Dobb, On Economic Theory and Socialism (New York: International Publishers, 1955) especially Ch. III, and Papers on Capitalism Development and Planning (Routledge and Kegan Paul, 1967), pp. 140-163. Dobb (p. 150-51) cited the note preceding the published summary of a discussion about the revival of theoretical economic discussion under the auspices of the Institute of Economics of the Academy in December, 1956, so saying: "A number of positions taken up in our literature until now and widely adopted need more precise working out, and some of them appropriate emendations. . . Reform of price policy has great economic significance since directly linked with it is an improvement in the forms of economic accounting, planning of prime cost and profitability of production, questions of calculating the effectiveness of capital investment and of introducing new techniques, etc." Voprosi Ekonomiki 1957, No. 2, p. 71. See also Ota Sik, "Socialist Market Relations and Planning" in Socialism, Capitalism and Economic Growth, C. H. Feinstein (ed) (London: Cambridge Univ. Press, 1967), pp. 133-157. Also see George R. Fiewel, The Soviet Quest for Economic Efficiency (New York: Frederick Praeger, 1967) for an excellent survey of the debate, Chs. 1 and 2.

But as John Kenneth Galbraith puts it,

The genius of the industrial system lies in its organized use of capital and technology. This is made possible . . . by extensively replacing the market with planning . . . In all cases there are careful projections of output; careful control of prices; . . . careful steps to see that the things needed for production . . . are available in the requisite amounts at the anticipated prices at the right times. To leave these matters to the market would be regarded, by those principally involved, as the equivalent to leaving them to chance.²¹

Nevertheless, carefulness or carelessness can be measured only against some measurement rod. Problems of industrializing are essentially problems of economizing and their careful solution can best be measured against economic laws and principles, however, planned their solution may be.

The Second generalization is a corollary of the first and is of the effect that everything of economic nature is planned on both the aggregate and the disaggregate levels. The following quotation gives the essence of this generalization:

Socialist enterprises do not work completely separately and independently of each other, according to their interests and decisions, for a more or less unknown market. Their general course is coordinated and balanced by the macroeconomic plan. The basic structure of their output programmes is regulated by overall planning. Technological and investment policies are under planned control and the training of personnel is organized with regard to the changes in the structures of the labor force. The plan also lays down the overall distribution of the national income and regulates the movements of key prices, price relations and the general price level. By these

²¹Op cit., p. 354.

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means planned regulations are extended to cover the whole field of market demand and its fundamental structure.²²

The third generalization is that social and political ideologies and beliefs play a dominant role in the organization and functioning of the economy and is of the effect that pure economic laws and principles of economic conduct do not hold the supremacy they hold in a capitalist market economy. Many examples demonstrate the plausibility of this generalization, but the space here is limited for their discussion.²³

Owing to the above characteristics, the "invisible hand" of the free market is not available for a planned socialist economy to insure efficient allocation and

²²Ota Sik, op cit., p. 154.

²³Three examples demonstrate that: the first can be found in the controversy about the applicability of the law of value to a planned socialist economy. See Alfred Zauberman, "The Soviet Debate on the Law of Value and Price Formation" in Value and Plan, G. Grossman (ed.) (University of California Press, 1960), pp. 17-40; Maurice Dobb, Political Economy and Capitalism (New York: International Publishers, 1945) Ch. VIII; Nove, op cit., pp. 286-91 and Ota Sik, Ibid. The second example can be found in the discussion around the economic concepts of scarcity, utility, and marginalism. See Petes Wiles interesting paper, "Scarcity, Marxism and Gosplan," Oxford Economic Papers, V (September 1953), pp. 288-316, and his essay on "Growth versus Choice", Economic Journal, LXVI (June, 1956). See also Nove, Ibid., pp. 292-302. The third example can be found in discussions about investment criteria. See M. Dobb, On Economic Theory of Socialism, Chapter III, B, and Chapter XV. See also Nove, op cit., Chapter 12; Oskar Lange and Fred M. Taylor, On the Economic Theory of Socialism (University of Minnesota Press, 1937; McGraw Hill paperback, 1966) pp. 55ff; and George R. Feiwel, op cit., pp. 1-16 and Chapter 3.



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employment of its economic resources. Some visible body should pursue the objectives and carry on its function. This visible body is usually a state planning agency or its equivalent.²⁴ The implications of this form of economic organization to accounting are twofold. The first is an instinctive result of the absence of free market forces and is of the effect that economic accounting calculations replace market calculations. The roles of accounting instead of being auxiliary to the market and dependent on it are now rivals to the market and independent from it. The second implication is a consequence of the change in the form of ownership of economic resources. Here social ownership of the productive resources of the society is, now, the rule and private ownership is an exception. But ownership carries its problems with it and therefore the task of efficient allocation and employment of those resources falls now on the shoulders of a Central Administration or its appropriate organs rather than on the shoulders of the individual members of the society. The result is a change in the whole orientation of accounting and its

²⁴The invisible hand performs these functions, using a trial and error method. "The solution by trial and error is based on what may be called the parametric function of prices . . . The equilibrium values of these parameters is determined by the objective equilibrium conditions (demand equal to supply). As Walras had so brilliantly shown, this is done by a series of successive trials." Oskar Lange, op cit., p. 70. On the subject of how a socialist planned economy can achieve a social optimum, see C. E. Ferguson, Microeconomic Theory (Homewood, Ill.: Richard D. Irwin Inc., 1966) p. 377ff. And Oskar Lange "The Computer and the Market" in Feinstein (ed.), op cit., pp. 158-161 and his On The Economic Theory of Socialism, op. cit.



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We start with the second implication first. As has been argued before, the ultimate objective of accounting is to facilitate the making of economic decisions dealing with efficient allocation and employment of economic resources. The ultimate objective is affected by the orientation of the decision, the characteristics of the decision maker and the subject of the decision. In a socialist economy, economic decisions are basically socially oriented by virtue of their being affectors of change in resources owned by the whole society and not by any individual member. And, since what is best for the individual is not necessarily the best for the society, it follows that what is the best accounting from an individual's point of view is not necessarily the best from a social point of view. Social orientation of accounting has the following results:

1. The major accounting entity is no more limited to the upper boundaries of the individual firm, but extends to cover collectivities of firms, industries and the whole economy.²⁵

2. Accounting serves the society and not the individual and overall social benefits become one of its major concerns.

²⁵See R. W. Campbell, Accounting in Soviet Planning and Management (Cambridge, Massachusetts: Harvard University Press, 1963), pp. 27-37.

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3. The freedom of the management of the individual enterprise in decision making is more limited by socio-political and ideological factors. New constraints are imposed and a new objective function is to be maximized. The new constraints and the new factors in the objective function need to be satisfied and served by accounting.

4. Decision criteria between firms and industries tend toward uniformity and factors of interdependence and dependence tend to be recognized and accounted for in it. Uniformity in the decision criteria requires uniform accounting for similar items between firms and industries and factors of interdependence and dependence require an extension of the domain of accounting to cover inter-firm and inter-industry calculations in an economically sound manner.

5. Profit is no more the main aim of production. Other important factors such as the satisfaction of the essential requirements of the people, construction of a powerful industrial base or engineering a supreme defense system are much more important than profit alone. Nonetheless, the roles of profit in measuring performance are being revived as will be treated later in this section.

The first implication--that of accounting calculations replacing market calculations--results in:

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6. Prices of factors of production and of output produced are no more determined solely on the basis of conditions of supply and demand, nor in the mere reflection of their scarcity, but in addition, according to the overall objectives of the macroeconomic plan. It follows that "the substitution of administrative organization of the allocation process . . . for the market organization means that the province of accounting is enlarged to include responsibility for generating all economic information A shift from the market economy to the administrative economy implies that the whole process of preparation and control of the national economic plans comes within the scope of accounting."²⁶

In short, the functions of accounting are much more difficult and the achievement of its ultimate objectives is much more complicated and laborious in a socialist planned economy than in a market economy. In the latter, it seems that the most important single function is the measurement of profit,²⁷ but doubt is cast on the importance of this function in the former. Therefore, a brief review of the role of profit in a planned economy will conclude this section.

Profit, in a market economic organization, is the main force behind the movement of economic resources among

²⁶Ibid., pp. 3-4.

²⁷See the literature on the Balance Sheet-Income Statement Controversy.

and within alternative means of production. Investors allocate their savings among alternative firms according to their "profitability," they measure the efficiency of the firm and its management by profit per share, dividends per share, etc., managers employ the firm's economic resources in, presumably, the most profitable alternatives, they measure their subordinate's performance according to (among other things) the profitability of their effort, and in short, profit in a free market capitalist economy is the most important single aim of business and, therefore, it follows that its measurement is the most important single aim of accounting.

In a socialist planned economy, profit is looked upon from two points of view. As Mr. N. S. Krushchev stressed in 1962: "In characterizing the socialist system of economy we must not confuse the concept of profit as applied to the entire national economy and as applied to a particular enterprise."²⁸ In a socialist society, the social aim is to satisfy the requirements of the people and goods are produced not for the sole purpose of profit but because they are needed by the people.

An individual enterprise, however, is a different matter. In the given case, the question of profit is of great importance as an economic index of the efficiency of its operations . . . without an account

²⁸In his report at the plenary meeting of the Central Committee of CPSU in Nov. 1962; cited by L. Gatovskii, "The Rule of Profit In a Socialist Economy", in M. E. Sharpe (ed.) Planning, Profit and Incentives In the USSR, Vol. I (New York: IASP, 1966), p. 90.

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of profit it is impossible to determine at what level an enterprise operates and what contribution it is making to the fund of the entire people.²⁹

From the social point of view, profit is "inseparably bound up with the law of socialist accumulation"³⁰ by virtue of its being a vital source of expanded socialist reproduction. But for its own sake, profit is not, the major aim, the aim of socialist production is expressed concretely in the national plan which defines the level of production necessary to satisfy the various requirements of the society. Therefore, "profit is one of the subordinated elements in the entire system of economic categories of socialism . . ." ³¹

Reflecting on the individual enterprise, profit essentially retains its roles in capitalism. It is a measure of managerial efficiency, an index of higher productivity, indispensable for intra-firm resource allocation, and the fundamental base for incentives and bonuses. Many Soviet economists regard Stalin as having been mistaken when he:

²⁹Ibid., p. 90.

³⁰Gatovskii, Ibid., p. 91.

³¹Ibid., p. 92; "An obvious belittling and, at times, outright ignoring of the importance of profit and of value categories in general were characteristics of the period of the cult of Stalin's personality. He substituted naked administration by fiat for economic instruments of directing the economy and material incentives . . . all this had a direct effect on profit, which was regarded as purely formal category." p. 95.



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Counterposed to the principle of profitability of enterprises his own principle of higher profitability . . . he regarded profitability of enterprises as "temporary and unstable" . . . the concept of higher profitability was divorced by Stalin from profit . . . The clear and definite concept of profitability was replaced by the absolutely hazy, indefinite and essentially meaningless concept of higher profitability, which has no relation to profit . . . One of the primary tasks of planning is to insure profitability of individual enterprises as the basis for socialist accumulation.³²

The following quotations will nakedly show the indispensable roles that can be played by profit in the administration of socialist enterprises:

To exert effective economic influence on economic activity, it is essential to choose a criterion that characterizes to the greatest degree the operation of the enterprise and the interests of both the national economy and the personnel of the enterprise . . . it is profit, that constitutes such a criterion.³³

The transition to the broad use of economic management methods requires a single criterion for evaluating their efficiency and, consequently, for stimulating materially the enterprise's executives and personnel . . . it is the enterprises' profit that constitutes such criterion.³⁴

Such indices as the growth of output volume, higher finished output, greater output per rubble of fixed assets, lower production costs--all together and each

³²Ibid., pp. 96-97.

³³V. Trapeznikov, "For Flexible Economic Management of Enterprises," Pravada, August 12, 1964, in Sharpe (ed.), op cit., p. 196 with emphasis.

³⁴L. Leont'ev, "The Plan and Methods of Economic Management," Pravada, September 7, 1964, in Sharpe (ed.) op cit., p. 209.

individually--have their own significance in planning and the accounting process. But they all come together and cross in profitability which, for this reason, ought to be employed as the key criterion for estimating the efficiency of an enterprise's operations.³⁵

The enterprise must possess a fund for material incentives, the size of which must depend upon the actual level of profitability.³⁶

Enterprises will get bonuses on the basis of their share of participation in the income created: the greater the profitability in the plan, which is compiled by the enterprise itself, the greater will be the bonus . . . what is profitable for the society should be profitable for every enterprise.³⁷

The above quotations show the clear indispensability of the concept of profit for the proper administration of socialist enterprises. Its meaning and context in a socialist economy seems to entail some differences from its counterpart in a capitalist economy, a subject which will be referred to later in this study. We now move to see where the United Arab Republic's economic organization fits into the picture and what implications it contains to accounting.

³⁵E. G. Liberman, "Once Again on the Plan, Profits and Bonuses," Pravada, September 20, 1964, in Sharpe (ed.) Ibid., p. 215.

³⁶V. S. Nemchinov, "The Plan Target and Material Incentives," Pravada, September 21, 1962, in Sharpe (ed.) Ibid., p. 111.

³⁷E. G. Liberman, "Plan, Profit, Bonuses," Pravada, September 9, 1962, in Sharpe (ed.) Ibid., p. 80 and 83.



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2.3. Objectives of Accounting in the UAR: Objectives of the New Uniform Accounting System

Inasmuch as they aim at the assistance in the making of appropriate economic decisions, the ultimate objectives of accounting should be no different in the UAR than anywhere else in the world. In its own way each country is striving for efficiency and the UAR is no exception. The way, however, is influenced by the economic organization of the society which is, in the UAR, a socialist planned economy reducing private ownership of economic resources to the "non-feudal" agricultural sector and the "non-exploitative national capitalism." The latter is virtually limited to retail trade, housing, and the small craftsmen industry. The rest of the economic resources of the society are socially owned and administered. The somewhat decentralized administration and, in essence, the comprehensive planning and control of economic activity are carried out through a mechanism of coordinated socialist national planning and ministerial hierarchical control. The roles of the market are recognized and relied upon to a much greater extent than in Soviet type economies. The following are some characteristics of the UAR economy with regard to allocation and administration of economic resources:

1. Virtually all new investment in the economy is made directly or indirectly through the government.



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Investment is allocated to various sectors according to a five (or seven) year plan.³⁸

2. All public enterprises are classified into groups according to the nature of their main products and each group is subjected to the supervision of one of the (currently) forty-three General Organizations established specifically for this purpose. Each General Organization is independent in its own decisions within the limits of the laws governing such organizations (to be discussed later) and as long as it observes the requirements of the National Plan.

3. Each General Organization allocates its appropriated share of investment between its affiliated enterprises (or in some cases establish new enterprises) according to a predetermined scheme of priorities of investment projects and according to the position of each enterprise's planned projects in the scheme.

4. Although investment in fixed capital is set by the government in the National Plan, investment in current capital is by and large decentralized. Each firm draws its own production plans according to its available capacity and supply and demand conditions subject to the approval of the mother Organization.

5. Each firm is independent in its decisions concerning intra-firm allocation and employment of economic

³⁸For a brief description of how the UAR economic system works, see, Hansen and Marzouk, op. cit., pp. 303-308.



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resources, as long as they are not specifically appropriated to a given project by the Organization, and as long as the firm observes the requirements of the law.

6. Labor and material markets are generally free with a minimum wage level imposed by the law and with a mixture of administered and free market prices of materials.

7. Prices of the final products of public firms are generally administered by the government and set on the basis of cost plus a fair profit margin. Some commodities are priced at, or below cost and subsidized by the government for reasons of social relief or export market competition.

8. Some commodities, as well as some materials, are rationed usually at a cost or below cost official-price (sugar, kerosene, cotton seed oil, and others) and those wanting to buy rationed goods in excess of their ration can do so at higher official prices.

The objectives of the UARUS as stated in the system are:³⁹

1. To provide basic information and analytical tools and methods for planning, execution of plans and control at all levels.

The levels specified by the system are the following:

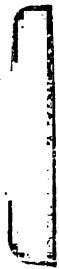
- a. The enterprise level: In addition to providing the necessary information for the analysis of its financial position and results of its operations, the system requires each economic

³⁹CAA, The Uniform Accounting System, Vol. I, op. cit., pp. 8-11.

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unit to prepare three main budgets: a budget for production requirements in physical terms, a cash budget, and a finance budget. This, according to the system, will enable these units, perhaps for the first time, to coordinate their plans in physical terms with their plans for finance, which is an essential coordination on the enterprise level to achieve overall economic balance.

- b. The General Organization level: The system is intended to provide information to facilitate control, direction and supervision and enable the Organization to participate in planning. According to the Law of General Organizations and Public Enterprises, each Minister is charged with the duty of supervising a number of General Organizations through which he is to execute the public policy of the government. The General Organization is granted authority to supervise, control, coordinate and evaluate the efficiency of economic units affiliated with it. The UARUS is intended to provide information to facilitate all these functions.
 - c. The level of other organizations: The system intends to serve the Ministry of Planning by coordinating the various plans of separate economic units with the National Plan and by providing uniform information to enable the Ministry of following-up the plan at all levels. The system intends to supply the information needed by the Ministry of Finance and the Ministry of Economics by coordinating the accounts of various economic units with the National Budget, the Final Account, and the Foreign Currency Budget. It is intended to meet the requirements of the Banking System with regard to the exercise of control over circulating currency and liquidity statuses of economic units. It is intended to provide the Central Accounting Administration with information needed for financial control, follow-up of the plans, and evaluating the efficiency of their execution. And, finally the system intends to facilitate the functioning of the Central Statistical and Public Mobilization Administration by supplying uniform information.
2. To provide a link between the accounts of the individual economic units and the social (national income) accounts.



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3. To facilitate the objectives of collecting, organizing, and storing of accounting information.

These objectives fit, in the scheme developed earlier, the level of intermediate objectives, and they aim at the achievement of the ultimate objective--the aid in the efficient making of allocative and operative decisions dealing with economic resources--at essentially four levels: the level of the economic unit, the General Organization level, the level of the Ministry, and the level of the National Economy. To put the demands on the services of accounting into clear focus, some reflections on the functional and organizational interrelationships between these levels follow.

The functional and organizational interrelationships of the first three levels are specified by the Law No. 60 for 1963, and the Law No. 32 for 1966 which defines the authority, function, and interrelationships of each level with respect to the others. These are summarized as follows:⁴⁰

1. The Minister or his deputy presides over the Board of Directors of the General Organization which, with respect to affiliated economic units, exercises the duty of the general assembly. The Minister has one vote on the Board and his own decisions can only be passed by a majority vote.

⁴⁰Summarized from Dr. Anwar A. Salamah, "Economic Organization of General Organizations and Public Enterprises," Economic and Accounting Magazine (Cairo: Commerce Club) No. 238 (Oct. 1967), pp. 8-12; No. 239 (Nov. 1967) pp. 7-9 and No. 240 (Dec. 1967), pp. 11-15, (in Arabic).

2. The Minister is given supervising, directing and controlling authority over the General Organization.

3. The Chairman of the Board of the affiliated economic units has to report decisions of the Board to the Chairman of the Board of the Organization seeking approval on matters concerning rules and regulations, financial statements, the production plan, the budget forecast, investment and finance plans, marketing and exporting programs, increase or decrease in capital and utilization of reserves and provisions of the economic unit in terms not specified in the budget. The Chairman of the Board of the Organization submits the decisions of the Board to the appropriate Minister for approval.

4. The General Organization's Board exercises the authority of participation in the preparation of the affiliated economic unit's production plans that provide for efficient use of available resources, supervising the efficient execution of these plans, providing assistance to the unit in establishing programs for increased exports, rectifying the policy for increasing production efficiency, and the measurement of the efficiency of performance of affiliated units. The Organization is also authorized to prepare uniform cost standards for various activities of affiliated units, to supervise work performance, to coordinate their effort, to review their periodic reports, and to participate in the

preparation of employment policy guided by effective economic administration of affiliated economic units.

5. The Board of Directors of the economic unit is granted full authority to carry on all functions required for the achievement of the objectives of the unit in accordance with the law and within the limits of the above stated requirements.

6. Each General Organization has its own budget, but is limited in its transactions to its total appropriation in the National Budget. An appropriation is made to the Organization as a whole and the Organization is entitled to exceed the appropriation for a given affiliate by drawing on the appropriations of the other affiliates.

With respect to the fourth level, the Supreme Council for National Planning, headed by the President of the Republic, fixes in advance, social and economic targets. Each Ministry, in cooperation with affiliated General Organizations, prepares investment plans and suggestions in their own field and forwards them to the Ministry of Planning whose technical secretary, the National Planning Commission, coordinates proposals of various ministries and proposes a comprehensive plan to be submitted for the approval of the Supreme Council. The latter has a number of technical advisory committees headed by the Ministerial Committee for Planning Affairs. After detailed study of the proposed plan by the Supreme Council and its committees

the final plan is drafted incorporating any changes, which are sometimes radical, desired by the Council. Alongside this planning machinery, there is a follow-up and performance measurement system to compare the actual and planned execution and performance. The plan, which is usually a medium term plan of five to seven years, is subdivided into annual plans to be executed within the framework of the National Budget and where it is connected with the budgets of the General Organization (see number 6 above).

From the analysis in this section, up to this point, we can draw the following conclusions about accounting in the U.A.R.:

1. Accounting serves the efficient making of economic decisions at four levels, the Enterprise level, the General Organization level, the Ministry level and the National level.

2. Each firm is a separate accounting entity as far as accounting for the individual firm is concerned and is a part of a larger accounting entity so far as accounting for the General Organization is concerned. Each Organization is an accounting entity in its own rights but is also a part of the larger accounting entity of the sector. Likewise, the sector being an accounting entity in its own rights is a part of the larger accounting entity of the economy.

3. On the firm level the usual functions of accounting tend to stay the same. On the Organization level the

functions of accounting tend to be in the proximity of accounting for a parent and subsidiaries of a conglomerate. This is also true for the two other successive levels.

4. The prime source of accounting data is the enterprise level. This information is successively aggregated as well as supplemented to secure required information on the other three levels.

5. Within each of the four organizational levels all three levels of accounting's objectives exist, and, therefore, the possibility of conflict between its ultimate objectives at the four organizational levels exists and needs to be resolved.

6. Decision criteria within and between firms and industries tend toward uniformity only to the extent of satisfying regulations. Virtually all operative decision criteria between firms, and to some extent between General Organizations, are heterogenous. Allocative decisions criteria tend to be uniform on the upper two levels and diverse on the lower two levels.

7. Although profit is not the most important single aim of production at the national level, it tends to be one of the most important aims at the enterprise level and therefore, goes with it all its properties in influencing decisions and measurement of performance.

8. In the UAR, the function of accounting is more complicated than in any of the two extremes of economic organization discussed earlier. The complication occurs due to the fact that the economic organization of the UAR is mixed and consequently the functions of accounting tend to be a mixture of its functions in a free market and in a socialist planned economy. The UAR economy is comprehensively planned along with a high degree of decentralization and in addition is dependent on the market to a significant degree. Whether the stated objectives of the UARUS will be able to satisfy the requirements of various administrative levels in the economy is, therefore, extremely doubtful and only experience can convincingly supply the needed evidence. It is even doubtful that the proposed system can satisfy its objectives, let alone the objectives of the economy. All that we can do at this point in time is to take the objectives as given and refer back to theory to examine the concept in the hope that theory will shed some light on our doubt. This is the purpose of the chapters that follow, the last section of this chapter being left for a statement of criteria.

2.4. A Criterion for Judgment:

Six standards will be used to guide future analysis.

They are:⁴¹

1. Relevance and appropriateness for expected use.
2. Feasibility
3. Quantifiability
4. Additivity
5. Freedom from organizational bias.
6. Disclosure of significant relationships.

The first of these in the American Accounting Association Committee's first standard along with their first communication guideline.⁴² Relevance will be as to the objectives of the UARUS and appropriateness will be as to the expected use of the above-mentioned four organizational levels in the UAR economy with the rest of the Committee's explanation being accepted.

Feasibility is second in importance to relevance and will be used here to mean compatibility to practical applications within the limits of reasonable cost and effort of any accounting method or procedure to be chosen. The most relevant alternative is not always the most feasible and, therefore, a reasonable balance between the two needs to be weighed. This standard is the third standard used in the preparation of the UARUS and is embodied in the American Accounting Association Committee's second standard of verifiability.

⁴¹Four standards were used in the preparation of the UARUS. They are: "(a) Simplicity, clarity, and flexibility, (b) aim at the most acceptable principles and methods, (c) Amenability to application, (d) Meeting the requirements within and without the economic unit" op cit., p. 16

⁴²Op cit., pp. 9-10 and 14-15.

The third standard is the Committee's fourth, and the explanation given by the committee is accepted.⁴³

Additivity will be used to mean amenability to mathematical addition by holding similar characteristics to objects considered the same such as the sum of the parts equals the whole. It is essential if data are to be aggregated to serve successive hierarchical organizational levels.

Freedom from organizational bias will be used here to mean that any given piece of information intended to serve more than one organizational level should be capable of serving them equally well without bias toward the needs of any one level. This is necessary if accounting information is to objectively serve the needs of more than one hierarchy of objectives.

Disclosure of significant relationships is the Committee's second communication guideline and is being accepted here as explained by the Committee.⁴⁴

These standards will be used as criteria to guide my future analysis. It is important, of course, that any accounting method meets the criteria as a whole. But this is not expected to be the case, and therefore, it becomes a matter of judgment. Even the decision that a given accounting method meets the criteria as a whole is a matter of judgment by virtue of the criteria not being objective. The moment judgments enter the picture, opinions of

⁴³Ibid., pp. 11-12.

⁴⁴Ibid., pp. 15-16.

individuals are liable to differ and I expect that mine will be no exception. All that I can do under the circumstances is to support my judgment by the judgment of others which (in my judgment!) would seem to be the most powerful. This was a word of caution to prevent any future disappointments, for the possibility of which I will now turn.

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CHAPTER III

VALUATION OF CURRENT ASSETS: INVENTORIES

3.1. Economic significance of Inventories:

For a businessman, inventories are normally the most important item in the current assets category; for an economist, inventories serve to bridge the gap between the production and consumption of goods; for a business cycle student, inventories are an accentuating cause of short or minor business cycles; and for an accountant inventories are his "Achilles Heel."¹

For a businessman inventories must be carried for reasons of convenience and necessity. They are essential for steady production and reasonable consumer satisfaction and their presence provides both. But inventories embody economic resources which are no longer available for employment in alternative opportunities once displaced by inventories. The opportunity cost of maintaining them should, therefore, be balanced against the expected value of the convenience of having them on hand. Nothing more needs to be stated here on the importance of inventories or the

¹The term attributable to Professor Charles Johnson, Accounting Review, XXIX (January, 1954), p. 15.

problem they create to a businessman. Many books on managerial accounting treat the subject so extensively as to make any attempt at comprehensive citation almost formidable.

For an economist, every inventory item has a dual characteristic. Raw material inventories serve as both a technical factor of production (as opposed to the natural factors of production, land and labor) and as an intermediate product. As a technical factor of production, the economist is concerned about the opportunity cost of inventories. As an intermediate product, he is concerned about their supply and demand; about their price. The equality of opportunity cost on the margin and price is one of his competitive equilibrium conditions. Semi-finished and finished products from a business point of view are not necessarily so from an economist's point of view unless otherwise available for final consumption. If they are not available for final consumption, what pertains to raw materials also applies to semi-finished and finished products. If they are available for final consumption, then they are finished products from the economist's point of view and he is concerned about their opportunity cost of production which is a decisive factor in their supply, and their utility in consumption which is a decisive factor in their demand, the interaction of which with supply establishes their value in exchange as measured by price. The equality of long run average cost and price per unit of product is one of competitive equilibrium conditions.

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But besides their being an important factor in his theory of the firm and in the theory of general equilibrium, inventories are important to the economist on one other count. Especially for students of business cycles, inventories play a dynamic role. "The prominence of inventory investment as an aggravating agent in short cycles may be considered as established."² In addition, there is general agreement among economists that accumulation of inventory in expansionary periods and their liquidation in contractionary periods play an important role in accentuating major cyclical fluctuations.³ Although concerned mainly with inventory investment in real terms, that is in physical terms, many economist would argue for the fact that changes in valuation tend to have the same importance in affecting cyclical fluctuations as changes in the physical stocks. Changes in valuation affect changes in profit margins and the latter have their established roles in business fluctuations.

The problems of the accountant with respect to inventory are intimately related to those of the businessman,

²M. Abramovitz, Inventories and Business Cycles (New York: National Bureau of Economic Research, 1950), p. 497.

³No effort to treat the subject extensively is being made here. For an excellent treatment of the subject consult Clarence L. Barber, Inventories and the Business Cycle with special Reference to Canada (Toronto: University of Toronto Press, 1958), especially Chapter II for a brief survey of the theory.



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by virtue of accounting being mainly a service for doing business effectively. The accountant, like a physician, is supposed to prescribe to his client the right remedy and worry (at least ethically) about his ills. In the area of inventory planning and control, accountants, mathematicians, and statisticians have reached a stage of sophistication that have made preventative remedies, which enable the effective solution of inventory problems, quite abundant. But the area of inventory valuation still remains the accountant's "Achilles Heel." To this area, the remaining sections of this chapter will be devoted.

A summary of the economic significance of inventories follows:

1. Inventories embody economic resources which otherwise could have been used in alternative ways. The embodiment of these resources in inventory investment constitutes a sacrifice of their returns in the next best alternative. Unless the value of the added utility of investing in inventories is at least equal to the value that could have been added by investing in the next best alternative, inventory investment will result in a misallocation of resources. Recognition of the value added (positive or negative) by inventory investment is one step toward efficient resource allocation.

2. By embodying economic resources, inventories constitute a part of the economic wealth of the economic entity under consideration. Their consumption results in a

reduction of this wealth unless an equivalent amount of resources is created. Their transfer to another entity, whether in form or as embodied in another product, unless compensated for in the same real amount will result in a transfer of wealth. One entity will be less well off than before and the other will be better off than before. The aggregate wealth will remain the same. To keep each party to the transfer as well off as before, the amount transferred should be valued and transferred in real terms (adjusted for changes in the general purchasing power of money). The amount of compensation should be just enough to replace the transferred resources at the time of transfer.

3. The value of inventories at the time of acquisition is the value of economic resources displaced by their acquisition; their value thereafter is equivalent to the value of economic resources needed for their replacement in the same real amount. The value of inventories after acquisition may increase or decrease in real terms.⁴ An increase in the real value of inventories adds to the wealth of the economic entity under consideration and a decrease in their real value results in a reduction of wealth.

⁴The term "real" is used here to signify a constant purchasing power of the money unit used to measure value. This may be so either by accident or by correcting for any changes that may occur.

4. The most important aim in valuing inventories in a planned economy is to preserve the real value of wealth as an economic factor of producing income and therefore to differentiate between stocks (capital) and flows (income) of economic significance.

3.1.1. The Economic Significance of Inventories in a Planned Economy:

The statements above regarding the economic significance of inventories apply equally to a market and to a planned economy. It makes a difference, however, when the economy under consideration is a socialist rather than a capitalist economy. The difference exists due to variations in the conception of the law of value and the method of its application. Since the UAR is a socialist economy, it becomes very important, therefore, to designate the conception of the law of value most applicable to the UAR economy. Hence, a brief historical sketch of the development of the theory of value in economics seems to be appropriate at this point.

A long time ago economists distinguished four kinds of value for every economic commodity for which scarcity is an attribute. These are value in use, esteem-value, cost-value, and value in exchange.⁵ A group of economists

⁵In his Theory of Political Economy, Jevon distinguished between value in use, esteem, and purchasing power or ratio of exchange. 2nd ed. (1879), p. 87, as cited by C. M. Walsh, The Four Kinds of Value (Cambridge: Harvard University Press, 1929), p. 11. Walsh also cites Roscher's Die Grundlagen der Nationalökonomie as dividing value into

especially those known as the socialist school with David Ricardo in the forefront, considered value as a quality of a thing in itself.⁶ Value was viewed as a sort of fluid penetrating the commodities; "the quantity of that fluid in each commodity was held to correspond to the amount of labour required to produce that commodity."⁷ This view was to later become the labor theory of value developed by Karl Marx and his followers, which became the backbone of Eastern Socialist Economic Thought.⁸ Marx distinguished between use-value, which signifies the utility of a thing in the sense of usefulness and which he considers as a property "independent of the amount of labour required to appropriate its useful qualities,"⁹ and value as measured by "labor-time socially necessary . . . to produce an article under the normal conditions of production and with the average degree of skill and intensity prevalent at the time."¹⁰ For him value has a "relative"

use-value, cost-value and exchange-value, and hence the four kinds of value, p. 11.

⁶See Samuel Bailey's A Critical Dissertation on the Nature, Measures and Causes of Value: Chiefly in the Reference to the writings of Mr. Ricardo and his Followers (New York: A. M. Kelley, 1825). See also the intellectual study of Bailey's Dissertation in Robert M. Rauner's, Samuel Bailey and the Classical Theory of Value (Cambridge: Harvard University Press, 1961).

⁷Gustav Cassel, On Quantitative Thinking in Economics (Oxford: Clarendon Press, 1935), p. 29.

⁸Capital, A Critique of Political Economy, Vol. I, The Modern Library edition, (Charles Kerr, 1906).

⁹Ibid., p. 42.

¹⁰Ibid., p. 46.



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form and an "equivalent" form which he considered as "two intimately connected, mutually dependent and inseparable elements of the expression of value; but, at the same time, . . . mutually exclusive, antagonistic extremes . . . a single commodity cannot, therefore, simultaneously assume in the same expression of value, both forms."¹¹ Relative value is a relation between use-value of different commodities and its quantitative magnitude is determined by the amount of socially necessary labor embodied in each. "The relative value of a commodity may vary, although its value remains constant. Its relative value may remain constant, although its value varies . . ."¹² The value of a commodity, as distinctive from its "relative" and "equivalent" forms can vary only corresponding to variations in the amount of socially necessary labor embodied in it. The equivalent form of value is expressed in the nature of the commodity itself. "The very essence of this form is that the material commodity itself . . . just as it is, expresses value, and is endowed with the form of value by Nature itself . . . The particular commodity, with whose bodily form the equivalent form is thus socially identified, now becomes the money commodity, or serves as money . . . the universal equivalent."¹³

¹¹Ibid., pp. 56-57.

¹²Ibid., p. 63.

¹³Ibid., pp. 66 and 80.

Another group of economists considered value as a quality of the thing, not in itself, but with reference to its user, appropriator, producer or with reference to another thing.¹⁴ Still others would hold that "value of a thing can only exist in relation to another thing: that it is an actual or conceivable exchange proportion between two things."¹⁵

From an investigation of the literature on the subject, it seems more convincing that value in general is relative to somebody or something.¹⁶ Value of a thing in use is relative to the utility or usefulness it gives to its user, whether psychic or otherwise. Without possessing utility, a thing is of no use and, therefore, is valueless. Value in use is hardly measurable with any precision. "Being so close to mere usefulness, its measurement if possible in some cases, would belong rather to physics and

¹⁴See for example, Walsh, op. cit., p. 15. "Economic value in its generic sense, is a quality or power in, or somehow connected with, appropriable things with reference to the well-being and activity of the persons who do, or who would if they could, appropriate them."

¹⁵Cassel, op. cit., p. 30.

¹⁶B. M. Anderson's conception of value would dispute this statement. He argued that relativity of value is circular reasoning and the only fair conception of value is as a quantity. See his Social Value (New York: A. M. Kelley, 1966) first published in 1911. Ch. II and XI. We here distinguish, however, following Edgeworth, Mathematical Psychics (London, 1881), pp. 83 et. seq., between value which is primary and embodied in the thing and evaluation which is secondary and is devoted not to giving value, but finding out how much value is in a given thing.

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even to physiology."¹⁷ Anything that possesses a value in use does not necessarily have to possess the other three values (air). Value in use depends on total utility and needs the existence of no social relations.¹⁸ Henceforth, it is the least important of all value. Anything that has only a use-value is not scarce, is always free and almost unappropriable and, hence, is not an economic commodity. Value in use, however, is the basis for all other values. If a thing possesses any of them, it possesses a value in use.

The esteem-value of a thing "is its power to make us desire to possess it"¹⁹ and presupposes scarcity and appropriableness. The esteem-value of a thing depends on its marginal utility and "varies directly with our . . . preferences, and in some inverse proportion to the thing's quantity, differently of different things and for different persons."²⁰ Since esteem-value presupposes scarcity, a thing having it, will always have an exchange-value but not necessarily a cost-value. Because esteem-value depends on marginal utility, its measurability depends on the

¹⁷Walsh, op. cit., p. 49. "The various uses of the same thing may be compared with one another roughly; and also the total utility of one thing may be compared with the total utilities of other things and their relative importance be estimated in round figures. Nothing more than this seems to be needed."

¹⁸Ibid., p. 22.

¹⁹Ibid., p. 15.

²⁰Ibid., p. 50.

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measurability of the latter for which no practical absolute measure is neither known, nor is needed.²¹

Of the four kinds of value, cost-value and value in exchange are the most important. Exchange-value presupposes scarcity, utility and appropriableness. The development of the conception has a definite connection with the historical development of utility theory²² and has been conceived differently by different economists. Some economists view exchange-value as a ratio between two objective articles, while others insist that it is a quantity.²³ In the later conception "values are . . . represented by arithmetical figures, which we call prices . . ." ²⁴ "The

²¹Economists have historically employed three theoretical approaches to the measurement of utility. The first regards utility as a cardinal measurement, and the second as ordinal, while the third approaches it as a rationalization of behavioral phenomenon (revealed preference). None of these however, possesses the requirement of measurement theory. See Paul Samuelson, Foundation of Economic Analysis (New York: Atheneum, 1965) Ch. V, and Milton Friedman and L. J. Savage "The Utility Analysis of Choice Involving Risk", Journal of Political Economy. LVI (1948), pp. 279-304.

²²For an excellent survey of this development see George J. Stigler, "The Development of Utility Theory", Journal of Political Economy, LVIII (1950), pp. 307-27, 373-96. The article covers the development from Smith to Slutsky (1776-1915) and attributes the modern conception of utility theory to Jevons, Menger and Walras. It also credited Irving Fisher with the first careful examination of the measurability of the utility function and its relevance to demand theory.

²³See Anderson, Social Value, Ch. II.

²⁴Cassel, Quantitative Thinking, p. 31.



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only fair criterion of the value of an object is, the amount of other commodities at large, that can be readily obtained for it in exchange, whenever the owner wishes to part with it; and this in all commercial dealings, and in all money valuations, is called the current price."²⁵

The measurement of exchange-value in terms of current prices does not necessarily mean that value is an absolute quantity but rather--in an attempt at simplification--an exchange relation between commodities, as expressed in their exchange ratios, relative to a certain thing serving as a common denominator. By this our valuations--as distinct from values--become measurable quantities in terms of the common denominator chosen. The ox and dried fish were such common denominators in ancient times. Money is likewise used in modern times. It is Marx's universal equivalent form of value.

Exchange-value is presumably the market expression of what is known as subjective value. Although theoretically a superior concept, subjective value is rather unworkable since it involves expectations about the present discounted value of expected future services of the thing to be valued. This is computed by estimating the expected future exchange value of the stream of services to be

²⁵J. B. Say, A Treatise on Political Economy (London: Longman, Hurst, Rees, Orme, and Brown, 1821), p. 4. Compare p. 7n. "Wherefore it is quite correct to say, that relative value is determined by the relation of commodities one to another, and not solely by that of each commodity to money."

obtained and discounting them to the present by an "appropriate" discount factor. The practical soundness of such a process is doubtful. Presumably the closest approximation to subjective value is the current exchange value in the market. This is usually based to a large extent on future expectations, and since in most cases it is readily obtainable, it is the one which has the most use.

Cost-value, like exchange-value, presupposes the existence of use and esteem-value. Also anything that has a cost-value will normally have a value in exchange. In this conception cost-value is not tantamount with cost as used by the accountant. Cost in the accounting usage is a generic term and means different things for different people with relationship to context. Professor Clark, as far back as 1923, distinguished nine different kinds of costs pertaining to different problems.²⁶ In addition, the same kind of cost tends to differ in meaning and magnitude for the individual and the society. A cost from the point of view of an individual is not necessarily identical with cost from the point of view of society. Conversely, not every cost to society is the same for the individual. It is, therefore, delusive to speak of the cost of anything without relating it to the purpose of its measurement.

The cost with which our analysis will be concerned in the main is the cost of production. The distinction between the Marxist and the Western concept of cost of

²⁶J. M. Clark, Studies In The Economics of Overhead Costs (University of Chicago Press, 1923), Chs. III and IX.

production is very important in justifying our analysis with regard to the UAR economy.

For Marx, the cost of production is an element of the value of the product in his formula of value: $C = c + v + s$;²⁷ where C is the value of the product, c is equal to the value of intermediate inputs plus depreciation, v is equal to the value of labor power expended in production, and s is surplus value which is equal to Capitalist profit on the one hand or to the workers' contributions to social capital accumulation and social unproductive services on the other, according to whether the economy is a Capitalist or a Socialist economy respectively. The first two elements of value ($c + v$) he labels as cost-price which when realized upon the sale of the commodity, should be used to replace in kind the raw and auxiliary materials consumed in production and to renew the labor power spent by "fresh labour-power."²⁸ His cost concept is a concept of average cost, which does not include any payments for interest, rent--whether absolute or differential, or returns to entrepreneurial abilities.²⁹

In current Western Economic Thought, cost of production is equated to the current opportunity cost of

²⁷Op. cit., Vol. III (International Publishers, paperback edition, 1967), pp. 25-26.

²⁸Ibid., Vol. II (International Publishers paperback edition, 1967), pp. 449-50.

²⁹Ibid., Vol. III, parts V and VI.

resources consumed in the process. Opportunity costs being defined as those elements of cost that can be saved by not conducting the production process, or alternatively as the amount of revenue forgone in giving up the best available alternative in order to employ the resources in the current production process. Therefore, it is necessary to distinguish between the variable and the fixed cost of production, and the short and the long run cost concept. Cost includes payments to all factors of production including land rent and interest on capital and returns to entrepreneurs.

Given Marx's labor theory of value and average-cost-price; and the Neoclassical theory of value and marginal-cost-price, we have to choose a pair as a basis for future analysis. The choice should of course be limited by the subject of analysis which is the UARUS and the surrounding environment--in this case confined to the Egyptian economy. Given these limitations, the choice is very easy. The Neoclassical theory of value and the marginal-cost-price are the more appropriate bases for the analysis. This is so, if not for their superiority as tools for economic analysis, because they are being employed in the Egyptian economy and therefore they furnish the conceptual framework of the subject of our analysis as being drawn from the environment within which the UARUS is functioning. In addition, and more important, our main concern is with the analysis of microefficiency for

which Western concepts provide the main working tools employed in the UAR. Such tools are also employed in Eastern economics as was seen in Chapter II, and as will be seen in the remainder of this study.

3.2. Methods of Inventory Valuation in the UARUS:

The usual three-way classification of inventories into materials and supplies, work in process and finished product is made in the system and one method of valuation is recommended for each class.

1. "Commodity materials": The first class of inventories is "commodity materials," for which the system provides no explicit definition. In explaining the accounts directory, however, the system provides for five main control accounts under the master account "commodity materials" (131).³⁰ These are: raw material stores (1311), fuel stores (1312), maintenance and supplies stores (1313), packing and wrapping materials stores (1314), and salvage stores (1315). This implies that "commodity materials" include all tangible property which is held for consumption in producing goods and services in the normal course of business. This, definition, however, would not cover "salvage", which seems to be included under "commodity materials" for reasons of convenience rather than natural proximity.

³⁰CAA, The Uniform Accounting System, Vol. I, op. cit., pp. 62-64.

The system requires that "commodity materials" consumed during the period and remaining at its end "are to be valued in accordance with the moving average method which is the average acquisition value after the last addition

$$\frac{\text{Value of inventory balance} + \text{value of addition}}{\text{quantity of inventory balance} + \text{quantity of addition.}}^{31}$$

"Acquisition value" is used by the system in this context to mean acquisition cost f.o.b. destination.³² All materials are to be valued by the above stated rule except salvage which should be valued by average selling prices of the previous year.³³

2. Unfinished product and work in process: These are defined in the system as "the inventory at the end of a given period of semi-processed materials which are not amenable to sale at its then present conditions."³⁴ A mixed method of costing is recommended for valuation of unfinished product and work in process. They are to be valued by full production costs (absorption costing) of the production stage immediate to their current stage of production plus direct materials and direct labor of the current stage (some sort of direct costing). The system states:

³¹Ibid., p. 110.

³²(CAA), Monthly Training Bulletin, Nov-Dec. 1967, p. 70. (in Arabic).

³³(CAA), The Uniform System, p. 64.

³⁴Ibid., p. 110.

Unfinished product and work in process are to be valued by production cost of the stage previous to the current stage of production plus direct materials and direct labor of the current stage.³⁵

Cost of production includes in this context the cost at production centers and the cost at production service centers and excludes the costs of any service center not mainly providing assistance for production centers.

3. Finished product: Finished product is defined in the system as:

The finished produce of the economic unit intended for sale or rent. Semi-finished products are to be also considered finished if amenable to sale in their then, present conditions.³⁶

The rule furnished by the system for valuation of finished product is full production cost which includes cost of production centers and cost of production service centers. But if cost so computed was found to be higher than selling price, a provision for the difference should be made. The system states:

Finished product at the end of the period is to be valued by cost of production. This includes cost of production centers and cost of production service centers. A provision for the difference between cost and selling price is to be made if selling price is found to be lower than cost so computed.³⁷

A host of puzzling questions can be raised at this point. Two of these will be entertained here. The first

³⁵Ibid.

³⁶Ibid., p. 107.

³⁷Ibid., p. 110.

question concerns what is inventory cost and what is inventory value, and which is the more relevant for what purpose? The second deals with the logic and theoretical support that lie behind the recommended methods of valuation.

3.3. Value of Inventory versus Inventory cost:

3.3.1. Raw Materials:

From the point of view of the individual economic unit, raw materials constitute those tangible goods acquired for further processing in the normal course of the business. They are usually combined with the services of other factors of production like fixed capital and labor to produce the final product of the firm. The final product of one economic unit may be considered a raw material by other economic units.

Accounting principles require that raw material purchases be recorded on the books at cost, by debiting a raw material account and crediting a cash or other creditor account. When used by the firm in the process of production, the acquisition cost of the amount used is transferred from the inventory account to a production cost account by crediting the former and debiting the latter. Although acquisition cost is the accounting rule for valuing raw material inventory, this cost can be determined according to various methods. The most popular methods are first in first out, last in first out, and average cost, with many



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variations being used for each. According to FIFO, what was acquired first is charged to production first and what remains in stock represents the values of the latest acquisitions. According to LIFO, what was acquired last is charged to production first and what remains in stock reflects the values of earlier acquisitions. According to average cost, the acquisition costs of various purchases are averaged on the basis of a moving, weighted, or simple average and an average unit cost is determined on the basis of which production is charged and the remainder in stock is valued.

The objective of this analysis is to determine whether the accounting cost rule is consistent with economic principles, and if not, what such principles would imply with regard to raw material valuation. The analysis starts with the acquisition of raw materials.

Raw materials may be acquired currently for immediate use in production or to be held in inventory for future use in production. The decision as to when to acquire raw materials not currently needed for production can be considered as fairly independent of current production decisions.

According to current economic principles the value of any thing at a moment of time can be fairly measured by its opportunity cost on the market at that time. The opportunity cost of an article in one's possession is here defined as the price currently obtainable on the market

for such an article. What that price is may depend on the point of view. From a buyer's point of view, the opportunity cost of an article is the minimum price needed to be paid in the market to acquire the article. From a seller's point of view, the opportunity cost of the same article is the maximum price obtainable for it in the market. It is not unusual for these two points of view to diverge, so the same article has two different market prices, even from the point of view of one entity: a selling price, and a buying price. This divergence is due mainly to the economic process of specialization in buying and selling. If the seller is not specialized in selling the article, we would expect the maximum price he can get for it in the market to be lower than the minimum price he would have to pay to get it in the same market. To him, the buying price is equal to the opportunity cost of acquisition, and the selling price is equal to the current value of disposition. Both are economic measures of the value of the article. The one to be used in this analysis will depend on the nature of the specialization of the entity under consideration. In this section the analysis will be concerned with a buyer's point of view since raw materials possessed by an entity specialized in selling them are considered as a finished product from the point of view of that entity, and are subject to the principles of valuation of finished products. We can say, therefore, that if the materials are regular inputs to the entity, then the

relevant value is the current cost of acquisition, and if the materials are regular outputs of the entity, then the relevant value is the current price of disposition.

According to these principles, the opportunity cost of raw materials at the time of acquisition is the market price of acquisition. If such materials are immediately used in production, their opportunity cost would be charged to production and there will be no significant divergence between the accounting cost rule and the economic opportunity cost principle. It is when such materials are held in inventory for a period before they are used in production that divergences between the acquisition cost rule and the opportunity cost principle can arise. This is the most usual case in business operations today. My objective therefore is to analyze the possible reasons for such divergence and examine their positive or negative magnitude.

With a perfect market, perfect foresight, and a constant general price level, the opportunity cost of materials held in stock at the time they are used in production would be equal to the sum of the acquisition cost, plus interest on this amount from the time of acquisition to the time of use and any other cost necessary for carrying raw materials in stock for the period. Let this sum be called the imputed opportunity cost at time of use. Under the above conditions, this amount would be approximately

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equal to current acquisition cost in the market.³⁸ Any significant divergence between the imputed opportunity cost and current cost can be traced to either or both of two possibilities. The first is an unforeseen change in the price of the raw materials in question during the holding period relative to the prices of other goods. The second possibility is a change in the general price level over the same period. It should be noted that the divergence under consideration is that between current acquisition cost at current market prices and imputed opportunity cost, and not between the former and past acquisition cost. Each case is considered in a little more detail.

1. Change in relative prices: Prices of raw material items may change relative to other commodities with the general price level being constant or changing. If such items are held in stock for a period before they are used in production under these conditions, there may result a divergence between their current and imputed opportunity costs. The current cost of

³⁸Raw materials may have seasonal supply or steady supply. A seasonal supply would render the price of materials at any moment of time--under the above assumptions--equal to the price at any future point of time, minus interest on the current price for the period and any necessary storage cost. With a perfect foresight these two amounts should be equal for an exchange to take place.

Under a steady supply condition, raw materials would be purchased for stock only if the quantity discount is enough to cover interest and other inventory carrying charges from the time of purchase to the time of use.

production should be measured by current opportunity cost. The divergence can be related to the perceptive efficiency of management. A favorable divergence to the advantage of the firm indicates superior efficiency in predicting the course of relative prices, and an unfavorable divergence indicates inferior efficiency. The existence of no divergence may be considered as indicating the marginal case of management efficiency in predicting the future.

Under no circumstances should a favorable divergence be appropriately considered a part of the value of production output or an unfavorable divergence be added to the cost of production inputs, if the desire is to measure the functional efficiencies of the firm on the basis of economic principles. Such divergence is the result of purchasing efforts and cannot be attributed to production efforts. The divergence is a holding gain or loss and not a revenue or expense of current production.

2. Changes in the general price level: The opportunity cost of materials used in production in real terms will be higher or lower than the number of money units paid at acquisition according to a rise or fall in the general price level.³⁹ If knowledge about the future

³⁹A physical unit of materials may cost 50 money units at acquisition and 60 money units for replacement at the time it is used in production. If production is charged with acquisition cost, the current opportunity cost of production is understated.



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course of the general price level existed at the time the materials were acquired, and if the management decision to acquire the materials at that time was economically justified, then the imputed opportunity cost of materials in possession should not be greater than the current acquisition price, both measured at the same price level. If the imputed opportunity cost exceeds the current acquisition cost, both measured in money units of equal purchasing power, this would clearly indicate inefficiencies on the part of the management in making the decision to buy and hold materials. The discrepancy is a holding loss due to insufficient perceptive efficiency of management. It should be noted that to measure such efficiency, changes in the general price level must be corrected for. Otherwise, a real holding loss may appear as a money gain and vice versa. Such money gains or losses are not indices of efficiency. If not corrected for, this may result in the impairment of the purchasing power of the capital of the firm.

Under these conditions, if production is charged with raw material cost on the basis of the accounting rule, holding gains or losses will be included with the gain or loss from production activities, thus substantially reducing the accuracy of measurement of the latter. Any judgment concerning production activities of the firm as distinct from other activities

(form-utility creating activities as distinct from time-, place- and possession-utility creating activities) on the basis of a rate of return will be misleading due to the effect of these distortions. In effect, if accounting practices are to give a correct measure of the effectiveness of various activities of the firm, they must be practices that make use of the economic concept of opportunity cost.

In short, if we desire to account for raw materials in a way consistent with economic principles, this would require the following:

- (1) Separate holding gains or losses from gains or losses resulting from production activities and recognize each on time.
- (2) The book value of raw materials in stock at any moment of time should correspond to the current market value at that time.
- (3) Money gains or losses should be adjusted for and recognized as they occur in such a way as to maintain the purchasing power of capital intact.
- (4) Management perceptive efficiency with regard to inventory holding decisions should be judged by the rate of holding gain or loss (in real terms) to inventory investment.

- (5) The efficiency of production decisions should be judged on the basis of gains and losses resulting from production activities alone.

To accomplish these objectives, three types of cost may be distinguished:

- (1) The opportunity cost of acquisition at the time the actual acquisition of materials takes place. This is equal to accounting cost and will be referred to hereafter as acquisition cost (AC). It is also an entry value and is equal to the current value on the market at time of acquisition.
- (2) The imputed opportunity cost at any time after acquisition. This is equal to acquisition cost plus interest on capital invested in inventories from the time of acquisition to the time of utilization in production, plus any other inventory carrying charges which are avoidable by not carrying materials in stock. It will be referred to hereafter as imputed cost (IC).
- (3) The opportunity cost of replacement on the market of materials used in production at the time of use. This is equal to the entry value of materials used in production if they are to be purchased on the market at the time they are used, and will be referred to hereafter as utilization cost (UC).

AC will be equal to UC under either of two conditions. The first is where materials are purchased for immediate use in production, and the second where materials are in a steady supply in a perfect market, under perfect foresight, with a constant general price level. If the second condition existed there would be no economic inducement for carrying materials in inventory unless the quantity discounts on large purchases were enough to cover the interest on inventory investment and other carrying charges.

IC will be always greater than AC, by definition. IC would be equal to UC under perfect competition, perfect foresight, a constant general price level, if a perfect future market existed for the materials under consideration. Otherwise IC would be equal to UC only by coincidence.

Ideally, what should be charged to production is the UC of materials used. The difference between AC and UC is due to the perceptive efficiency of management (PEM) and can be divided into two parts:

$$a. \quad IC_{t_n} - AC_{t_{n-1}}; \text{ and}$$

$$b. \quad UC_{t_n} - IC_{t_n};$$

where t_{n-1} signifies the time of acquisition, and t_n signifies the time of utilization.

The first part gives the opportunity cost of capital invested in inventories from the time they are acquired to the time they are used. It is a cost of production only insofar as the PEM is marginal; that is, only if



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$IC_{t_1} = UC_{t_1}$, which renders the second part equal to zero. If IC_{t_1} is greater than UC_{t_1} , then capital is inefficiently employed during the period from (t_{i-1}) to (t_1) . The difference is a holding loss and has no relation whatsoever to production activities. If UC_{t_1} is greater than IC_{t_1} , the difference is a holding gain due to superior PEM. A zero value for part (b) gives the marginal case of PEM. The following PEM index may therefore be constructed.

$$c. \text{ PEMI} = \frac{\sum_{i=1}^n (UC_{t_i} - IC_{t_i})}{\sum_{i=1}^n (UC_{t_i} + IC_{t_i})}$$

For the purpose of the following analysis it is assumed that materials are acquired in discrete lots for the purpose of inventory, and that the oldest lot is used in production first. Given a constant price level, any change in the price of materials over the period they are held in stock is real. When the firm acquires at time (t_a) a quantity of material X equal to X_a it pays the price P_a per unit prevailing at that time. So:

$$1. \quad AC_{t_a} = X_a P_a;$$

where (a) signifies the time of acquisition. When a given lot X_0 acquired at time (t_0) for a price of P_0 is used in production over the period (t_1) to (t_n) then;

$$2. \quad IC_{t_n} = \sum_{i=1}^n x_i P_0 \left(1 + \sum_{i=1}^n \frac{rt_i}{m}\right);$$

where

IC_{t_n} = Imputed cost of materials used in production over the period;

x_i = The average daily consumption of material X in production;

r = The average annual rate of interest and other inventory carrying charges;

m = The number of days in the year.

For any lot X_a acquired at t_a for a price P_a /unit, the imputed cost of the whole lot at t_n will be:

$$3. IC_{t_n}(X_a) = \sum_{i=a+1}^n x_i P_a \left(1 + \sum_{i=a+1}^n \frac{rt_i}{m}\right)$$

The utilization cost of the same lot will be

$$4. UC_{t_n}(X_a) = \sum_{i=a+1}^n x_i P_i$$

For example assume that a firm acquired two quantities of material X; $X_0 = X_n = 10,000$; $P_0 = \$50.00/\text{unit}$; $P_1 = P_2 = \dots = P_n = \$52.00/\text{unit}$; $x_1 = 100$; $n = 100$; and $r = 6\%$, then,

$$1. AC_{t_0} = (10,000) (50) = \$500,000.00$$

$$2. AC_{t_{100}} = (10,000) (52) = \$520,000.00$$

$$\begin{aligned} 3. IC_{t_{100}}(X_0) &= (100) (100) (50) \left[1 + \sum_{i=1}^{100} \frac{6 t_i}{m}\right] \\ &= (100) (100) (50) \left[1 + \frac{6 (101) (50)}{(100)(100)(360)}\right] \\ &= (100) (100) (50) \left(1 + \frac{30,300}{3,600,000}\right) \\ &= \$504,210.00 \end{aligned}$$

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$$4. \quad UC_{t_{100}} (X_o) = (100)(100)(52) = \$520,000.00$$

$$PEMI = 200 \left(\frac{520,000 - 504,210}{520,000 + 504,210} \right) = 3.1\% \text{ approximately.}$$

The following entries would be made:

Cost of Production	\$520,000	
Raw material inventories		\$504,210
Gain or holding materials in inventory		\$ 15,790
To charge production with utilization cost of material used and recognize holding gains.		

Raw material inventories	\$ 4,210	
Revenue from inventory investment		\$ 4,210
To charge the inventory account with capital cost of inventory investment.		

The normal procedure would be to charge the inventory account with the acquisition cost and charge production on the basis of acquisition cost until the end of a given period when the appropriate adjustment would be made to the accounts involved to give the results stated above. The process of adjustment can be performed at the end of each month, or if more than one material acquisition is used during the month, after a given acquisition is used in production. In this case the price to be used for the computation of UC at the end of the month or for a given acquisition would be an average of the market prices of the material during the month or during the utilization period. Of course the price to be used in the computation of IC is that of acquisition of the materials used in production at the time they were acquired.



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To determine the financial position of the firm at the end of a given period, the value of raw material inventories should be adjusted to reflect their UC = market value at that time. If UC was found to be greater (or smaller) than IC, inventories should be debited (or credited) and a holding gain (or loss) account should be credited (or debited) by the difference. This will result in timely recognition of the accomplishments of management purchasing effort on the one hand, and on the other it will result in a more accurate representation of the value of resources possessed by the firm.⁴⁰

⁴⁰This view is supported by many writers in economics and accounting. In 1919, J. Bauer argued for current cost presentation in financial statements and current cost of replacement even for depreciation, in his "Renewal Costs and Business Profits in Relation to Rising Prices," Journal of Accountancy CVI (Dec. 1919), p. 414. G. Edward Philips argues that "Economic power does not exist without market value," "The Accretion Concept of Income," Accounting Review, XXXVIII (Jan. 1963), p. 17. Elsewhere he argues that "assets exist in the present and not in the future. If we know the market price, we know the value of an asset . . . We often find it useful to estimate the amount of expected future benefits, not because these constitute the things we wish to measure, but rather because they provide the best guide to current [exchange] value," "The Revolution in Accounting Theory" Accounting Review XXXVIII (Oct. 1963), pp. 701-707.

"Converted historical cost represents a measure of the economic significance of the asset at the date of acquisition, but it tends to lose its significance as time goes by. As between market prices at alternative dates, the more recent price is typically more relevant to today's and tomorrow's problems. This leads to the concept of replacement cost, or what it would cost to acquire the asset at the reporting date," George J. Staubus, "Current Cash Equivalent for Assets: A Dissent," Accounting Review, XLII (Oct. 1967), p. 651.

"Stocks which will be replaced or sold would be valued at replacement cost. This is their value to the new period," Tom K. Cowan, "A Resources Theory of Accounting,"

The relevance of this information for all levels of decision makers in the UAR economy is unquestionable. Given that the activities of the firm are continuous in the future UC is the most rational measure of production cost. Neither AC nor IC is as an appropriate a measure of the opportunity cost of production as is UC. The first (AC) is history and has no bearing on current decisions except perhaps to forecast the future. The second (IC) includes, besides efforts, elements of accomplishments of the holding activities of the firm. Only the third (UC) is an appropriate measure of the opportunity cost of production, especially under conditions of market imperfection, on the firm level.

The imputation of the cost of capital invested in inventory holding and the clear distinction between the results of holding decisions and production decisions will

Accounting Review, XL (Jan., 1965), p. 12. "The relevance of current (replacement) cost to a going concern is underlined whenever the enterprise continues to manufacture or purchase the item contained in its inventory," R. T. Sprouse & M. Moonitz, Accounting Research Study No. 3: A Tentative Set of Broad Accounting principles for Business Enterprises (AICPA, 1962), p. 29.

See also, E. O. Edwards & P. W. Bell, The Theory and Measurement of Business Income (University of California Press, 1961), Ch. 3; A. L. Thomas "Value-itis'--An Impractical Theorist's Reply," Accounting Review XXXIX (July, 1964), pp. 574-81; M. J. Gordon, "Valuation of Accounts at Current Cost," Accounting Review, XXVIII (July, 1953), pp. 373-84; Germain Boer, "Replacement Cost: A Historical Look," Accounting Review, XLI (Jan. 1966), pp. 92-97; W. A. Lewis, Overhead Costs (New York: Rinehard and Company, 1949), Ch. I; etc.

induce better utilization of the scarce resources of the society. Any wasteful accumulation of inventories will no longer be easy to conceal in the results of the other activities of the firm. Mistakes in past decisions will be guarded against in current and future decisions, if not for anything else, for their being made known to management, to the General Organization and to the public.⁴¹

Not only will the distinction between AC, IC, and UC provide better information to the General Organization for exercising adequate control over the inventory transactions and inventory norms of affiliated companies, but it will also enable more accurate calculations of the prices of the final products. Since cost of production is one of the most important factors in price determination, especially in a planned economy, accuracy in cost calculation and consistency with economic cost concepts become extremely important factors in determining the most efficient price of the final product.

Comparisons of the cost of production for various firms producing the same product will disclose inefficiencies in the production processes employed by preventing the concealment of such inefficiencies in the results of the

⁴¹Compare the following from Professor Bedford: "Another opportunity for expanding the use of matching techniques lies in the comparison of replacement cost with acquisition cost of resources held. Accountants do not generally do this, since they are reluctant to accept replacement cost as a measure of accomplishment. Such a matching would reveal the gain or loss due to holding assets, as opposed to using them." Income Determination Theory; An Accounting Framework (Reading, Mass: Addison-Wesely, 1965), p. 100. See also pp. 140-144.

other activities of the firm. It will make production cost norms stated in value terms more accurate indicators of the firm's productive efficiency. This is due to the fact that the price element in the computation of UC will tend to have less effect on the variations of UC of various firms. Cost of production of various firms will therefore be more comparable on economic grounds.⁴²

There is no question as to the feasibility of measuring these three types of cost. AC is already on the books of the firm since this is the accounting cost. The only problem with IC is the determination of the appropriate interest rate to be used in the calculation. Such a problem is substantially reduced in a planned economy however due to the fact that interest rates are reasonably uniform and stable over a relatively long period of time (usually more than a year). This reduces the problem to a choice between lending or borrowing interest rates. The choice should be clearly dependent on the source of funds used to finance inventory investment. If internal funds are employed then a lending rate would be employed, and if

⁴²Compare to the following from Professor J. M. Clark: "What the concern expends now is materials which it now has, not the money which is paid out for them some months ago, and the sacrifice now involved in putting these materials into a given order is really represented by what the concern could realize on these materials if it did not make them up and sell them to this particular customer. This sacrifice is measured by the market price of materials and not by the original cost." Op. cit., p. 197.

external funds are employed then the relevant rate would be a borrowing rate.⁴³

Since raw materials are a short lived technical factor of production, their current price on the market will be readily obtainable. The purchasing department should presumably have up-to-date knowledge of such prices, and the computation of the UC will provide no problems.

Also there is no question as to the quantifiability of this information, and therefore, quantifiability will be dismissed as a non-binding constrain in this case.

Quantitative information provided by the proposed scheme of raw materials valuation will be additive for both stock and flow purposes. Since the value of raw materials in inventory at the end of a given period will reflect their market price at that time for all firms, and since the accounting period is also uniform for all firms in the economy, then the amount of intermediate goods in the economy can be obtained by the summation of the possessions of all firms. No significant adjustments would be needed for social accounting purposes on this count. The stocks

⁴³The problem of whether the interest rates thus set by the government in a planned economy reflect accurately the scarcity of capital will not be subject to discussion here. My impression is that even if they do not, it will be more appropriate to charge a price on capital employed in inventory holding than to let a scarce factor be used freely. Substantial inefficiencies will be reduced by charging such a price although it may not be the most appropriate one.

of intermediate inputs in the economy will be readily available at market prices.⁴⁴

As we have seen above, the cost of production of various firms will be readily comparable because they are measured uniformly using the same yardstick of UC. Cost of production of various firms will also be additive, as far as the value of intermediate inputs is concerned, for the purpose of calculating the aggregate cost of the social product at market prices. This is so because of the existence of a common quality to be added, which in this case is the value of material inputs, and because this quality is measured by the same yardstick--the current market price.⁴⁵

Up to this point, the analysis was based on the assumption of a constant general price level, and any deviations in the AC-IC-UC relations were therefore considered to be real deviations. A changing general level of prices

⁴⁴No distinction is being made here of the possible divergence of social cost from private cost and the effect of this divergence on the appropriateness of the market price for the measurement of social economic categories. The reasons for this neglect are twofold. Firstly, such divergence is easier to trace in theory than in practice. Secondly, even if such divergence can be traced in practice, it is usually very difficult to quantify. Our main interest is in quantifiable magnitudes that can be made subject to the accounting process. A fruitful avenue for future research would be to attempt to formulate a quantitative measure for such divergence which can be applied--within the limits of reasonable cost and effort.

⁴⁵"The choice among methods of valuation rest not on any proof of the correctness of one valuation over another--but on questions of logic, usefulness and measurability." C. E. Johnson, Inventory Valuation: The Accountants "Achilles Heel," Accounting Review, XXIX (January, 1954), p. 16.

will render these relations a little more complicated. That is, corrections for the changes in the general price level should be made for both the AC and the IC of raw material inventories used in production and remaining in stock before the above equations can be applied. The choice of the appropriate price index is not our concern here since this would be a subject of another study. The problem remains important however, especially for an economy using inflationary finance for economic development as in the case of the UAR. It becomes worthwhile, therefore, to restate the AC_IC_UC relations in such a way as to take into consideration the effect of changes in the general price level.

Let it be assumed, instead of a constant price level, that the prices of materials relative to the prices of other goods are kept constant so that any changes in the prices of materials will be due to changes in the general price level alone. Denoting the price level index at any time (t_1) by L_1 , then the price of a given unit of materials acquired at (t_a) for a price of P_a will be equal at time (t_n) to: $P_n = P_a \frac{L_n}{L_a}$. But if the production process is continuous with regard to material consumption, then any quantity in stock for the period from (t_a) to (t_n) equal to one half the quantity acquired. So if materials utilized in production were to be replaced instantaneously to keep the materials stock equal to the (t_a) acquisition, then the replacement cost in money terms of the whole acquisition will be equal to:

$$5. \quad \overline{AC}_{t_n} = X_a \cdot P_a \cdot \frac{\sum_{i=a+1}^n L_i}{nL_a} .$$

If materials were not instantly replaced upon their utilization in production, then their acquisition cost at the time the actual replacement takes place at time t_n will be:

$$6. \quad \overline{\overline{AC}}_{t_n} = X_a \cdot P_a \cdot \frac{L_n}{L_a}$$

$$7. \quad AC_{t_n} = X_a P_n$$

Equation (6) gives the number of money units needed at time (t_n) to maintain intact the purchasing power of capital invested in inventories at time (t_a). Equation (5) gives the amount of money necessary to maintain the physical capital embodied in a given stock (X_a) of materials intact over the period from (t_a) to (t_n).

\overline{AC}_{t_n} will be greater than, equal to, or smaller than $\overline{\overline{AC}}_{t_n}$ as:

$$\frac{\sum_{i=a+1}^n L_i}{n} \begin{matrix} > \\ < \end{matrix} L_n$$

Equation (6) will diverge from equation (7) only if the prices of materials relative to the prices of other goods change. In this case: $P_a \cdot \frac{L_n}{L_a} \neq P_n$. The difference between P_a and $P_a \frac{L_n}{L_a}$ gives the effect of the price level

alone on the value of capital embodied in inventory holdings. The difference between $P_a \cdot \frac{L_n}{L_a}$ and P_n gives the effect of changes in relative prices alone on the results of the holding activities of management.

The imputed opportunity cost of materials acquired at (t_a) and used in production over the period from (t_a) to (t_n) will be,⁴⁵

$$8. \quad IC_{t_n} = \sum_{i=a+1}^n \frac{L_i}{L_a} \left[\sum_{i=a+1}^n x_i P_a + \sum_{i=a+1}^n x_i P_a \left(\frac{rt_i}{m} \right) \right]$$

⁴⁵This is derived as follows:

$$ic_1 = x_1 P_a \cdot \frac{L_1}{L_a} + x_1 P_a \cdot \frac{L_1}{L_a} \cdot \frac{r}{m} = \frac{L_1}{L_a} \left(x_1 P_a + x_1 P_a \cdot \frac{r}{m} \right)$$

$$ic_2 = x_2 P_a \cdot \frac{L_2}{L_a} + x_2 P_a \cdot \frac{L_2 \cdot 2r}{L_a m} = \frac{L_2}{L_a} \left(x_2 P_a + x_2 P_a \cdot \frac{2r}{m} \right)$$

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$$ic_n = x_n P_a \cdot \frac{L_n}{L_a} + x_n P_a \cdot \frac{L_n}{L_a} \cdot \frac{nr}{m} = \frac{L_n}{L_a} \left(x_n P_a + x_n P_a \cdot \frac{nr}{m} \right), \text{ thus}$$

$$IC_{t_n} = \sum_{i=a+1}^n \frac{L_i}{L_a} \left[\sum_{i=a+1}^n x_i P_a + \sum_{i=a+1}^n x_i P_a \left(\frac{rt_i}{m} \right) \right]$$

But note that if price level changes alone are involved, then

$$x_1 P_a \cdot \frac{L_1}{L_a} = x_1 P_1, \quad x_2 P_a \cdot \frac{L_2}{L_a} = x_2 P_2 \dots, \quad x_n P_a \cdot \frac{L_n}{L_a} = x_n P_n \text{ and}$$

therefore; 8.' $IC_{t_n} = \sum_{i=a+1}^n x_i P_i \left(1 + \frac{rt_i}{m} \right)$, which is equal

to (8). If relative prices also change then (8) \neq (8') and IC can only be determined by (8).

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Utilization cost will remain to be determined by equation (4) above, which will equal to equation (5) if price level changes alone are involved. Otherwise $\overline{AC}_{t_n} \neq UC_{t_n}$, and the difference will be due to changes in relative prices.

The previous example may be used to illustrate the points involved in this case. In addition to the information given in the example, assume that the price level index rises by one tenth of one per cent per period. This renders it a case of changing relative prices mixed with a change in the general price level. We get the following solutions to the appropriate equations:

$$5. \quad \overline{AC}_{t_n} = (10,000)(50) \frac{(10505)}{(100)(100)} = \$525,250.00$$

$$6. \quad \overline{AC}_{t_n} = (10,000)(50) \left(\frac{110}{100}\right) = \$550,000.00$$

$$7. \quad AC_{t_n} = (10,000)(52) = UC_{t_n} = (100)(100)(52) \\ = \$520,000.00$$

$$8. \quad IC_{t_n} = (1.0505)(500,000)(1.00842) = \$529,672.60;$$

where

$$\left(1 + \sum_{i=1}^{100} \frac{rt_i}{m}\right) = \left(1 + \frac{6(101)(50)}{(100)(100)(360)}\right) = 1.0084 \text{ approximately.}$$

$$PEMI = 200 \left(\frac{520,000 - 529,672.60}{520,000 + 529,672.60}\right) = -1.84\% \text{ approximately.}$$

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At time (t_n), the number of money units needed to replace the physical quantity of raw materials acquired at (t_0) is \$520,000. It would take, however, \$525,250 to maintain the same quantity of raw materials from (t_0) to (t_n) if their prices relative to other goods remained constant. But the fact that it costs less to replace the whole quantity at (t_n) than to maintain the quantity intact over the period implies that the prices of materials relative to other goods must have been reduced to account for the difference. Actually what happened in this example is that the relative prices of materials were higher during the period from (t_1) to (t_{39}) than they were at (t_0); they were equal to their level at (t_0) at (t_{40}) and thereafter they became lower. The price per unit increased by 4 per cent at (t_1) from \$50 to \$52 and thereafter was maintained. It takes the price level 40 periods at the rate of increase of one tenth of one per cent per period to become 104 per cent of its level at (t_0). After (t_{40}) the price level continues increasing while the money price of materials remains constant. This amounts to a real decrease in the relative prices of materials compared to other goods. The amount of \$9,672.60 given by the difference between equation (8) and equation (4) can therefore be divided into two parts: \$5,250 is loss on the real value of raw materials due to the decrease in their relative prices, and \$4,422.60 is the cost of capital invested in inventory over the period. Accordingly the following entries would be made at (t_n):

(1) Raw material inventories	\$29,672.60	
Purchasing power adjustment of capital		\$25,250.00
Revenue from inventory investment		4,422.60
To adjust raw material inventories to changes in the price level and to the cost of embodied capital		
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(2) Loss on inventory holding	\$ 9,672.60	
Raw material inventories		\$ 9,672.60
To recognize the loss of real value due to the decrease in relative prices of inventories and adjust raw material inventories to the level of utilization cost		
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For the firm to maintain the purchasing power of its capital at (t_n) as it was at (t_0) , the purchasing power adjustment should amount to \$50,000, of which \$25,250 is provided by entry (1). The remainder would be provided for by the following entry:

(3) Loss on the purchasing power of capital	\$24,750	
Purchasing power adjustment of capital		\$24,750
To restore the purchasing power of capital at (t_n) to its original position at (t_0) .		

All other arguments regarding the relevance, appropriateness to expected use, quantifiability and additivity of these information, stated above in the case of changes of relative prices alone, are also applicable to this case.

3.3.2. Valuation of Finished Product

With regard to finished products the firm adopts the point of view of a seller. The difference between UC of factors of production employed to produce the product and the current exchange value (CEV) of the product is an

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appreciation of the firm's wealth. It is the surplus value added by the cooperation of various factors of production and its magnitude gives a measure of the accomplishment of such cooperation. It should be noted that it is not the sum of UC of factors of production embodied (directly or indirectly by providing services) in the product, but rather their CEV that gives the measure of accomplishment. UC measures efforts, CEV measures the resulting rewards, and their difference measures production accomplishments. Production accomplishment is fully recognized at the time the final produce is completed.⁴⁶ To delay the recognition of such accomplishment to any later stage is to render the cooperative efforts of factors

⁴⁶ Although all economists agree to the plausibility of this statement, it is disputable in accounting literature. The American Institute of Certified Public Accountants has taken the position that accomplishments are to be recognized only at time of sale--with some minor exceptions--on the grounds of two main convictions, objectivity and matching of costs and revenue. (Accounting Research Bulletin No. 43, p. 34). Sprouse and Moonitz (Accounting Research Study No. 3, p. 27); American Accounting Association's Committee on Basic Accounting Theory; Edwards and Bell, op cit., pp. 79-90, 274-275; Chambers, Accounting Evaluation and Economic Behavior, pp. 255-260, 265; and Canning, The Economics of Accountancy, pp. 220-228, would support (with minor modifications) our statement. Also, Morton Backer, Handbook of Modern Accounting Theory, p. 241, would recognize accomplishments at completion of production. Paton and Littleton, An Introduction to Corporate Accounting Standards, while recognizing the earning of accomplishments by production--"Revenues may be said to be implicitly earned in terms of operating activities" (p. 49), they would delay its recognition to the point of sale with the exception of cases where selling prices are definite (pp. 50-57). For a discussion of realization see F. W. Windal, "The Accounting Concept of Realization," Accounting Review, XXXVI (April, 1961), pp. 249-258.

of production rewardless until this later stage. This is contrary to economic principles of production and current practices of payment to factors of production.

Of course, the activities of the firm after production also involve the incurrence of efforts, the recognition of rewards, and the realization of accomplishments. Actually the selling price of the final product measures all the rewards realizable for all efforts incurred. The calculation of the cost of the final product on the basis of UC of factors of production makes the rewards for production and selling efforts equal to the difference between the selling price and UC. What is needed therefore, is not a delay of the recognition of production accomplishments, but rather a reasonable method to apportion the expected final accomplishment between production and selling efforts. Since the price of the final production in a planned economy is most often readily known even before the start of the production operation, it becomes very easy to find such a reasonable method. A method of allocation that can be used is to divide the final accomplishment between production and selling efforts according to the ratio of each to the total efforts, which, is to be measured in each case by the UC of factors incurring it. That is, if UC of selling activities is equal to 5 per cent of the total UC, then 5 per cent of the final accomplishment is the surplus value of selling efforts and 95 per cent is the surplus value of production efforts.

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Now let us see how this method of valuing the finished product by net realizable value measures with the requirements of our standards. We start with relevance and appropriateness to expected use. From the point of view of the firm, a decision to produce would imply that the expected accomplishment from production was at least equal to zero, or the decision would not have been made. In the short run, the relevant efforts are those which can be avoided, but in the long run all efforts are avoidable. A decision to produce in the short run would therefore imply that short run rewards are at least as great as short run avoidable effort, and a decision to continue in production in the long run implies that the expected rewards are at least as great as all future efforts. But since the sum of the efforts in the short run should equal the long run effort, then the sum of short run rewards should be equal to rewards of the long run, and any deviation between the sum of the short run and long run would be due mainly to uncertainty of expectations and can be considered as a part of the measure of management's perceptive efficiency. Therefore, if a decision is made to produce this period rather than the next, then this implies that expected rewards of production of this period are higher than in the next, and these rewards are clearly measured by the net realizable value of the product at the time of its completion whether sold or not. If the product is not sold then we have to differentiate between

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two situations: voluntary and involuntary holding of the product. If management decided voluntarily to hold the product (as when producing for inventory) then the difference between net realizable value at time of production and net realizable value at time of sale is a holding gain or loss and is due to perceptive efficiency of management. If the decision to hold is involuntary and was unexpected at the time the decision to produce was made, then the difference between the two net realizable values is a gain or loss due to uncontrollable circumstances. It is therefore the expected rewards of production as measured by the net realizable value of the product at the time of production that is relevant in deciding whether to produce or not to produce. Efforts only are not significant to such a decision unless compared to rewards expected therefrom.

Since goal congruence,⁴⁷ is essential, if efforts which are best for the parts, are to be the best for the whole, it is therefore also essential that the criteria used by management to evaluate its own performance should be that which are to be used by the General Organization to evaluate managerial performance of the firm. Overall performance can be evaluated by overall profitability but this is not a good index of efficiency since inefficiencies

⁴⁷The term is attributable to Robert N. Anthony, "Note on Responsibility Centers," in Anthony and Dearden, Management Control Systems (Homewood, Ill.: Richard D. Irwin, Inc., 1965), p. 165.

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of some decision categories tend to be cancelled against the efficiency of others in the overall process of aggregation. Therefore, it is much better index to evaluate the efficiency of individual decision categories and their contribution to the overall performance. Production decisions can be evaluated by production rewards net of production efforts, holding decisions can be evaluated by holding rewards net of holding efforts, and any effect of uncontrollable circumstances can be isolated. This is only possible if production rewards are recognized at completion of production.

As to the ministerial and national levels, what is relevant for purposes of social accounting is presumably relevant and pertinent for them. If the valuation rule is to serve the purposes of both micro and social accounting it should be the same, for the latter is no more than the aggregates of the former. A quotation from the UAR first Five Year Plan Frame demonstrates the relevance of our valuation method for the purposes of social accounting. The plan defined the gross value of production as:

The value of goods and services produced at selling prices . . . If the produce goes through more than one stage of marketing, then the selling price is that of the first stage . . . If the product is to be valued by cost, then cost is computed by deducting applicable taxes and adding applicable subsidies to the value of the product at selling prices, to give the value in

terms of cost of factors of production, which is equal to their returns.⁴⁸

To meet the needs of social accounting, the uniform system made a peculiar requirement. In the Current Operations Account, the system required that the difference between finished product inventory value at cost and at selling prices be added to the revenues from current operations on the credit side of the Account. But in order not to depart from the cost rule, the system also required that this difference be added to the debit side of the Account to arrive at the results of current operations.⁴⁹ The same thing is also to be done in the Production and Merchandising Account.⁵⁰

It should also be noted that the system requires each economic unit to fill a standard form (out of about 24 required) to show production and value added (form 7.a).⁵¹ Two of the figures required to complete the form are value of production at market prices, and value of production at cost of factors of production as above defined. Both of them are more akin to our valuation rule than to the cost rule.

It seems that the other standards are satisfied by implication. No one can argue that a thing which is

⁴⁸National Planning Commission (NPC), Framework of the General Plan for Economic and Social Developments, 1960/1965 (Cairo, 1964), p. 45. (In Arabic, my translation.)

⁴⁹CAA, The Uniform System, Vol. I, p. 137.

⁵⁰Ibid., p. 143.

⁵¹Ibid., p. 212. The form is given in Chapter VI.

being done is unfeasible or that a quantity is unquantifiable. Nor can it be argued that a summation of a common characteristic of the parts is not equal to this characteristic in the whole, since by definition X_1, X_2, \dots, X_n are additive if a property (P) common to all X's is present such as:⁵²

$$\sum_{i=1}^n PX_i = P \sum_{i=1}^n X_i.$$

This property P in our case is market exchange-value at the time of production (or net realizable value).

3.3.3. Valuation of Unfinished Product

The most significant problem in evaluation of unfinished products is essentially a problem of allocation. According to our analysis, however, efforts are incurred purposively for the sake of rewards and it is the allocation of the latter rather than the former that constitutes the problem. Of course, efforts that are of significance to us are those escapable in the short run and the problem of fixed cost allocation does not arise since it contains no significance to short run production decisions. What is really significant is rewards that are expected from a given sum of efforts that are escapable. If such efforts are incurred in the current period then the rewards are measured by the current exchange-value of the resultant product. But the product in this case is

⁵²See Chambers, *op. cit.*, pp. 89-90; Larson and Schattke, "Current Cash Equivalent, Additivity, and Financial Action," Accounting Review, XLI (October, 1966), pp. 637-640.

not complete and a market price may not be readily obtainable. Hence, the allocation problem arises. One way to solve this problem is to postpone the recognition of rewards until the next period and to value the unfinished product in terms of the amount of escapable efforts incurred.

However, such a method is objectionable on two counts:

(1) there will be a misstatement of the accomplishments of the two periods by understating those of the current period and overstating those of the next period; (2) the PEMI will be biased in favor of management production decisions in the next period as against the current period.

To avoid such misstatements and bias a resort to some mode of apportioning accomplishment is desirable. One such mode is to apportion the present value of net realizable future accomplishments at expected selling prices according to the percentage of escapable efforts already incurred to the total escapable efforts that are needed to render the product complete. Another way of doing it, is to determine the percentage of net margin to total effort (escapable) for the current period and then multiply the amount of escapable efforts incurred by one plus this percentage. For example, if such percentage is found to be k , and the UC of escapable efforts incurred V_r , then current period rewards with regard to unfinished product would be $V_r(1 + k)$. This will be consistent with our rules of valuating other inventory categories.

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All arguments pertaining to the consistency of the recommended valuation methods for other inventory categories with the criteria developed in the previous chapter are pertinent to this last category and any further discussion would be redundant. It should be noted, however, that the discussion was limited to inventory valuation for purposes of production decisions and income determination. The problem of price calculations was not covered. This problem will be treated in a later section of this chapter, after we examine the methods recommended by the UARUS as stated in section (3.2) above.

3.4. An Evaluation of the UARUS' Methods of Inventory Valuation

All inventory valuation methods adopted by the UARUS are based on efforts as measured by historical cost incurred. Material acquisitions, utilization in production, and holding are valued in terms of acquisition efforts. Unfinished products are valued by a mixture of short run and long run escapable efforts with the latter being essentially noncomprehensive. Finished product is valued by the sum of both short run and long run escapable efforts. No accomplishments are recognized unless the product is sold. Three main objections to such valuation methods will be considered and hereinafter discussed.

The first objection is based on the contradiction of these methods with the economic theory of production. This is sufficiently important to discuss in greater

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detail, in spite of the fact that it was treated in the previous section. An important argument in favor of our recommended valuation methods is based on their consistency with the economic theory of production. A second objection is based on the disability of UARUS' valuation methods to pass the test of the criteria developed in the previous chapter. The third objection is based on the inconsistency of the UARUS' recommended valuation methods with other parts of the system. We treat these objections in order.

3.4.1. Economic Theory of Production and Inventory Valuation Methods in the UARUS

In his Human Efforts and Human Wants, Logan McPherson asserted that "One definite statement applies to all economic utilities. Whatever is sold and bought is such a utility . . . All utilities whether concrete, intangible or in the form of personal service are produced by the application of productive force."⁵³ It is generally agreed, by economists as well as by other people, that utility is created by production and the test of its existence is its amenability to consumption. Since utility is that which is bought and sold, and since utility is a creation of production, then what is bought and sold is really production rewards, as distinctive from production

⁵³Logan McPherson, Human Efforts and Human Wants (New York: Harcourt, Brace and Company, 1923), pp. 9, 15.

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effort. Any effort that creates utility is productive and its rewards are equal to utility added whether in form, time, place, or possession.⁵⁴ Each one of these types of utility is created by the efforts of economic factors of production whether in isolation or by combination, and whether by direct embodiment or indirect embodiment of the factor itself in the final product. We can, therefore, distinguish between four types of productive efforts and four types of production rewards corresponding to the four types of utility. Let them be called form-effort, time-effort, place-effort and possession-effort to signify efforts spent in creating form-, time-, place-, and possession-utility, respectively, and form-rewards, time-rewards, place-rewards, and possession-rewards to correspond to the four types of efforts, respectively.

⁵⁴In their Dictionary of Economics, H. S. Sloan and A. J. Zurcher define production as "The process of increasing the capacity of goods to satisfy human desires or rendering services capable of satisfying human desires. In formal economics . . . it is generally recognized that the utility or power of a material good to satisfy a human desire may be increased by the creation of (1) a time utility, (2) a place utility, (3) a form utility, or (4) a possession utility" (New York: Barnes and Noble, 1953), p. 255. The same dictionary defines time utility as "The accessibility of goods at a time when they are wanted to satisfy human desires," p. 321; place utility as their accessibility where they are wanted, p. 244; form utility as "satisfaction of a human desire as the result of the alteration of shape, structure or composition of some good," p. 132; and possession utility as "the satisfaction resulting from the actual possession of goods and services," p. 247.

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It should be noted that each of these four types of utility, and hence each of the four types of rewards that correspond to them, can be either positive or negative. A negative utility is a disutility and a negative reward is a lost effort. On the other hand, efforts are always negative since by definition they involve tangible or intangible sacrifices. The former involves lost utility of tangible goods in the form of material technical factors of production, and the latter involves lost utility of human rest and lost services of material factors of production.

Three decision categories that are made in an economic unit can be distinguished: production decisions, holding decisions, and decisions dealing with distribution of the product. Production decisions involve the incurrance of form-efforts in expectation of form-rewards by creating form utility. The difference between the UC of efforts sacrificed in the process of production and the CEV of production rewards is the market measure of surplus utility added by production. It is the net accomplishment of production decisions. Holding decisions involve sacrifices of the next best of alternative returns on resources held in expectation of higher returns in the future. The difference between the UC of holding efforts and the CEV of the resources held is a measure of the market valuation of surplus time-utility added by holding. It is the net accomplishment of holding decisions. Likewise,

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distribution decisions result in the added surplus utility of place and possession. However, for the economic unit to maximize its behavior, the marginal accomplishment of each additional unit of effort should be equal for all three types of decisions; it is, therefore, necessary to recognize the accomplishments of each separately. If such is not done, then the comparison of the relative efficiency of various decision categories will not be possible and the possibility of wasted resources will therefore remain undiscoverable.

Now let us determine whether the recommended methods of inventory valuation in the UARUS satisfy these requirements. It is evident that not only do these methods measure efforts, but they also measure these efforts incorrectly. For raw materials, efforts of acquisitions are those considered for utilization and no holding efforts are recognized or accounted for. The result would be an over or understatement of production accomplishments of added utility by the amount of time utility or disutility created by holding. The error is further multiplied by not recognizing production accomplishments apart from distribution accomplishments. This is true since the selling price of the final product at time of sale will represent in addition to the UC of all efforts incurred, holding accomplishments of materials used in production, production accomplishments, holding accomplishments of the final product until the time of sale, and distribution accomplishments.

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For unfinished products we need to distinguish between two types of production decisions, the short run and the long run. A long run decision is concerned with whether to continue or discontinue production in the future. A decision to continue production in the future would imply that expected long run production rewards would at least be equal to long run escapable efforts. On the other hand, a short run production decision is concerned with the present; whether to produce in the current period or not to produce. A decision to produce in the current period would imply that current period production rewards would at least be equal to current period escapable efforts to render surplus value equal to zero. The relevant efforts for such a decision are, therefore, those that can be escaped by a decision not to produce currently. These are the short run escapable efforts. The system, however, includes short run as well as some long run escapable efforts in its measurement of efforts incurred on the unfinished product. The same argument pertains to finished product.

3.4.2. The Judgment Criteria and Inventory Valuation Methods in the UARUS

All decisions in some way or another involve comparisons of alternatives. The only difference would be in the certainty or degree of uncertainty of the outcome of various alternatives. Also, every economic alternative has a cost as well as a benefit and the factor of

uncertainty is influential on both. This is true on the highest level as well as on the lowest level of decisions in a given economy. If such an economy is planned and the decision is to allocate resources to various sectors in the economy, it involves a comparison of social costs and social benefits of various alternatives. Both costs, and benefits in this case may involve expectations about the future and hence, should allow a margin for uncertainty. For the decision to be the most efficient within the given conditions, costs and benefits of alternatives should be only those relevant to the decision. In this case, the relevant cost to the society includes all costs of resources that can be employed in alternative opportunities and the relevant benefits include all benefits to the society of employing these resources in the given opportunity.

On the other hand, a decision to buy materials now rather than two months later involves a comparison of cost to the firm now and two months later as against the benefits of having materials now rather than two months later. Actually the relevant variable is net accomplishments of the firm by acquiring materials now as against two months later.

Now let us investigate whether the information provided by the UARUS valuation methods are relevant. Acquisition costs are relevant at the time of acquisition because they constitute one factor in the criteria on

the basis of which the decision to acquire is to be made, rather than merely because they are incurred at acquisition. Perhaps the clearest evidence of the accountant's subconscious recognition of this fact is that not all costs incurred in acquisition are considered as costs of acquisition. For example, acquisition cost of materials lost in transit by fire not covered by insurance are recognized as a loss and is not added to the asset. This loss is a sacrifice incurred in acquisition but it is not a planned sacrifice. It is not planned because it was not expected or foreseen at the time the decision was made and hence was not included in the decision variables. If it had been foreseen an insurance coverage would have been made (if it had been available in this case) and the insurance premium would have been included in the decision variables and therefore, would have been treated as a part of acquisition cost. Because it was not foreseen, it was not planned and hence, treated as a lost cost. After incurring such a loss it becomes a record of history and the only lesson to be drawn from it is to expect its occurrence in the future and guard against it.

Decisions that are made after acquisition of materials are mainly of three types: utilize them in the production process, resell in condition, or replace them. As we have seen in the previous section none of these decisions would be efficient if based on historical acquisition

cost. Actually in two out of the three types of decisions, acquisition costs are not considered at all in practice. If the decision is to resell, the relevant variables are current selling prices on the market (opportunity cost) as compared to the present value of expected net future selling prices. Acquisition cost is not a factor in the decision. A replacement decision is likewise based on current and expected future cost of replacement without any reference to past acquisition cost. The third type of decision--the decision to utilize--should also be made on the basis of the expected value added by utilization as against present value of resale in the present condition, if the decision is to be optimum.

The main use of acquisition historical cost is in the determination of the aggregate accomplishment of the economic unit under consideration. The usefulness of historical cost, however, in this regard hinges on the condition of stable prices, general and relative. But even if such condition would be satisfied, an aggregate measure of accomplishment tends to conceal inefficiencies of certain decisions by cancelling their results against those of efficient decisions and possible causes of wasteful resource utilization will remain undiscovered. For this reason it would be more desirable to segregate the results of various decision categories to guard against inefficiencies. For this purpose historical

acquisition cost can serve only as a starting base of analysis as demonstrated in the previous section.

On the level of the General Organization, one of the main concerns is the determination of the relative efficiency of affiliated economic units. For this purpose net aggregate results can serve well, provided that the method of measurement employed is a sound one. One other main concern to the General Organization is the determination of causes of efficiency to be diffused in other firms and industries. Aggregate results cannot serve this end and with it go historical costs even if conditions remain the same. Different costs for different purposes is the only concept that can stand and historical cost alone is not sufficient or even necessary.

The framework of the UARUS provides evidence against the relevance of historical cost to the other two levels of the economy. As has been said before, the Ministerial and National Levels are served mainly by social accounting information. The latter however, is no more than the aggregate of microaccounting information, with minor exceptions, especially in the industrial and commercial sectors. In recognition of the fact that historical costs are not relevant for these purposes, the system provides for a round about method to arrive at current costs and value approximations. This was shown in the last section.

Although failing the relevancy and appropriateness to expected use criterion, historical costs are the most

feasible and quantifiable. Yet, so are other relevant concepts of costs and the binding criterion of choice becomes one of relevance and appropriateness to expected use rather than feasibility or quantifiability.

Neither are historical costs additive on successive levels because if they were there would have been no need to supplement them for purposes of social accounting. Historical costs are additive only in so far as history is concerned but for most contemporary and prospective calculations they are not. Their additivity in this case will even depend on the critical assumption of their being originating at the same moment in time and of fixing conditions constant. In most practical situations, however, neither do conditions remain constant nor do costs originate at the same moment in time. As for additivity of historical costs within the same organizational level this would depend upon the attributes desired to be measured and aggregated. If these attributes are to measure the number of monetary units given up in acquisition at different times without attaching any concept of value to it, then historical costs are additive. But in this case what we are actually measuring and aggregating is the abstract measuring unit itself detached from the real world and the subject to be measured. There is no meaning for measuring a yard by a yard or an inch by an inch to show that a yard is equal to a yard or an inch is equal to an inch. A yard and an inch are units of measure to be applied for measurable objects and to have

any significance we need to say a yard of this or that object rather than just this is a yard. A yard of cloth plus a yard of cloth are additive in so far as the length of cloth is concerned (the number of yards) and nothing more. This is also true for aggregating historical cost data. We are merely measuring the number of money units given up in history and nothing else. We cannot say that we are measuring cost or value without attaching a moment of time and a purpose of measurement. The purpose of measurement will identify which concept of cost or value to use and the moment of time will make it possible to correct for possible bias in the measurement unit especially if the characteristics which we desire to measure are subject to the influence of changes in the environment in time and place. For these reasons historical costs are not additive, either horizontally (within levels of the economy) or vertically (among levels of the economy) except in a timeless-valueless world in which persons and groups do not attach any significance for time and the value of efforts. This is not attainable even in a stationary state.⁵⁵

⁵⁵This is so since competition is not always assured even in a stationary state. Even if competition was assured, cost would be a good measure of value only if prices were frozen and conditions of supply and demand were such as to render their elasticity infinite (no consumer or producer surplus). Joel Dean says: "Even though accountants and economists start from widely different viewpoints in measuring income, they could conceivably come up with the same estimates, but this could occur only in a stationary economy, where prices were frozen and where competition insured that cost was a good measure

One main argument advanced for historical costs by its supporters is that historical cost data reduce the bias involved in the subjectivity of alternative methods of measurement. There is much evidence in the literature, however, that the bias introduced by historical cost data is much more significant and much more dangerous than that which may result from the relative subjectivity of alternative methods of measurement. The bias introduced by employment of historical cost data is especially acute in an economic environment in which prices fluctuate widely over time. In fact such bias will always be present unless prices are frozen over time.

Two factors tend to render historical cost data biased and unreliable: (1) fluctuations of prices and (2) concealment of inefficiencies. The first factor results in a change in the value of the measurement unit and changes in the relative prices of commodities. The second factor is a result of inappropriate recognition of accomplishments of various decision categories. This last factor was discussed in section (3.4.1) above, where it was shown that any utility creating effort should be credited with the value of utility added by its incurrence to determine

of value." "The Measurement of Profits for Executive Decisions," The Accounting Review, XXVI (April, 1951), p. 187. Dean's conditions would be necessary and sufficient from a private individual's point of view, but they would not be so from a social point of view unless supplemented with the condition of infinite elasticity of both supply and demand.

relative efficiencies of various decision categories. Otherwise the results of inefficient decisions would be cancelled against those of efficient decisions and the aggregate efficiency index would be biased. It was also shown that the required segregation of results is unattainable under historical cost based accounting and the conventional realization rule, and that such would be possible if our valuation methods were followed. We are left then with the first of these factors to discuss.

As was seen above, price fluctuations result in a change in the real value of money and changes in the relative prices of other commodities. The first is referred to as a change in the general price level and the second is known by changes in specific prices, and both render historical cost biased and unreliable. The magnitude of the bias introduced by changes in the general price level tend to be proportional to such changes. Many empirical studies made by Baxter,⁵⁶ Dean,⁵⁷ Hendriksen,⁵⁸ Jones,⁵⁹

⁵⁶"Inflation and the Accounts of Steel Companies," Accountancy (May, 1959), pp. 250-257, and (June, 1959), pp. 308-314.

⁵⁷"Measurement of real economic earnings of a machinery manufacturer," Accounting Review, XXIX (April, 1954), pp. 255-266.

⁵⁸Price-Level Adjustments of Financial Statements (Pullman, Washington: Washington University Press, 1961).

⁵⁹Price Level Changes and Financial Statements--Case Studies of Four Companies (American Accounting Association, 1955).

Kennedy and McMullen,⁶⁰ Spencer and Barnhisel,⁶¹ and others,⁶² show that the magnitude of such bias is both significant and misleading. Although most of these studies were made for companies in the United States and may be of no relevance to Egypt as such, yet they clearly show the bias introduced by historical costs due to changes in the real value of money. Taking into consideration that both wholesale and retail price indices have risen in Egypt from 100 in 1958 to 113 and 118 in 1964 respectively⁶³ renders the results of these studies much more relevant to Egypt than would be expected.

In addition to its ignoring of change in the real value of money, historical cost also ignores one other important piece of information. It ignores the price of perhaps the most important factor of production, especially in an underdeveloped country, and that is the price of capital. This is due to its ignoring the change in relative prices of commodities after acquisition. The

⁶⁰Financial Statements--Form, Analysis, and Interpretation, 3rd ed. (Homewood, Ill.: Richard D. Irwin, Inc., 1957), pp. 370-400.

⁶¹"A Decade of Price Level Changes--The Effects on the Financial Statements of Cummins Engine Company," Accounting Review, XL (January, 1965), pp. 144-153.

⁶²Most of the above studies and others are summarized in (Appendix E) of Accounting Research Study #6, Reporting the Financial Effects of Price Level Changes (AICPA, 1963), pp. 221-249.

⁶³Central Statistical Administration of the UAR, Statistical Indicators of the UAR. 1952-1965 (Cairo, 1966), p. 211. (In Arabic.)

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price of capital invested in inventories is the rate of return (interest) obtainable in the next best alternative. This price is embodied in the current replacement cost on the market of inventories previously acquired. As it has been argued before, if the market is perfectly competitive for items of inventories under consideration, their current replacement values will deviate from acquisition costs by exactly the amount of interest on capital invested in inventories for the period from acquisition to replacement. Any excess deviation, whether positive or negative, would be due to perceptive efficiency of management. By ignoring changes in relative prices of commodities, historical cost results in a misstatement of the cost of production equal to at least the time price of capital. It also results in concealment of management inefficiencies. In short, historical costs fail to pass the requirement of freedom from bias on all conceivable grounds.

3.4.3. Consistency of Historical Cost Valuation of Inventories with Other Parts of the UARUS

The main objective of this subsection is to show briefly the inconsistencies between the objectives of the UARUS and the recommended inventory valuation methods. As we have seen in the previous chapter the objectives of the system tend to emphasize the planning and control process at successive organizational levels of the economy and to link accounting on the level of the economic unit with

social accounting. In fact, one of the four standards followed in the preparation of the system (and perhaps the most important as a reading of the objectives of the system would most clearly show) states that it should be able to "meet information requirements originating inside and outside the economic unit."⁶⁴ We have seen that neither micro or macro-economic decisions nor social accounting information are based on historical costs. As a consequence, the valuation methods recommended by the system are not consistent with its own objectives and do not possess the requirement of its most important standard. To overcome this deficiency the system resorted to a round about method (mentioned briefly above and discussed in detail in Chapter V) to satisfy the requirement of social accounting. The system, however, failed to satisfy the most important requirements of accounting information: to insure efficient decision making and to spot areas of wasteful employment of resources.

In recognition of the fact that historical cost based accounting results in encroachment of capital and income, and in an effort to maintain the real productive capacity of the economic unit intact, the system requires that:

It is necessary to provide for the difference between replacement cost and historical cost of the asset to maintain the productive capacity of

⁶⁴Op cit., p. 16.

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invested capital intact. This difference should be deducted as a "general provision" for the purpose of profits distribution and should appear in the balance sheet as a "provision for rising prices of assets" under the caption "general provision."⁶⁵

By stating this requirement, the system avoided one of the main shortcomings of historical costs, though apparently mislabeled.

3.4.4. Historical Cost Valuation of Inventories and UARUS' Valuation Methods

For "commodity materials" the system recommended the use of the moving average cost method of valuation. Finney and Miller⁶⁶ consider this method as "subject to the same objection as applied to the weighted average method."

This latter method is

. . . theoretically illogical because it is based on an assumption that all sales are made proportionately from all acquisitions, and that inventories will forever contain some goods of the earliest acquisition--assumptions which are contrary to ordinary merchandising procedure.

Because the costs determined by the weighted-average method are affected by purchases early in the period as well as those toward the end of the period, there may be considerable lag between purchase costs and inventory valuations. Thus on a rising market the weighted-average costs will be less than current costs, and on a falling market the weighted-average costs will be in excess of current costs . . . the lag is less pronounced in the moving average method than in the weighted-average method.

⁶⁵Op cit., p. 112.

⁶⁶Principles of Accounting: Intermediate, Sixth edition (Englewood Cliffs: Prentice Hall, 1965), p. 199.

Finney and Miller's theoretical objection is not considered by Paton and Paton as a

. . . serious practical objection. What is desired is a reasonable method of approximating costs and the procedure . . . is acceptable for this purpose, particularly where acquisitions are intermingled and withdrawals are taken from stock as a whole.⁶⁷

But Devine considers the employment of this method from the viewpoint of the balance sheet as giving

. . . inventory values that are often poor expressions of net realizable values or of replacement costs, but supplementary information or inventory reserves may correct this defect without difficulty.⁶⁸

As has been seen, the UARUS provides for supplementary information and inventory reserves and for the purpose of financial position this would be adequate. From the viewpoint of operating results however, the deficiency still remains.

It should be stated here that little has been written about this method. An investigation of accounting literature gives the impression that the method is either not popular or is a forgotten hero. Compared to FIFO and LIFO, each of which apparently is getting much more than a fair share, average cost has not been given much attention. This is in spite of the fact that it seems to be as popular as FIFO and LIFO. Approximately 25 per cent

⁶⁷Asset Accounting (New York: Macmillan, 1952), p. 61.

⁶⁸Inventory Valuation and Periodic Income (New York: Ronald Press, 1942), p. 56.

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of American firms used average costs as compared to 29 per cent for FIFO and 31 per cent for LIFO in 1962 and these shares seem to have persisted fairly constantly since 1950.⁶⁹ Although there are no such statistics showing the popularity of different cost valuation methods in the Egyptian economy before the Uniform System, I believe the average cost method was more popular in Egypt than in the United States. This is because LIFO was not as popular in Egypt as in the United States and because the UARUS, aiming at adoption of the most popular method, has adopted average costs.

The method recommended by the UARUS for valuation of finished and semi-finished products is absorption costing. This is the most acceptable method in practice everywhere for the purpose of asset valuation and income determination. No good arguments on practical grounds can be established against it although accountants' cries have reached the sky about the complexities of the problems surrounding overhead allocation. The front that is left weak for possible attack and destruction of absorption costing is its theoretical unsoundness for asset valuation and income determination as well as for decision making. The point should be clear from the previous section and the first part of this section and

⁶⁹Based on sample of 622 firms surveyed by The American Institute of CPA's, Accounting Trends and Techniques, 17th ed. (New York, 1963), p. 48.

more clarity can be obtained from an examination of the direct costing-absorption costing controversy. No attempt will be made to pursue the subject here even by citations since, if such is to be practical, it would be essentially fragmentary and incomplete. The essence of the arguments is implicit in the material of previous sections. This chapter is concluded with a note on cost calculations for price determination in a planned economy.

3.5. Efforts Measurement for Price Determination

An efficient price mechanism is as essential for the functioning of an economic system as is the heart for the functioning of a living being. This is regardless of whether it is a planned or a market economy. Just as a weakness in the heart results in a weakness of the functioning of the whole body, a weakness in the price mechanism may bring destruction to the whole economy. For long the market has been praised for setting prices that insured efficient allocation of resources but in recent as well as past history, numerous instances indicate the reverse. To cite John Kenneth Galbraith:

For thousands of reluctant scholars, a few distantly remembered curves depicting the interaction of supply and demand to establish prices have for long been the only permanent return on an investment in economic education . . . There has also long been agreement on how, in an ideal world, prices should be set. The process would be impersonal. No individual or firm by its presence or absence in the market would have power durably to affect that market. If it could do so, it would influence prices in

its own favor. Such power would be least when all participants are small . . . yet in the characteristic market of the industrial system there are only a handful of sellers.⁷⁰

Nothing is as easy in the real world as its theoretical construct. That is what Machlup termed the "fallacy of misplaced concreteness."⁷¹ To confuse the firm as a theoretical construct with the firm as an empirical concept is to commit such fallacy. He argues that price theory with its analysis of supply and demand is not equipped to answer what prices will be, but rather how the price of X commodity will be affected by an increase or decrease in the price of Y factor.⁷² In short, in the real world market economy, most prices are not set by the market, but rather by producers in the market on the basis of cost calculations and demand projections.

In a planned economy, the problem is a little more complicated. If not for anything else, this is so because the whole burden of price setting falls on the shoulders of a central administration. The task is further complicated by considerations of social costs and benefits and by the aggregative effects of small mistakes.

⁷⁰The New Industrial State (Boston: Houghton Mifflin, 1967), p. 179.

⁷¹"Theories of the Firm: Marginalist, Behaviorist, Managerial," American Economic Review, LVII (March, 1967), p. 9.

⁷²Ibid., p. 8.

Accordingly, it was argued by vonMises,⁷³ vonHayek,⁷⁴ and others that the state in a socialist economy would not be able to make the millions and millions of calculations necessary for setting a price mechanism that insures efficient allocation of resources. In answer to their argument, Oskar Lange⁷⁵ has shown that the state can use the same method of trial and error that is used in a market economy. After all, the problem of efficient allocation of resources is one of valuation, of ascertaining the relative economic significance of the primary factors of production. But the trial and error method might prove costly especially in a dynamic economy where

⁷³"Economic Calculation in the Socialist Common Wealth," in Collectivist Economic Planning, von Hayek, F.A. ed. (London: Routledge, 1938).

⁷⁴"The presnet State of the Debate," Ibid.

⁷⁵Lange summarized this method as follows: "Let the Central Planning Board start with a given set of prices at random. All decisions of managers . . . of individuals as comsumers and as suppliers of labor are made on the basis of these prices. As a result of these decisions the quantity demanded and supplied of each commodity is determined. If the quantity demanded of a commodity is not equal to the quantity supplied, the price of that commodity has to be changed. It has to be raised if the demand exceeds supply and lowered if the reverse is the case. Thus the Central Planning Board fixes a new set of prices which serves as a basis for new decisions, and which results in a new set of quantities demanded and supplied. Through this process of trial and error equilibrium prices are finally determined. Actually the process of trial and error would of course proceed on the basis of the prices historically given. Relatively small adjustments of those prices would constantly be made and there would be no necessity of building up an entirely new price system. On the Economic Theory of Socialism (University of Minnesota Press, 1938), p. 86.

relative scarcity of factors of production change through time. Under these conditions trial and error will be continued indefinitely and it may not be possible to reach the efficient price at any time.

However, there have been three developments in recent years that may make it possible for a socialist economy to achieve practical efficiency of resource allocation without recourse to the trial and error method. The first is the development of input-output analysis by Leontief in the thirties; the second is the development of programming models which started in the forties; and the third is the development of the big computer. One essential prerequisite to benefit from these developments, however, is the availability of economic cost calculations for the variables in the system.

The proper concept for cost calculations for this purpose is UC. Modification of the conventional standard cost system to correspond to the economic concept of UC would be quite helpful. This can be achieved if the valuation methods recommended in this study are used. Accordingly the following suggested modifications on the conventional standard costing are pertinent. They are three in number and pertain to the Egyptian economy for its own specific features.

The first modification would be to include the time cost of capital in the calculations of standards. This should be done by adding to overhead costs to be

allocated, the time cost of capital invested in overhead assets. The time cost of capital invested in direct assets would be accounted for in their UC. The rate of interest to be used is the weighted-average on long term foreign loans and the time cost of capital would be computed by applying this rate to net long term assets. The reason for using an external interest rate is the possible imperfection in the internal capital market that may result in under or overstatement of the real cost of capital. The reasons for including the time cost of capital in cost calculations are twofold: first, it reflects the real economic cost to the society and conforms to the economic concept of cost of production. Second, it places a charge on the employment of excessive amounts of capital which is important in an economy where capital is extremely scarce and labor is relatively abundant. The reasons that this cost is computed for only net long term assets are also twofold: first, short term assets are excluded on the assumption that their UC would include the imputed cost of capital at the time they are used in production as has been previously shown. Second, long term assets are netted by deducting depreciation since the latter is embodied in other economic resources and, therefore, to avoid double counting.

The second modification would be to allocate overhead according to the long run expected normal capacity.

This is defined as the average long run expected capacity at the time the original decision to allocate resources to the firm was made. If a firm has been already established, normal capacity would be the weighted-average of expected future long run capacity and past utilized capacity. Unutilized capacity should be considered as a loss and should not enter in cost calculation for resource allocation unless it was expected and therefore it will be included in the determinants of the cost of normal capacity. Neither should overutilized capacity be included unless it was planned at the time the decision was made. It should be accounted for separately to spot light efficiencies and inefficiencies of resource allocation and utilization. It shows that either the allocation decision was wrong or the utilization decision was wrong. Inclusion of under or overutilized capacity in cost calculation would conceal this fact and may result in a continuation of the wrong decision.

The third modification is a little more difficult and pertains to the cost of labor and management. For maximum social welfare, it is necessary but not sufficient that each factor of production should be paid the value of its marginal product. In the Egyptian economy this is practically impossible to calculate due to labor market imperfections (this is essentially true everywhere in the

world). Hermanson,⁷⁶ though not quite precise in his conception of the problem, provided a possible escape. According to his methods of accounting for human resources, the excess amount over normal returns would be capitalized "and entitled 'Operational Assets' and will consist of all scarce resources operating in the entity that are not owned. An example of such an asset would be a highly trained sales force."⁷⁷ My contention is that these excess earnings would be due mainly to cost miscalculations-- private and social costs diverge. This may result from a miscalculation of the productivity of labor or management

⁷⁶Accounting for Human Resources (East Lansing: M.S.U. Bureau of Business and Economic Research, Occasional Paper No. 14, 1964). Although apparently recognizing that this excess earning may be due mainly to factors of market imperfections, like monopoly or oligopoly factors, Hermanson proceeded in his analysis as if they were not present. If these excess earnings were a result of monopoly or oligopoly powers, and most certainly a substantial part if not the whole are--then they are a result of past labor exploitations rather than future service expectations. Their capitalization would give the value of expected future monopoly power of the firm and hence, indicate inefficiencies in resource allocation rather than productive efficiency. The contradiction is apparent in the following quotation: ". . . it is possible for a management group to pay itself more than the value of its marginal product . . . which . . . results in a decrease in the valuation placed on human resources," p. 55. If all factors are paid the value of their marginal product, the valuation placed on human resources will be equal to zero in his system. However, he considers that a positive valuation indicates more efficiency than a zero valuation, which is not true. The most efficient resource allocation would require a long run zero valuation on his human resources from a society's point of view. From the point of view of the residual equity he is quite correct, however. Yet the capitalized value of excess earning in this case would be due to monopoly power rather than higher productivity.

⁷⁷Ibid., p. 5.

or both, and therefore, they will be misremunerated, or they may be the result of factor and/or product market imperfections. In either case it should be corrected for in cost calculations for resource allocations from the point of view of the society. The latter case calls for a modification in production capacity to the point of zero excess returns. The correction of cost calculations for resource allocation and price determination would be achieved by deducting the average amount of excess returns from the cost base before the computation of the standards. The result would be a standard from the social point of view. The efficient price that would result, however, may call for a subsidy to the firm to break even. It will also result in a more efficient resource allocation. The treatment of the former case would be exactly the same.

There are many other problems of cost calculations for price determinations and resource allocation. Those dealt with in this chapter are what have been considered as pertinent to the chapter topic. The treatment was brief and sometimes undocumented mainly due to the space the chapter has already occupied. Some of these other problems will be treated in the next chapters.

CHAPTER IV

VALUATION OF FIXED ASSETS:

DEPRECIATION

4.1. Introduction:

For the purpose of accounts classification the UARUS distinguished eight groups of fixed assets.¹ These are: (1) land, (2) buildings, constructions, facilities and roads, (3) machinery and equipment, (4) transportation facilities, (5) tools and supplies, (6) furniture and fixture, (7) animal and water resources, and (8) deferred costs. This latter category includes organization costs, research and development costs, interest accrued before operations, etc. Each one of the groups is further divided into subgroups mainly according to the type of use for which the asset is put. In addition, each subgroup is divided further on the basis of desired cost classifications. For example, the machinery group is divided into two subgroups: production machinery and service and utility machinery. The first subgroup is divided into two classes: local and imported machinery. Local machinery is stated under two headings: purchase costs and other costs.

¹CAA, The Uniform System, Vol. I, pp. 27-33.

Imported machinery is stated under three headings: purchase costs (f.o.b.), customs, and other costs which include cost of installation.

The main purpose of the classification is to facilitate the process of aggregation needed for social accounting categories and other social aggregates. For the purpose of fixed assets valuation and the measurement of capital consumption (depreciation) the system does not differentiate between groups of depreciable assets with regard to the base or the method. The basis of valuation is historical acquisition cost less depreciation as computed according to the straight-line methods. The only discrimination between various types of fixed assets is in the straight-line rates that should be applied and these rates are given in great detail for each type of asset in each industry without regard to the formal asset classification in the industry or the whole economy. That is, within each group of fixed assets different rates can be applied for the same asset in different industries.

The emphasis in this chapter will be on the valuation of depreciable industrial assets in general and on the method of depreciation and the mode of its application in particular. This is to confine the study within manageable limits. The analysis will consider various objectives of depreciation and how these objectives can be achieved. Arguments presented hereafter are applicable to market, to planned, and to mixed economies unless

otherwise specified. The inquiry begins with an examination of the economic significance of depreciation.

4.2. Economic Significance of Depreciation

From a strictly economic point of view, depreciation is one of three main variables affecting the value of existing stocks of capital. It is a measure of the current value of capital consumed in the process of current production.² It makes no difference whether the economy is planned or not, except perhaps in the measurement process and the mode of its application. The other two variables are capital formation and capital adjustment.

Generally we can distinguish three distinct, yet related, purposes of depreciation measurement: asset valuation, income determination, and price calculations.³ For each of these purposes different concepts of depreciation can be employed to yield different results. The depreciation concept will vary according to how we define "value", how we define "income", and the purpose of price calculations. The interminglement of the first two purposes of

²See Solomon Fabricant, Capital Consumption and Adjustment (New York: National Bureau of Econ. Res., 1938), p. 3. He defined gross capital formation as "the current value of all new durable goods added to the capital stock," capital adjustment as "the value of durable goods used up in ways other than in the current production of good and services, and value changes arising from revaluations of existing durable goods."

³See W. Arthur Lewis, "Depreciation and Obsolescence as Factors in Costing," in J. L. Meij (ed.) Depreciation and Replacement Policy (Chicago: Quadrangle Books, 1961) p. 17 et seq.

depreciation calculation yields the economist's conception which is essentially concerned with maintenance of capital intact. Different writers have various opinions, however, on what constitutes capital and how capital should be maintained intact.⁴ For example, Professor Pigou would maintain capital intact in "equivalent" objects:

Capital consists at any given moment of a definite inventory of physical things . . . in order that capital may be kept intact, if any object embraced in this collection becomes worn out or thrown out (scrapped) it must be replaced by 'equivalent' objects.⁵

Terborgh, on the other hand, would maintain the subjective value of an asset as derived from its expected future service. He says:

From an economic standpoint, a capital asset is nothing but a store or reservoir of valuable future services, from which alone the value of an asset derives . . . capital is a value magnitude and is consumed as value is exhausted. The pattern of value erosion therefore sets the pattern for the depreciation charge. The recovery of capital through this charge should be so far as practicable synchronous with the value erosion itself.⁶

After defining the value of a machine's service net of costs (exclusive of depreciation and interest costs

⁴For an excellent survey of the disagreement see Irving Fisher, The Nature of Capital and Income (New York: Augustus M. Kelly, 1965) original ed. 1906, pp. 51-65. Fisher defined capital as "A stock of wealth existing at an instant of time," p. 52.

⁵"Maintaining Capital Intact," Economica, VIII (Aug. 1941), p. 271.

⁶Realistic Depreciation Policy (Chicago: Machinery and Allied Product Inst., 1954), pp. 29 and 27.

related to the acquisition of the machine) as quasi-rent, Professor Edgar O. Edwards defined subjective depreciation (that necessary to maintain subjective value) as:

That part of quasi-rent which is not income will, if appropriately invested, just maintain subjective value at its level at the beginning of the period . . . to permit the maintenance of a constant stream of income should the owner of capital so desire.⁷

In fact Professor Edwards distinguished five possible maintenance criteria by which depreciation charges can be judged:

(1) the continuous replacement of subjective value criterion rests on the premise that subjective value be maintained from period to period; (2) the continuous replacement of market value criterion suggests that each period's depreciation charge should be sufficient to maintain the market value of the firm's assets in that period; (3) the replacement of historic cost requires that, by the end of the machine's life, depreciation accumulate to its original cost; (4) the ultimate physical replacement criterion suggests that depreciation charges on a particular machine should be sufficient to provide for its ultimate replacement; (5) the running physical replacement criterion requires that each period's depreciation charge be just sufficient to maintain a constant physical stock of machines. Given static conditions, an infinite horizon, accurate expectations and a machine stock evenly distributed by age, all of these criteria are satisfied by all the depreciation methods . . . discussed (subjective value, internal rates, market value, and original cost based arbitrary methods). When these conditions are violated, however, and many of them are likely to be in the real world, the convenient identities of replacement criteria and depreciation methods vanish. It becomes necessary to choose from among the alternatives.⁸

⁷"Depreciation and the Maintenance of Real Capital," in Meig (ed.), op. cit., pp. 48 and 55.

⁸Ibid., p. 75.

Each of these criteria can be further subdivided. For example, is the subjective value to be maintained that of the individual or of the society? Is it to be maintained in money terms or real terms? Is it to be computed on an internal rate or an external rate of return basis?

Whether consciously, subconsciously, or not at all, the accounting profession recognized these difficulties; the stand has been taken that depreciation is a process of cost allocation and not of valuation. This is as true in Egypt as it is in the U.S.A. As for the USSR, Campbell has reached the conclusion that:

In the Soviet setting depreciation charges are retained as part of the enterprise accounting less for purposes of income determination and distribution, and more for cost-accounting purposes, than in the Capitalist economy. The accountants of the head office recognize capital consumption as a real cost, differentiated by firms, sectors, and products; and they want this cost included in their internal cost-accounting system.⁹

Depreciation treatment in enterprise accounting in the USSR is very much in line with the objective of cost allocation. Depreciation continues to be calculated by application of rates (straight-line) assigned from above to a stock of assets assigned and valued from outside, and the depreciation charge is not only intended to recover original cost but also to distribute equally maintenance and repair cost on the useful life of the asset.

How this allocation is to be made, however, remains a subject of dispute among accountants since allocation

⁹Op. cit., p. 53.

also has many problems of its own. What is to be allocated, when, and how are the standard questions which need to be answered before any "systematic" process of allocation can be made. Most "practical" accountants in the United States have chosen to allocate historical acquisition cost on what they call the "estimated useful life" of the asset (this is also the general case in Egypt with some exceptions to be discussed later). No unique pattern of allocation, however, is followed and various alternatives exist in the United States (in Egypt the alternatives were eliminated by the UARUS). The reason for the numerous alternatives is that none of them is considered completely satisfactory under all conditions. Income tax considerations and income tax laws seem to have reduced these latter difficulties. What was found unjustifiable on economic or logical grounds apparently has been justified on grounds of tax considerations. In the remainder of this section, depreciation from a planned economy's point of view will be examined. The examination will be based on economic as well as practical grounds. Essentially those factors that pertain to the Egyptian economy will be emphasized.

4.2.1: Economic Significance of Depreciation in a Planned Economy

One of the things that is economically common to all countries is their unequal endowment of economic resources. Except in the most strict stationary conditions dynamic changes take place in such an endowment with regard to

composition and gross magnitude. This is true whether the economy is planned or not and the only difference would possibly be in the pace of speed such changes take place. It is generally contended that economic planning, even at its lower limits of indicative planning, can make a higher rate of growth possible than no planning. Recent statistical history tends to render this contention plausible. Yet, the extent and composition of the original resource endowment is the most decisive factor in making such a higher growth rate possible. For planning without adequate resource endowment is like an ocean wave striking against a solid rock. The latter is never completely removed and is worn out very slowly, though stricken hard and continuously.

Egypt is a comprehensively planned and decentralized economy. Both endowment of capital and the "right" type of labor are inadequate; whereas, its endowment of the "improper" type of labor is abundant. Growth requires the formation of new capital and the efficient employment of old capital. It requires an increase in the appropriate type of labor and a decrease of the inappropriate type of labor. It requires an increase in saving and investment and a decrease in consumption and hoarding. And last but not least, it requires the dissemination of the "right" technology and the dissolution of the "wrong" technology. Yet to achieve these objectives requires appropriate

policies along with appropriate incentives for their consummation.

It is the writer's contention that a more appropriate depreciation policy can be used as an economic instrument to achieve the desired objectives and to supply some of the needed incentives. A statement of the desired results will precede the statement of the depreciation policy. The analysis in the main concerns the Egyptian economy, though applicable to economies with comparable features.

Several eminent economists contend that the marginal productivity of labor in the Egyptian agriculture is close to zero or even negative.¹⁰ Although their contention has neither been empirically proved nor disproved in conclusive terms, it certainly seems plausible with regard to the Egyptian economy.¹¹ Yet this analysis will begin with more "conservative" grounds. It will assume instead that the value of the social marginal product of labor in the Egyptian agriculture is much lower than in industry,

¹⁰See for example, W. Arthur Lewis's much cited classic, "Economic Development with Unlimited Supplies of Labor," Manchester School, XXII (May, 1954), pp. 139-92. See also G. Ranis and J. C. H. Fei, "The Theory of Economic Development," American Economic Review, LI (September, 1961), pp. 533-65, and "Innovation, Capital Accumulation and Economic Development," American Economic Review, LIII (June, 1963), pp. 283-306.

¹¹See for example Morton Paglin, "'Surplus' Agricultural Labor and Development," American Economic Review, LV (September, 1965), pp. 813-832, R. L. Bennett "Surplus Agricultural Labor and Development: Comment," American Economic Review, LVII (March, 1967), pp. 194-202, and Paglin's "Reply", pp. 202-209; Harry Oshima, "The Ranis-Fei Model of economic Development: Comment," American Economic Review, LIII (June, 1963), pp. 448-452, and Ranis-Fei, "Reply," pp. 452-454.

though not necessarily zero or negative.¹² This would imply that labor transfers from agriculture to industry would, ceteris paribus, increase the rate of growth of total output. Assuming that the demand for labor in industry is solely a function of the marginal value product, then two main factors can affect the "size" of that demand: (1) the "size" of the industrial capital stock which if increased, without a compensating increase in capital labor ratio, will shift the demand curve for labor to the right, and (2) technological change which can, in turn, operate in two ways: increase labor productivity thus favoring labor intensive methods of production, or increase capital productivity thus favoring capital intensive methods of production. In both cases a rightward shift of the demand curve for labor may result but this is certain only in the first case.¹³ In general, then, the greater

¹²In effect, I am accepting the Ranis-Fei hypothesis that "the heart of the development problem lies in the gradual shifting of the economy's center of gravity from the agricultural to the industrial sector through labor reallocation," from agriculture to industry to start with, and through capital reallocation from industry to agriculture when the latter's terms of trade with the former start to worsen, "Innovation, . . ." op. cit., p. 283. To them "reaching the turning point signifies a major measure of success in the development effort in the sense that the disguisedly unemployed in the hither to 'dragging' agricultural sector have finally been productively mobilized. Thereafter, (they) view the agricultural sector as moving toward the role of an 'overly productive' appendage to the industrial sector which must be subsidized (as is typical in many advanced countries) rather than squeezed for the benefit of the rest of the economy," "Reply" op. cit., p. 453.

¹³See Fei and Ranis, "Innovation . . .," op. cit., pp. 284-288.

the rate of capital accumulation, the greater will be the rate of industrial employment. The greater the rate of labor biased innovation, the greater will be the use of labor using production techniques.

In the Egyptian economy the source of most recent additions to industrial technology is outright borrowing from abroad. The essential feature of this technology is its relatively greater capital intensity. This leaves capital accumulation, after off-setting the effect of capital--using biased technology, as the most important factor capable of affecting an outward shift in the demand function of labor. If we accept the Ranis-Fei "Critical Minimum Effort Criterion" to the effect that to provide for a reduction in surplus agricultural labor the rate of growth of population should be lower than the rate of growth of the industrial labor force, as pertinent to Egypt, then the "government policy must insure that the combination of capital accumulation, innovational intensity, and labor-using bias is powerful enough to overcome population pressures."¹⁴ Under these conditions, the appropriate depreciation policy should encourage relatively higher rates of capital accumulation in labor intensive industries and relatively lower rates in capital intensive

¹⁴Ibid., p. 289. The mathematical statement of the critical minimum effort condition is as follows:
 $g < n_L = n_k + \frac{BL + r}{\eta_L}$, where g = population growth rate, n_L

and n_k equals rate of growth of industrial labor and capital respectively, BL = degree of labor using bias, r = innovational intensity, and η_L = elasticity of labor demand.

industries (though not below what is necessary to sustain it in economical conditions).

This objective tends to be at variance with the conventional objective of depreciation. This is true because the latter does not provide for a growth variable in the process of depreciation calculation. For example, the conventional objective of depreciation is to preserve either some value of an asset or some value of its income stream. Under the above conditions the objective of depreciation should be to support a growing, rather than a constant, real income stream, and a growing, rather than a constant, real value of capital assets. This is necessary if industry is to absorb higher rates of surplus agricultural labor. In fact, this is necessary under any conditions other than those of a stationary state.

The desired rate of growth in each industry and the rate of growth which can be achieved will be determined within the limitations of existing and expected socio-economic and political conditions. These rates are generally set by macroeconomic calculations for the whole economy and according to one or more variants of a macro-investment criterion. My contention is that, if such a criterion should provide for increasing employment of surplus agricultural labor, then the depreciation policy to be adopted should not hinder the achievement of this objective by favoring capital intensive industries or even putting them on the same footing as labor intensive

industries. Actually what is needed is a depreciation policy that is biased in favor of the latter industries.

The analysis made by Edwards,¹⁵ Preinreich,¹⁶ Domar,¹⁷ and Eisner¹⁸ provide an important clue. As indicated above, I am inclined here to believe that the purpose of depreciation should not be based on the assumption of maintaining intact a constant productive capacity of the firm or the economy since this would be appropriate only for a stationary state.¹⁹ Thus, the adequacy of depreciation charges should not be judged against replacement requirements but against what is needed to finance new additions at the desired rate of growth. Ideally, if each firm in the economy can sustain its rate of growth from

¹⁵Op. cit., pp. 75-103.

¹⁶"Annual Survey of Economy Theory: The Theory of Depreciation," Econometrica, VI (July, 1938), pp. 219-241.

¹⁷"Depreciation, Replacement, and Growth," Economic Journal, LXIII (March, 1953), pp. 1-32, and "The Case for Accelerated Depreciation," Quarterly Journal of Economics, LXVII (Nov., 1953), pp. 493-519.

¹⁸"Accelerated Amortization, Growth and Profits," Quarterly Journal of Economics, LXVI (Nov., 1952) pp. 533-544, and "Depreciation Allowances, Replacement Requirements and Growth," American Economic Review, XLII (December, 1952), pp. 820-831.

¹⁹This objective of depreciation is of course at variance with that of measuring the current value of capital consumed in the process of current production and with the objective of maintaining capital intact. Depreciation here is used as a tool of economic policy to provide an additional source of forced saving needed to sustain growth. It can only be defended on long run social welfare grounds, though very much disputable on grounds of current social welfare.

internal saving then the growth of the whole economy can be automatically self-sustained. It is generally agreed, as well as mathematically proved, that for a growing firm the depreciation charge calculated in accordance with any of the conventional accounting methods would, ceteris paribus, provide for more than the running physical replacement requirements.²⁰ But, it is as well agreed and proved mathematically, that such depreciation charges provide for less funds in a growing firm than what is actually needed to finance new capital additions inclusive of replacements.²¹ So for each firm to be able to sustain

²⁰See Edwards, op. cit., pp. 78-81. Domar, "Depreciation . . ." op. cit., pp. 7-9. For example at a growth rate of 5%, straight-line depreciation would provide for 114% of physical replacement requirements if the average useful life of the asset population was 5 years, 130% if such life was 10 years, 172% for a life of 20 years and 232% for a life of 30 years on the assumption of a zero scrap value. Edwards, p. 79.

²¹See Edwards, Ibid., pp. 84-91, and Domar, Ibid., pp. 3-6. The following table is a partial reproduction of Edwards' (Table 7), p. 84. It shows D_0/A for various asset lives n , and ratios of growth k , where D_0/A is the ratio of Depreciation Charge on a straight-line, zero scrap basis to the cost of new acquisitions. The rate of growth of Egyptian firms would probably fall between 5-10% in recent years with an average useful life of about 14-25 years for capital stock.

$k \backslash n$	5	10	20	30	50
-.02	105	111	123	137	172
0	100	100	100	100	100
.02	95	91	82	75	63
.05	83	79	63	52	37
.10	79	63	43	32	20

its desired rate of growth from accumulated internal funds, the depreciation allowance and retained profits should measure up to the requirements of needed new capital additions. Actually Professor Domar has shown that:

If the rate of retained profits (P) and the rate of growth of investment (r) happen to be equal, the whole investment program of a growing firm can be financed internally year after year.

Where (p) according to his definition is the "rate of retained profit on the stock of capital net of depreciation," and (r) is the relative rate of increase in gross investment consisting "of fixed capital only and is gross of depreciation or replacement."²² A higher profit rate will create excess funds and vice versa.²³

²²"The Case for Accelerated Depreciation," op. cit., pp. 495, 498, among Professor Domar's assumptions are a straight-line depreciation and that the firm begins with no fixed capital, Ibid., p. 495.

²³Egyptian enterprises, whether functioning in the public or the private sector, are subject to a flat tax rate of 32.2% of net profits, as follows:

Tax on commercial and industrial profits	17.0%
Local government tax	1.7%
National defense tax	10.5%
National security tax	8.0%
Total	<u>32.2%</u>

The proportion of tax revenues used for capital accumulation is equal to the government's propensity to save, which is under usual conditions substantially less than one, multiplied by the amount of tax revenues. On the other hand, any reduction in tax revenues due to increased depreciation allowances will result in an increase in gross capital accumulation equal to the whole amount. That is, if the amount of tax revenues foregone due to increased depreciation allowances is X, government saving will be reduced by X (1-c); where c is the government marginal propensity to consume and is greater than zero. At the same time gross

For the purposes of this analysis the assumption will be made that the whole industrial sector can be divided into two groups of productive units: one group with a higher technologically constrained capital labor ratio, which constitutes the capital intensive industries, and the other group with a lower technologically flexible capital labor ratio, which constitutes the labor intensive industries. It will be assumed further that growth is desirable and the absorption of surplus agricultural labor is an important aim of economic policy. On the basis of these assumptions a discriminatory depreciation policy should be of great help in the achievement of the desired objectives. The discrimination would be reflected in the depreciation rates allowed for each industry. A higher rate should be granted for labor intensive industries and a lower rate for capital intensive industries. These rates should be such as in combination with the normal rate of profit retention in each industry would allow the generation of enough internal funds to finance the major proportion of new capital acquisitions necessary to maintain the desired rate of growth. The planned rate of growth for labor intensive industries should, of course, be higher than that for capital intensive industries, if the policy objectives are to be achieved. A scheme of accelerated

business saving will increase by X . It is clear that $X > X(1-c)$. Financing government expenditure can then be provided for by imposing higher income tax rates on capital intensive industries, or by charging an interest price on publicly owned capital to compensate for the amount of reduction in revenues.

depreciation for the former industries and of straight-line or less accelerated depreciation for the latter industries would tend to achieve the objective depending on the magnitude of acceleration. The higher the rate of acceleration for labor intensive industries, the greater the funds provided by depreciation for a given amount of retained profit. But the higher the rate of acceleration, the lower the rate of profit retention and the lower the funds provided by the latter. Yet unless the rate of profit retention is higher than the desired rate of growth, total funds generated by an accelerated depreciation scheme would be higher than that provided by a straight-line scheme, given the same rate of profit retention.²⁴

There are many implications to such a discriminatory depreciation policy and its success in the achievement of the desired objectives depends on many factors.

1. Its success will depend on the earning capacity of each industry. Unless each industry is earning enough revenue to cover the depreciation charge and the desired rate of profit retention, its capacity in generating the required amount of funds to sustain its growth rate will be hindered. If depreciation charges are not earned, the ratio of internally generated funds to the desired rate of acquisition will be reduced; likewise if no profits were retained.

2. Unless conditions are expected to remain the same, the value concept upon which depreciation

²⁴See Edwards, op. cit., pp. 88-91, especially (Table 10).

calculation is based will be a decisive factor in determining the success of the depreciation policy under conditions of changing prices. Ideally, the depreciation base should be the expected amount needed to replace the asset, at the time its economic life is expected to terminate, by another asset of the same capacity. Current replacement value can be used instead, but the depreciation charge of each year will usually need to be adjusted for under or over depreciation of past years. This would be a more practical method since expected future replacement may be difficult to determine, especially if the expected useful life of the asset under consideration is relatively long. The condition of replacement in terms of productive capacity and not in kind is introduced by technological change. Depreciation should also be based on the economic rather than the technical life of the asset. Maximum economic life terminates at the point in time where repair and maintenance costs per unit of output exceeds replacement cost of the asset per unit of output. That is, when the acquisition of a new asset will result in cost saving per unit of output equal to its acquisition cost per unit of economic life output. Historical experience as well as engineering studies should be of great value for such estimates.

3. The success of this depreciation policy would depend to a large extent on the scheme of economic incentives followed. If the efficiency index for the firm

or the industry is based on the rate of growth in the value of gross output as determined on a full-cost-plus a profit margin basis, (as is the case in most socialist planned economies) no inconsistencies will arise. This would also be true if the efficiency index is based on value added, net profit, or variable cost of production, given the same pricing policy above. If on the other hand, prices are determined solely on the basis of competitive conditions, then inconsistencies will arise except in the case of variable cost based efficiency indices.²⁵

4. Unless the assets in question are nationally produced, the success of the depreciation policy in adding to the physical capacity of the industrial capital stock will depend on the ability to earn enough foreign exchange to finance the additions. Yet even under conditions of foreign exchange rationing the capital stock of labor intensive industries will still grow at a faster rate than that of capital intensive industries, provided that the rationing process is consistent with the rate of growth of internally generated funds in each industry.

5. Unless long run social welfare is much more important than current social welfare, the discrimination

²⁵For more comprehensive discussion of this point see Aleksy Wakar and Janusz Zielinski, "Socialist Operational Price Systems," American Economic Review, LIII (March, 1963), pp. 109-126, and J. M. Monias, "Socialist Operational Price Systems: Comment," American Economic Review, LIII (December 1963), pp. 1085-93 and Wakar-Zielinski's "Reply," pp. 1093-94.

will be socially undesirable for two reasons. First, there will be an involuntary business saving of a proportion equal to the difference between the real net saving proportion as computed on the basis of utilization cost depreciation and the apparent net saving proportion as determined on the basis of the accelerated scheme. Provided that efficient employment of these concealed savings can be assured, the economy will be better off in the long run, though short run social welfare will be distorted. Second, if the price of the final product is determined on a full average cost basis (including the cost of capital) there will result a divergence between the real social cost on the margin and the apparent social cost. Real social cost will be lower than apparent social cost which is equal to price in labor intensive industries, while in capital intensive industries real social cost will tend to be closer to price. The latter industries will appear as if they were more efficient. However, if the difference between the apparent and real social cost in labor intensive industries can be equated with the benefit of increased surplus agricultural labor absorption in industry, the distortion will tend to disappear and the economy will be better off in the long run.

6. Unless funds provided by depreciation are supplemented by profit retentions or outside sources, no reasonable rates of acceleration of depreciation can sustain any positive growth rate. Even if depreciation

funds are instantaneously invested in new machine additions, there will come a point in time after which the physical stock of capital will not grow on depreciation funds alone. Until such a point is reached, instant investment of depreciation funds will provide for an increasing physical stock of capital. The rate of increase will vary positively with the rate of depreciation acceleration. A much simplified case will clarify the points involved here. Assume an extreme case of accelerated depreciation, such as each machine in the capital stock is fully depreciated by the expiration of one-half of its economic life. Let the method be identified by "double the straight-line rate on economic life." Assume that a new machine is acquired at the time an existing one is fully depreciated, prices are constant, and capital labor ratio is constant. For simplicity, assume that at the time this depreciation scheme is applied the industry's capital stock consisted of eight machines with remaining economic life for each as follows:

Machine	1	2	3	4	5	6	7	8
Economic Life Remaining	5	10	15	20	25	30	35	40

The maximum economic life for each machine new is forty years and all machines are identical. To simplify the exposition with little or no alteration to the conclusions, assume that at the time the scheme is applied, previously accumulated depreciation of the eight machines will be maintained.²⁶ In effect when the scheme is applied the

²⁶This assumption is necessary to make possible a non-mathematically involved treatment of the case.

remaining value of each machine will be depreciated on half the period of its remaining economic life. A new machine will be added instantly when an existing machine is fully depreciated, though the latter remains in operation until its economic life expires. Table 1 shows the effect of such a scheme on the number and age distribution of machines in the stock. According to the assumptions the following conclusions can be drawn from the table.

a. The rate of increase in the number of machines will be decreasing until the number doubles by year forty and the rate of increase will become zero. From this point on depreciation charges will be just enough to maintain the number of machines constant. This would be the static equilibrium number of machines at which the age distribution will thereafter be maintained.

b. If straight-line depreciation was followed under the above assumptions, the number of machines as well as their age distribution will remain intact. If we relax the assumption of maintaining accumulated depreciation at year zero and permit its investment in new machine acquisition, by year forty the number of machines under straight line will be about 150 per cent of their number at year zero, while under the double straight line rate the number of machines at year forty will be about 300 per cent of their number at year zero. The number will thereafter be maintained intact under either method but

TABLE 1.--Age Distribution of a Machine Stock After a Change From Simple to Double Straight-Line Rate on Economic Life Depreciation With Instant Additions at a Zero Book Value.

Time Years	Time Years																									Number of Machines
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
0	5	10	15	20	25	30	35	40																		8
2½	2½	7½	12½	17½	22½	27½	32½	37½	40																	9
5	0	5	10	15	20	25	30	35	37½	40																9
7½	2½	7½	12½	17½	22½	27½	32½	35	37½	40																10
10	0	5	10	15	20	25	30	32½	35	37½	40															10
12½	2½	7½	12½	17½	22½	27½	30	32½	35	37½	40															11
15	0	5	10	15	20	25	27½	30	32½	35	37½	40														11
17½	2½	7½	12½	17½	22½	25	27½	30	32½	35	37½	40														12
20	0	5	10	15	20	22½	25	27½	30	32½	35	37½	40													12
22½	2½	7½	12½	17½	20	22½	25	27½	30	32½	35	37½	40													13
25	0	5	10	15	17½	20	22½	25	27½	30	32½	35	37½	40												13
27½	2½	7½	12½	15	17½	20	22½	25	27½	30	32½	35	37½	40												14
30	0	5	10	12½	15	17½	20	22½	25	27½	30	32½	35	37½	40											14
32½	2½	7½	10	12½	15	17½	20	22½	25	27½	30	32½	35	37½	40											15
35	0	5	7½	10	12½	15	17½	20	22½	25	27½	30	32½	35	37½	40										15
37½	2½	5	7½	10	12½	15	17½	20	22½	25	27½	30	32½	35	37½	40										16
40	0	2½	5	7½	10	12½	15	17½	20	22½	25	27½	30	32½	35	37½	40									16
42½	2½	0	2½	5	7½	10	12½	15	17½	20	22½	25	27½	30	32½	35	37½	40								16

Note: A circle indicates that the machine is fully depreciated, the number in the circle indicates the remainder of a machine's estimated economic life.

under neither would the age distribution be maintained intact.²⁷

c. To maintain a given rate of growth, accelerated depreciation will be superior in generating internal funds as long as the rate of profit retention available for new machine acquisitions does not exceed the desired rate of growth.²⁸

d. The greater the difference between the depreciation life base and economic life the greater the number of machines at the point of static equilibrium and vice versa.

e. Any disturbance in depreciation policy, replacement policy, or exogenous investment policy (the latter has been assumed to be zero above) at year forty will set forces in motion to disturb the number of machines. A positive exogenous investment will render the number of machines increasing given the same depreciation policy. An acceleration of depreciation will start a cycle of increasing the number of machines. A deceleration of depreciation will initiate a cycle to the reverse, that is, to decrease the number of machines.

f. Under rising prices depreciation funds will finance a smaller number of new machine acquisitions. Accelerated depreciation would still be superior.

²⁷There is an analogy between stable age distribution models of capital and stable population models. For a fuller description of the analogy see Kenneth Boulding, A Reconstruction of Economics (New York: Science Editions, 1962), Ch. 11, especially pp. 189-202.

²⁸See Edwards, op. cit., pp. 88-90.

g. Total annual depreciation charge will be the same, although the physical capacity is increasing. Provided that such increased capacity can be utilized effectively, the annual rate of return will be increasing. Therefore, a higher rate of profit retention can be attained. Such a higher rate of profit retention would allow the maintenance of an internally financed higher rate of growth of physical capital stock even after the point at which depreciation funds become just enough to maintain a given physical capital stock intact. Given a constant capital labor ratio, the rate of labor absorption in industry will be constantly increasing.

7. Important to the above depreciation policy are questions related to the destination and controllability of funds provided by depreciation. If these funds were extracted from the economic units under consideration and were subject only to the control of a central authority, the objective of the depreciation policy would most probably be unrealized. In addition to lost incentives, this would be so due to the fact that the distribution of these funds between replacement and new capital additions may favor the former. The central authority, constrained with a limited amount of investible resources will satisfy urgent replacement first, which will tend to be generally biased in favor of capital intensive industries. On the other hand, if depreciation funds are to be left under the control of the economic unit, appropriate measures

Should be taken to assure the efficient employment of these resources. It would be better if the central authority established a pool of depreciation funds for each industry separately. Each firm would contribute to the pool an annual amount equal to the depreciation charge and the appropriated portion of retained profits and extract from it an amount equal to what is needed to satisfy its replacement and new capital additions decisions. Foreign exchange limitations and the requirements of macroinvestment criteria would, of course, still have to be satisfied. This policy would achieve the objectives of increasing the rate of absorption of surplus agricultural labor in industry and would reduce the difficulties involved in a decentralized control over depreciation funds.

These implications bring up the questions as to what are and/or what should be the objectives of depreciation in a planned economy. Should depreciation be mainly a tool of economic policy or should it remain a conventional accounting technique? The two objectives may, and usually do, conflict. It is, therefore, important to clarify what is to be accomplished by depreciation accounting; otherwise the proper criteria for evaluating any given depreciation policy would be lacking. Thus, the depreciation methods adopted by the UARUS cannot be evaluated on grounds of economic policy unless such methods are intended to serve the objectives of this policy. Oddly enough, the UARUS did not state any explicit objectives for

depreciation and these objectives will then have to be established by implications. The next section is devoted to this and other tasks related to depreciation under the UARUS.

4.3: Depreciation Under the UARUS:

No clear stand has been taken by the system regarding the nature and objectives of depreciation. Whether the system considers depreciation as a process of cost allocation or a process of asset valuation or a tool of economic policy is not made explicitly clear. On the other hand implicit statements to this effect are too fragmentary and sometimes contradictory to indicate what the system is really trying to accomplish by depreciation. A reading of the system's objectives (stated in Chapter II above) would give the impression that depreciation should most appropriately be considered as a tool of economic policy. However, a reading of statements regarding depreciation in the system would definitely lead to an opposite conclusion. Some statements give the impression that depreciation is not considered a process of cost allocation. The first part of the following statement gives this impression:

It is necessary to provide for the difference between historical cost and replacement cost of assets to maintain the productive capacity of the invested capital intact. Such difference should be considered as a part of the general provision when profits are distributed.²⁹

²⁹(CAA) The Uniform System, Vol. 1, p. 112.

The second part of the statement would give the opposite conclusion: that depreciation is mainly a process of historical cost allocation and the objective of maintaining the productive capacity intact should be considered as a decision of profit distribution and not as a decision of cost calculations. Yet other statements would indicate neither objectives:

Depreciation of assets which are fully depreciated but still used in production should be continued at 75% of the original depreciation rate. The amount of depreciation will be added to the general provision (provision for rising prices of assets).³⁰

This is not a process of asset valuation since the value of the remaining productive capacity of the asset is not restored on the books. Neither is it a process of cost allocation since there is no remaining cost to allocate. In a very restricted sense depreciation in this latter case could most appropriately be considered as imputed utilization cost of production. Apparently, however, past utilization cost was overstated and under a full cost plus pricing policy this overstatement of cost would be transferred to the consumer thus reducing his social welfare. Most appropriately the amount of overdepreciation should be considered as a forced saving and should be debited to the asset and credited to a social capital account. In labor intensive industries this amount would be invested in new capital additions to increase the rate of surplus

³⁰Ibid., p. 112.

agricultural labor absorption. From capital intensive industries, the amount would be extracted and transferred to labor intensive industries. Utilization cost would then be computed on the restated value of the asset.

Since no one objective of depreciation can be established as being the main concern of the UARUS the analysis that follows will have to consider three main objectives: asset valuation, cost allocation, and depreciation as a tool of economic policy. This section is divided into two parts, one dealing with depreciation methods and the other dealing with depreciation rates. They are discussed in order.

4.3.1. Depreciation Methods in the UARUS

The only depreciation method allowed under the UARUS is the straight-line method. The system requires every economic unit to calculate annual depreciation on its assets according to the straight-line method regardless of the results of its operation.³¹ The rate to be used for each asset is given in the first appendix of the system and will be discussed later. Although no explicit statement as to the depreciation base is given in the system, the implications clearly indicate historical acquisition cost as the adopted base. All fixed assets are subjected to depreciation except the acquisition cost of land.

For a clear understanding of the effect of any depreciation method we should differentiate between the

³¹Ibid., p. 112.

method per se and the mode of its application. Terborgh distinguished three principal modes, though labelled as methods:

Amortization method. This procedure, which is applicable to individual assets, or to groups . . . installed at or about the same time, simply amortizes the original investment over the estimated average life. No account is taken of mortalities or retirements occurring before the average life is reached. Short lived assets that go out before that point continue to be depreciated as if they were still present . . . attainment of the average life . . . terminates depreciation.

Item method. Like the system just described, the item method discontinues depreciation on all assets reaching the average service life. It differs, . . . (in that) it writes off the undepreciated balance at the time of retirement as a terminal loss . . . only surviving assets are depreciated, and these only over the period of the average life. This method is applicable either to one-asset accounts or to groups.

Group method. . . . applied only to a depreciation account containing more than one asset. All items in the account are depreciated at the average-life rate as long as they survive . . . No disposal losses are taken on premature retirements . . .³²

None of these methods of application can exactly fit the UARUS' prescription. The general rule is that depreciation be computed for each asset individually according to the rates given in the system. The rates given, however, are for assets purchased new, operated one shift or less per day for 300 or less days per year. If these can be called normal rates then it is found that the effective rates

³²Op. cit., pp. 53-54.

may substantially differ. The effective rates would be as follows:³³

1. Assets purchased new:
 - a. Satisfying the above requirements: The effective rate is 100 per cent of the normal rate.
 - b. Not used in production at all during the year: The effective rate is 50 per cent of the normal rate.
 - c. Used in production but fully depreciated: The effective rate is 75 per cent of the normal rate for the same operating conditions for assets not fully depreciated. The depreciation charge is to be credited to "provision for rising prices of assets."
 - d. Still economically useful in production, fully depreciated, but not used in production during the year: Effective rate is 37-1/2 per cent of normal rate. The depreciation charge is to be credited to "provision for rising prices of assets."
 - e. Used in production for more than one shift, or more than 300 days: Normal rates would

³³Op. Cit., pp. 111-113, and (CAA), Monthly Training Bulletin, pp. 74-80, and A. Hafiz, M. Wassilly and F. Ausmann, Theory and Practice in the Uniform System of Accounts (Cairo: Dar Alfikre Alarabi, 1968), pp. 228-231. (In Arabic).

be increased by the economic unit in consultation with the appropriate General Organization according to the expected effects of increased utilization.

2. Assets purchased used:

All effective rates applying to the various cases of assets purchased new should be doubled for assets purchased used.

Many issues can be raised with the adopted depreciation method and many more can be raised with the scheme of its application. Some of these issues are discussed below:

A. The Method:

As was mentioned previously, depreciation measures the current value of capital consumed in the process of current production. Accordingly it is the factors that determine the current value of capital, and the pattern of capital consumption, that should determine the current depreciation charge. These factors not only determine the allocation base but also the allocation pattern. A great majority of economists believe that the current value of a durable asset is a function of the present value of its expected future services.³⁴ Once this latter is

³⁴See for example, Fabricant, op. cit., p. 19, Terborgh, op. cit., Chs. 4 and 5, DR. Scott, "Defining and Accounting for Depreciation," Accounting Review, XX (July, 1945), pp. 308-315; Edwards, op. cit., pp. 54-67, and Lewis, op. cit., pp. 17-19, 29-33.

determined the present capital value of the asset can be determined and the pattern of its erosion would determine the amount of depreciation necessary to restore the capital value of the asset to its original position. The present value of expected future services, in turn, is a function of many factors: (1) It is a function of time. Generally, the efficiency of an asset in producing services is a decreasing function of time. Also the present value of an asset's expected future services is a decreasing function of time; the further the service from the present, the lower its present value. (2) It is a decreasing function of the time value of money. The higher the time value of money (the discount factor) the lower the present value of any given future stream of services. (3) It is a function of the asset's output and its distribution through time. (4) It is a function of the economic life of the asset; the longer the economic life, other things being the same, the higher the present value of its expected future services. (5) It is a function of the asset's expected repair and maintenance cost. (6) It is a function of the asset's expected disposal value. (7) It is a function of risk and uncertainty.

The allocation pattern that is implied by these factors should presumably be more theoretically sound than any of those implied by the conventional accounting methods. The practical problems of application involved in such a concept need not be of concern here since no actual attempt

is being made to that effect. The real interest lies in the theoretical pattern of allocation and then only to the extent useful to determine the adequacy of various conventional depreciation methods in approximating the theoretical pattern of value erosion. Once the theoretically sound pattern of capital consumption can be established, then selection of one of the many practical methods available can be made on the basis of its ability to approximate the theoretically sound base of allocation.

Terborgh³⁵ argues on the basis of both theoretical and empirical evidence that service value and accordingly capital value of assets typically decline with time. Table 2 indicates the pattern of decline (given the assumptions stated in the table heading). He argues that factors such as rising operating costs, impaired service quality or adequacy and improved alternatives, combine to reduce the value of the service as the assets age.³⁶ He then concludes that "in the case of capital equipment, . . . from both theoretical and empirical evidence that something like one-half of cost should be written off in the first third of the service life, and at least two thirds in the first half. As to plant (buildings and structures), . . . the same theoretical analysis . . . indicates a first-half write off of well over 60 per cent."³⁷

³⁵Op. cit., Chs. 4 and 5.

³⁶Ibid., p. 33.

³⁷Ibid., p. 70.

TABLE 2.--Percentage of Original Capital Value Lost During the First Third and the First Half of the Service Life When Service Values Decline at a Constant Rate for Various Service Lives and Discount Rates.

Service Life (Years)	Percentage of Original Value Lost					
	In the First Third of the Service Life		In the First Half of the Service Life		Rate of Discount %	
	5	10	15	5	10	15
10	53.2	51.3	49.5	73.0	71.3	69.7
15	52.2	49.4	47.1	72.1	69.7	67.4
20	51.1	47.7	45.2	71.1	67.9	65.3
30	49.3	45.0	42.2	69.4	65.1	62.0
40	47.6	42.8	40.1	67.8	62.8	59.6
50	46.1	41.2	38.8	66.3	60.9	57.9
75	43.1	38.6	36.8	63.1	57.7	55.2
100	41.0	37.2	35.9	60.7	55.8	53.8

Source: Terborgh, op. cit., p. 38.

Terborgh's analysis would emphasize W. Arthur Lewis' conclusion that:

If one wanted the book value of an asset to be a truer reflection of its real value (whether its scrap or inside value) the "diminishing balance" method of depreciation, which is widely used in the United Kingdom, would be superior both to the straight-line method, which has been general in the U.S.A., and also to the sinking fund method, which is the favourite of the mathematically inclined . . . if the assets lose half their value within the first quarter of their life, but only a quarter of their value is retained within the business, then capital has not been maintained intact.³⁸

Accordingly even if the accounting concept of capital maintenance is considered, straight-line depreciation fails due to the lag it creates between capital recovery and capital erosion. The danger of this lag is not limited to its effect on capital maintenance. Perhaps more important is its effect on economic policy especially in a planned economy. The lag affects two important policies (1) pricing policy and (2) modernization and replacement policy.

(1) Pricing Policy: A Soviet writer explained this as follows:

Incorrect calculation of amortization leads to distortions in cost, which in turn leads to the establishment of prices that are too high or too low, both on the means of production and on objects of consumption, to the distortion of the indicators of profitability of enterprises, and also of calculations concerning the

³⁸Op. cit., pp. 29-30.

effectiveness of capital investment and measures for the mechanization and automation of production.³⁹

If prices are based on a cost-plus basis, straight-line depreciation will result in prices which are lower than they should be in the early years and which are higher than they should be in the later years. The adequacy of the price mechanism for efficient resource allocation will be distorted. In addition since lower prices would be charged at early years, lower profits would result and the business saving proportion would be lower than it could have been if the correct prices were employed. The opposite would be true during later years. Both effects are not desirable especially in a developing country where increased saving is one of the most pressing problems. If however, capital assets of each industry are such as to fit a normal and stable age distribution, such adverse effect of the straight-line depreciation would be eliminated. The under-depreciation of the relatively new assets will be offset with overdepreciation of the relatively old assets. But in a developing economy where everything is supposed to be growing, neither a normal nor a stable age distribution of capital assets can be attained and hence, the adverse effects of straight-line depreciation would remain.

³⁹N. P. Grachev, "Voprosy amortizatsii i khozyaystvennogo rascheta na promyshlennykh predpriyatiyakh" (Questions of Amortization and Economic Accountability in Industrial Enterprises), Voprosy ekonomiki No. 6, 1957, p. 106. Quoted in R. W. Campbell, Accounting in Soviet Planning and Management, p. 73. (Probably his translation).

(2) Modernization and Replacement policy: The previous section has shown that straight-line depreciation is an inferior method in providing funds for internal financing of new acquisitions. It is well established that depreciation is normally the major source of financing business investment decisions. In addition, straight-line depreciation fails on another count. The fact that past investment is not relevant to replacement and modernization decisions is well established in economic analysis. It is, nevertheless, true that a write-off of a large book value is psychologically unacceptable. Grant and Norton emphasize that "there is no doubt that the high book value of old assets often operates as a deterrent to economic retirement." They further argue that "the combination of high tax rates and low allowable depreciation rates constitute a serious obstacle to investment in fixed assets and particularly to plant modernization . . . that in the long run may be expected to operate in the direction of technological stagnation."⁴⁰ Hatfield has emphasized this psychological effect when he wrote:

When the question arises as to the advisability of discarding an old, but still usable, machine and substituting a newer model, one faces the necessity of writing off the book value of the obsolete machine. It is always disagreeable to write off an asset.⁴¹

⁴⁰Depreciation, Revised printing (New York: The Ronald Press Co., 1955), pp. 311, 369.

⁴¹"Replacement and Book Value," Accounting Review, XIX (January, 1944), p. 66.

This psychological effect is more important to plant managers of a planned economy, especially if their performance is evaluated on the basis of their contribution to net profits. The danger would be accentuated if an allowance for repair and maintenance is accumulated in sufficient enough amounts to finance major repairs and excessive maintenance. Under these conditions no manager would ask for replacement unless the book value of the asset is zero or very close to it. "If improvements in industrial equipment were not put into place until the old equipment were fully depreciated, there would be a sizeable lag between technological progress and the general benefits to be derived from such progress."⁴² If decisions are made rationally, however, and funds are made available to implement replacement decisions on request, book value would have virtually no influence. "But there are indications that the financial mechanism is not neutral here. Apparently it is much easier to spend the repair fund, already at hand, for the purpose designated than to get funds from above for replacement or modernization."⁴³ This would be virtually certain in a case where shortage of capital is acute and where fixed capital assets are imported under conditions of insufficient foreign exchange reserves and balance of payment difficulties. These latter

⁴²Frank Gaston, Effects of Depreciation Policy, Studies in Business Economics, No. 22 (New York: National Industrial Conference Board, 1950), pp. 31-33.

⁴³Campbell, op. cit., p. 158.

conditions are very well approximated in the Egyptian economy. Hence, we would expect that the adverse effects of straight-line depreciation (especially if the allowable rates were too low as we will examine shortly) to be operative in the Egyptian economy in the long run.

Even from an accounting point of view, straight-line depreciation has been criticized on two main premises. These are described by Paton and Paton as follows:

. . . straight-line assignment does not produce a reasonable matching of costs and revenues, and is a dangerous policy from the stand point of income taxation and financial administration. What is needed . . . is an appropriate "acceleration" of depreciation in the early and more productive periods . . .

Even if the probability of decreasing output is ignored, a substantial objection to a straight-line depreciation is found in the increasing rate of return⁴⁴ on remaining investment that results from its use.

Perhaps no further discussion of any of these points is needed. It is conceded that the second criticism is "off base." The criticism is based on the assumptions that revenues are produced by the asset alone, that the depreciation charge is withdrawn from operations, and the book value of the asset reflects the true investment of the firm in producing the given amount of revenue. None of these assumptions seem plausible enough to justify the above-mentioned criticism. If depreciation charges are reinvested continuously in the firm's operation then it

⁴⁴Asset Accounting (New York: The Macmillan Co., 1952), p. 270.

should be expected that the rate of return on the total investment would be the same during the whole period of the economic life of the asset. This would also be true if the asset's share of total revenue can be computed and isolated correctly. Historical book value of the asset is not significant in measuring the effectiveness of a given investment except in stationary conditions and under the one venture concept of the enterprise.

B. The Mode of Application:

The peculiar mode of the application of the straight-line method to assets purchased new, assets purchased used, and fully depreciated assets deserves particular attention. The analysis will be limited here to the application of the method to the second and third category of assets, since the normal depreciation rates on new assets will be discussed later in more detail.

1. Assets purchased Used: The system required that the rates on these assets be double the normal rates for comparable conditions. A question was directed to the training committee of the CAA by one of the trainees regarding the definition of used assets and whether a machine used for only one month would be put at equal footing with one that was used for ten years before it was purchased. He further asked about the treatment of a special case where each of two factories has bought an identical machine at the same time, and the two machines were operated under identical conditions for a short period of

time after which one of the factories bought the other's machine to use along with its own.⁴⁵ The Committee's answer to both questions stands as follows:

The system did not differentiate between the length of the periods of use before acquisition. The general principle is that whatever is bought and resold is considered an old asset from the new purchaser's point of view even if the original purchaser has only used it for an insignificant period. Depreciation rates were set on the basis of certain assumptions and so far as the second machine is considered used, double the normal rates should be applied to it.⁴⁶

The Committee's statement is disputable on purely economic as well as purely accounting grounds. From a purely accounting point of view what is important is the proportion of useful life remaining of the original useful life of the asset. A machine having an economic productive life of ten years, acquired after two years' use is not equal in any respect to the same machine acquired after eight years' use. There is no commonality between the two machines except for the fact that both have been purchased used and this is no justification for giving them the same treatment. This will result in a substantial distortion in cost calculations for all conceivable purposes. Take a simple example of three factories each owning one of three identical machines with an economic life when new of ten years each. Factory A purchased its

⁴⁵(CAA) Monthly Training Bulletin, p. 78.

⁴⁶Ibid., p. 78.

machine new five years ago for \$10,000; Factory B purchased its machine, used two years, for \$8,000 three years ago; Factory C purchased its machine, used five years, for \$5,000, at the beginning of the current year (year 6). Given a constant annual net revenue before depreciation of \$4,000 for each factory, Table 3 shows the book value of each machine's annual depreciation charge, accumulated depreciation, and net profits for each of the three factories, according to the rules of the UARUS. We assume that the machines are usable for one more year after the expiration of expected economic life.

The table clearly indicates the resulting distortions. According to the assumptions, all three factories are equally efficient throughout the period. But due to differences in depreciation expense the second factory (B) will appear less efficient than the other two factories throughout the whole period. From Table 3 the following generalizations can be made:

- a. Unless the used machine is purchased for a price proportional to its remaining economic life and unless its economic life remaining is exactly one-half of that of a new machine, distortions will result. Given the same price for the final product, downward distortions in profit will result the longer the remaining economic life of the used assets, or the higher the acquisition price above the proportional price, or both, and vice-versa.

TABLE 3.--Book Value, Depreciation Charge, Accumulated Depreciation and Net Profits on Three Identical Machines Purchased at Different Ages Following the Rules of the UARUS.

Year	Book Value at Beginning of Year			Depreciation Expense for Year			Accumulated Depr. at End of Year			Profits for Year		
	A	B	C	A	B	C	A	B	C	A	B	C
6	5,000	3,200	5,000	1,000	1,600	1,600	6,000	6,400	1,000	3,000	2,400	3,000
7	4,000	1,600	4,000	1,000	1,600	1,000	7,000	8,000	2,000	3,000	2,400	3,000
8	3,000	0	3,000	1,000	1,200	1,000	8,000	9,200*	3,000	3,000	2,800	3,000
9	2,000	0	2,000	1,000	1,200	1,000	9,000	10,400*	4,000	3,000	2,800	3,000
10	1,000	0	1,000	1,000	1,200	1,000	10,000	11,600*	5,000	3,000	2,800	3,000
11	0	0	0	750	1,200	750	10,750*	12,800*	5,750*	3,250	2,800	3,250

Notes to Table:

- (1) Accumulated depreciation at year 6 represents the sum of previous year's depreciation taken by the current owner plus current year's depreciation.
- (2) After the asset is fully depreciated, depreciation continues at 75% of the original rate.
- (3) Machines B and C are depreciated at 200% of the normal rate of Machine A until their book value reaches zero and at 150% of the normal rate thereafter until they are scrapped. Machine A is depreciated at 75% of its normal rate after its book value becomes zero and until it is scrapped.
- (4) Starred figures indicate that amounts in excess of book value should be credited to "provision for rising prices of assets."

- b. The longer the remaining useful life of the used machine, the greater the amount of excess funds provided by depreciation over the acquisition value and vice-versa.
- c. If prices of the product are calculated on recorded cost-plus basis there will result a distortion in the price mechanism proportional to the degree of cost distortion created by depreciation. Under these conditions the same commodity will be sold at different prices according to whether assets were purchased new or purchased used. This is hardly an economic criterion for price differentiation.
- d. Under conditions of cost-plus price setting every manager would prefer to acquire a slightly used asset rather than a new asset even if prices of the used assets were much higher than prices of new assets because this will result in a higher price of his product. The market for old assets will boom and the market for new assets will decline. This is hardly an indication of technological progress.
- e. Comparisons between financial positions of different economic units will be extremely difficult and the additivity of such positions for the purposes of macroeconomic calculations will be extremely misleading. Wasteful resource allocation will result and substantial social welfare loss will be concealed.

2. Assets fully depreciated but still used in production: The system requires that depreciation on these continue at 75 per cent of the applicable rate. No restatement of the book value of the asset is to be made and the amount of annual depreciation would be debited to an expense account and credited to a retained earnings account called "provision for rising prices of assets." Since no adjustment to the book value of the depreciated asset is made then depreciation cannot be considered in this case as a process of cost allocation. The entry recording the annual depreciation charge points at two possibilities: (a) that depreciation measures utilization cost and hence the amount is charged to operations and (b) that depreciation is intended to maintain the productive capacity intact by crediting the amount to "provision for rising prices of assets."

An examination of each of these possibilities follows:

- a. Utilization Cost Depreciation: This is essentially a concept of user cost which means in this context opportunity cost, escapable cost, or cost that can be escaped by not using the machine or the asset under consideration. Under conditions of long run full capacity utilization user cost is equal to the current value of capital consumed currently which otherwise would be available for consumption in the future. This is ideally measured by the current value of replacement of the proportion of

current capacity output to the total expected capacity output. Under perfect conditions this reduces to the interest on purchase price plus the decline in market value of the asset during the year.⁴⁷ The latter would correspond to the decline in the inside value as measured by cost. Under variable conditions market value will deviate from cost and the latter will have no significance. Market value is supposedly a more appropriate measure of the decline in service value and hence, for user cost calculations.

Where book value is solely determined on the basis of purely accounting concepts, the user cost of a given asset will generally have no relation to its book value especially under variable conditions. An asset may have a substantial book value and still have a zero user cost. On the other hand, a zero book value is not an indication of a zero user cost. Factors such as the availability of current and future utilization alternatives, effect of current utilization on availability of future service, the degree of expected long run capacity utilization, and not the book value of an asset, determine the appropriate amount of user cost. Consequently, the depreciation rules given in the UARUS cannot be justified on the

⁴⁷See Lewis, op. cit., pp. 41-43.

basis of user cost calculation. Obviously, the user cost of two similar assets under similar conditions should be the same regardless of the fact that one of them is fully depreciated and the other is not.

b. Maintenance of the Productive Capacity of Capital

Intact: This concept of capital maintenance has been chosen here as a working criterion because, as was mentioned before, the UARUS states that the objective of the account "provision for rising prices of assets" is to maintain the productive capacity of invested capital intact. This provision was mainly intended to retain a proportion of profits available for distribution such as, if accumulated during the asset life along with depreciation, will provide enough funds to acquire the needed replacement. This proportion was set by the Prime Minister's decree No. 958 for 1967 at 5 per cent of profits available for distribution. The basis on which this proportion was determined is not known to the author therefore, its adequacy for the purpose intended cannot be ascertained.

Apparently a secondary objective of this provision was to provide a credit side for the entry recording depreciation on fully depreciated assets. The main reasoning that lies behind this treatment is to escape

the dilemma of having a negative asset on the balance sheet if the regular depreciation allowance would accumulate amounts higher than the book value. One other reasoning, and perhaps more important, can be made: the generally accepted accounting treatment in this case would be to estimate the useful life remaining in the asset after it is fully depreciated, restate its book value proportionally by debiting the allowance for depreciation and crediting a capital account, and then reaccumulate the allowance to match the original book value at the expiration of the extended life through annual depreciation charges. But since the final effect would be on depreciation expense and the appropriate capital account, then the adjustment would be considered appropriate if it is made directly to these accounts. This line of reasoning would be plausible if the depreciation charge is determined on an actual estimate of the extended life.

Under the UARUS, depreciation charge on fully depreciated assets is assumed to be automatically 75 per cent of the charge on not fully depreciated assets. This would mean an increase in the useful life of the asset by one-third of its original estimated life. Of course, there is no guarantee that every asset which will be used after it is fully depreciated will survive for such an extended period. It is not even possible to ascertain that all assets used after their being fully depreciated will provide an average of extended life equal to one-third

of the original estimated average life. In addition, if we assume a normal distribution of the length of the proportions of extended economic life such as to render a mean of one-third of the original mean to the whole economy, there is no guarantee that such distribution will be representative for each industry separately. What will actually happen is that some assets may remain useful for twice or three times as long as their original estimated life, while others will remain useful for a very small proportion beyond their original life.

The longer the asset lasts, the greater the sum of annual depreciation charges. For an asset purchased new which lasts for 120 per cent of its original estimated life the sum of depreciation charges would amount to 115 per cent of its original cost, while if the same asset lasts for 200 per cent of its original estimated life, the sum of depreciation charges would amount to 175 per cent of its original cost. No reasonable argument can be maintained to the effect that the productive capacity of capital invested in the asset will be equally maintained to the same degree under both conditions. The proportions for assets purchased used will, of course, be different. Objections based on the resulting distortions of the price mechanism and asset values in the balance sheet discussed earlier are applicable here.

4.3.2: Depreciation Rates Under the UARUS:

In Table 4 a comparison of depreciation rates in the UARUS is made against those allowable for tax purposes in the U.S. and those allowable in the USSR. The first thing to be noted is the similarity in the detail of the rates given by the UARUS and those of Bulletin "F". Unlike the USSR rates and the U.S. 1962 revision, which gives composite rates for very broad groups of assets without going into much detail, the UARUS and Bulletin "F" each goes into great detail giving specific rates for specific assets within each industry. The second thing to be noted is that the USSR overall rates are divided into two subrates, one for capital replacement (C/I) and one for capital repair and maintenance (C/R). In the UARUS depreciation rates are intended only to recover invested capital and another capital repair and maintenance allowance is provided to equalize maintenance and repair cost throughout the economic life of the asset. No specific rates are given for this latter allowance and are left to the discretion of each economic unit. Neither are the U.S. rates intended to cover any repair or maintenance costs. The logical comparison, therefore, should be based on the USSR subrates for capital replacement and not on the overall rates.

While the table generally indicates that the UAR rates are usually higher than those given by Bulletin "F" and the USSR rates for capital replacement, it also

TABLE 4.--Comparative Depreciation Rates in the UAR, U.S.A. and USSR for Selected Industries.

Machinery and Equipment of Industry Group	UAR	USA		USSR					
	1967	Bulletin "F" 1942	1962	Until Dec. 1962			1963		
	%	%	%	Overall	C/I	C/R	Overall	C/I	C/R
<u>Chemical Industry:</u>	NA	NA	9.0	5.9	3.2	2.7	7.4	3.7	3.7
Soap	6.0	5.0							
Acids	7.5	6.7							
Alkaline products	5.5	4.5							
.									
.									
<u>Iron and Steel:</u>	5.0	4.0	5.5 ^a	5.5 ^a	3.1 ^a	2.4 ^a	7.2 ^a	3.6 ^a	3.6 ^a
Annealing Furnaces	5.0	4.5							
Blast Furnace	5.0	4.0							
Heating Furnaces	6.0	5.0							
.									
.									
<u>Paper Industry:</u>	NA	NA	6.25	6.7 ^b	2.4 ^b	4.3 ^b	6.7 ^b	3.6 ^b	3.1 ^b
<u>Pulp:</u> Ground Wood	5.0	4.5							
Rag	6.0	3.6							
<u>Paper:</u> Newsprint	6.5	5.5							
.									
.									
<u>Rubber Industry:</u>	6.5	5.9	7.0	6.7 ^b	2.4 ^b	4.3 ^b	6.7 ^b	3.6 ^b	3.1 ^b
<u>Textile Industry:</u>			7.0	6.7 ^b	2.4 ^b	4.3 ^b	6.7 ^b	3.6 ^b	3.1 ^b
Cotton, Wool, or Silk:	5.0	4.0							
Rayon	6.5	6.25							
<u>Tobacco Products:</u>	6.5	5-6.6	6.6	6.7 ^b	2.4 ^b	4.3 ^b	6.7 ^b	3.6 ^b	3.1 ^b

NA: Overall rates not provided

a: Rates are for Ferrous Metallurgy only.

b: Rates are those provided for light industries.

Source: UAR rates are from Appendix 1, Vol. II of The Uniform System, U.S. rates for 1942 are computed from composite lives given in Bulletin "F" of the Internal Revenue Service as partially reproduced in Appendix C of Grant and Norton, op. cit., U. S. rates for 1962 are computed from composite lives of the Internal Revenue Service's "Depreciation Guidelines and Rules," Commerce Clearing House, Standard Federal Tax Reporter 1968, Vol. 2, The USSR rates are from P. Bunich "The New Depreciation Allowance Rates and Control Over Their Application by Financial Agencies," Finansy SSSR, 1963, No. 2 as translated and reprinted in Problems of Economics (March 1964, pp. 36-42).

indicates that they are generally lower than the rates of the U.S. 1962 revision. The USSR rates are maintained to be "always far too low as an estimate of capital consumption. This is acknowledged by the Russians themselves . . ."48 The system of depreciation which existed before 1963 in the USSR came into being in the thirties. Bunich describes the system and its shortcomings in the following:

In 1930 the Supreme Council of National Economy adopted depreciation rates that were differentiated according to types of fixed assets and branches of industry. In 1939, on the basis of these rates, there were computed mean depreciation rates for the various people's commissariates. These rates were the first to include a separate one for capital repairs. Subsequently, the depreciation rates changed mainly in the course of reforms of wholesale prices (this chiefly applies to the rates for capital repairs, the mean rate as a whole remaining stable).

Such a depreciation system had a number of shortcomings. The mean rates dominated the differentiated ones and, as a rule, failed to reflect changes in the structure of the fixed assets. Depreciation rates did not correspond to many types of new fixed assets and did not take into account the wear and tear of equipment. All this made it necessary to work out new rates that would assure the reproduction of fixed assets on the basis of modern technology.⁴⁹

The new USSR rates are significantly higher than the old rates though subrates for capital replacement are still far below those of the U.S. Bulletin "F". The new rate for capital replacement for the fixed assets of the USSR national economy (without collective farms) is 3.2 per

⁴⁸Campbell, op. cit., p. 75.

⁴⁹Op. cit., p. 37.

cent as compared to the old rate of 2.1 per cent, but still far lower than the rates of Bulletin "F" which are on the average higher than 5 per cent.

In 1962, the Treasury Department of the United States moved to shorten the lives on depreciable assets to permit faster write-offs and speed replacement. The new lives are significantly shorter than those given in Bulletin "F". Although rates given by asset lives of Bulletin "F" were minimums, by 1962 from one-quarter to one-third of the U.S. manufacturing facilities were economically obsolete. William Hogan⁵⁰ cites the McGraw-Hill survey of industrial obsolescence as showing that as of December 1961, 24 per cent of manufacturing capacity in the U.S. was installed before the end of 1945. The range varied between 8 per cent for Autos and Trucks to 39 per cent for Railroads. Perhaps this was the main reason inducing the Treasury to shorten the lives of depreciable assets in 1962.

Even though economic lives in the 1962 U.S. depreciation guidelines are relatively shorter (about 20 per cent shorter on the average), they are still longer than most representative tax lives in other countries. Representative average tax life in Canada, France, West Germany, Italy, and the Netherlands for depreciable assets is ten years while in the U.S. with the new depreciation guidelines

⁵⁰Depreciation Policies and Resultant Problems,
Studies in Industrial Economics No. 8 (Fordham Univ. Press,
1967), pp. 19-21.

it is about twelve years (prior to 1962 it was fifteen years in the U.S.).⁵¹ In addition these countries allow the recovery of 81 per cent of the initial investment on the average in the first five years of economic life while with the U.S. new guidelines only about 60 per cent can be recovered in the first five years. According to the UARUS only 35 per cent of initial investment can be recovered in the first five years for assets purchased new. This is shown in Table 5.

A comparison of Table 2 and Table 5 reveals the fact that all countries with the exception of the UAR and the USSR satisfy the Terborghian criterion of at least 50 per cent write-off of initial investment in the first third of economic life and at least two-thirds write-off in the first half at a discount rate of 5 per cent or higher. Even in the case of the United Kingdom where the representative economic life of twenty-seven years is about double that of the UAR, 64 per cent of initial investment can be recovered in the first five years as compared to about 35 per cent of the UAR and to the 16 per cent of the USSR. The reason for the failure of the UAR and the USSR systems in satisfying the Terborghian criterion is not only due to the deficiency of the depreciation rates but also due to the straight-line method of allocation. Given the same economic life, a depreciation method based

⁵¹Ibid., Table 11, p. 52, reproduced below.

TABLE 5.--Comparison of Depreciation Deductions and Initial Allowances and Representative Tax Lives for Selected Countries.

Country	Representative Tax Lives in Years	Depreciation Deduction, Initial and Investment Allowances as a Percentage of Cost of Assets		
		1st Year	1st Two Years	1st 5 Years
Belgium	8	22.5	45.0	92.5
Canada	10	30.0	44.0	71.4
France	10	25.0	43.8	76.3
West Germany	10	20.0	36.0	67.2
Italy	10	25.0	50.0	100.0
Japan	16	43.4	51.0	68.2
Netherlands	10	26.2	49.6	85.6
Sweden	5	30.0	51.0	100.0
U. K.	27	39.0	46.3	64.0
U. S.	12	16.7	30.6	59.8
U.A.R.*	14	7.0	14.0	35.0
U.S.S.R.**	31	3.2	6.4	16.0

*Estimated from depreciation rates given in Appendix 1 of the UARUS.

**Estimated on the basis of the 3.2% average straight-line rate for the whole U.S.S.R. economy as cited in the text above.

Source: All figures except those for U.A.R. and U.S.S.R. are prepared by the Office of Financial Analysis, U.S. Treasury Department and contained in "State of the Economy and Policies for Full Employment," Hearing Before the Joint Economic Committee, Congress of the United States, 87th Congress, 2nd Session August 17, 1962, p. 670, reproduced in Hogan, op. cit., p. 52.

On double the straight-line rate on declining balance would, in the case of the UAR, result in 52.7 per cent recovery in the first five years and about 65 per cent in the first seven years which approximately satisfies the Terborghian criterion. The same method would result in about 49 per cent recovery of initial investment in the first ten years (about one-third of the representative life) in the USSR as compared to 32 per cent on the straight-line basis.

There is no reason to believe that industrial fixed assets in the UAR depreciate less than in any of the countries cited in the table above. Actually a good argument can be made to the contrary in spite of the fact that Egypt is a socialist planned economy, while most of these countries are representatives of more or less free market economies. This argument can be based on both theoretical as well as practical grounds. On theoretical grounds, it can be argued that one of the most important objectives of economic planning is to eliminate excessive idle capacity of fixed capital by eliminating its causes. The most important cause of idle capacity is the business cycle, whether short or long. The ability of planned economies to reduce the effects of cyclical fluctuations can be theoretically established as being far more superior than the ability of free market economies. Now, if the economic life of the existing stock of fixed assets can be assumed as being a function of the rate of utilization (a plausible

assumption) then the higher the rate of full capacity utilization, the shorter the economic life and vice-versa. Accordingly, a shorter economic life for the same asset in Egypt (a planned economy) would be expected than in the U.S. (a free market economy). On practical grounds, it can be established that the efficiency of assets repairs and maintenance in a less developed country like Egypt is inferior to that of far more developed countries like the U.S. or France. Given the fact that the economic life of any given asset is definitely a function of the efficiency of its repair and maintenance, it would be expected that such economic life would be shorter in Egypt than in the U.S. or France. Therefore, it can be concluded that compared to other countries, depreciation under the UARUS is far less efficient in reflecting the normal pattern of expected value erosion. This deficiency appears to be mainly due to the depreciation method, though enforced by the low level of depreciation rates permitted.

4.3.4. The Judgment Criteria and Depreciation Under the UARUS:

Up to this point there has been no discussion concerning the allocation base, that is, the amount to be allocated. Under the UARUS the allocation base is historical acquisition cost. The system, however, recognizes the deficiency of historical cost under conditions of rising prices and requires that an appropriation of profits should be made to provide for the difference between

historical cost and expected replacement cost of assets. The objective of such a requirement is stated in the system so as to maintain the productive capacity of invested capital.⁵² As stated previously, a Prime Minister's decree of 1967 sets this appropriation at a rate of 5 per cent of profits available for distribution. There are many objections to this treatment. These objections will be discussed before considering depreciation treatment as a whole in the UARUS against the judgment criteria developed in Chapter II above. The first objection concerns the misstatement of depreciation cost and asset values; the second concerns the possible discrimination and inconsistencies that can be created by the 5 per cent profit appropriation.

A. Depreciation Cost and Asset Values: According to the UARUS, depreciation cost for purposes of internal calculations and external reporting is based on historical acquisition costs of fixed assets. Under conditions of rising prices (which are expected to continue in the UAR mainly due to inflationary investment financing), depreciation cost will be understated even though the depreciation method and the mode of its application were efficient. This will result in an overstatement of profits and a bias of the efficiency indices based on it. This bias will be further enforced by the understatement of fixed assets in

⁵²Op. cit., p. 112.

the statement of financial position. The age distribution of assets operated by different economic units will play an important role in determining their apparent efficiencies in resource utilization. A newly established firm with superior low cost technology may appear as productively inferior to an old firm that operates an old combination of assets with a much higher cost of production, mainly because the depreciation charge of the former is based on the high current value of assets as compared to the low acquisition cost of assets operated by the latter. Assume for example two firms, A and B, each having the same machine. Firm A acquired its machine two years ago for \$10,000 and Firm B acquired its machine seven years ago for \$5,000. The two machines when new were identical. The depreciation rate is 10 per cent and each firm earns the same amount of revenue, namely, \$2,000. All other costs except depreciation are \$600 for A and \$800 for B, the difference being due to maintenance and repair cost. The results for the two firms would appear as follows:

	<u>Firm A</u>	<u>Firm B</u>
Revenue	\$2,000	\$2,000
Cost other than depreciation	\$ 600	\$ 800
Depreciation	<u>1,000</u>	<u>500</u>
Total Cost	<u>1,600</u>	<u>1,300</u>
Profit	<u>\$ 400</u>	<u>\$ 700</u>

Firm B will appear more efficient in comparison to Firm A, even if the amount of invested capital was the same for the two firms. Adding the effect of the understatement of capital in Firm B, its apparent efficiency will increase. Yet in real terms, Firm A is far more efficient. In real terms, given the base year of Firm A, Firm B's profits would fall to 50 per cent of those of Firm A. This is due to the fact that depreciation charges of Firm B on current prices would amount to \$1,000. When adding the correction for real invested capital, Firm B's efficiency will be reduced far more.

In short, even if replacement of fixed assets can be provided for through an adequate scheme of profit retention, depreciation based on historical cost will destroy the usefulness of two important efficiency indices. The rate of return index will be extremely biased in favor of firms operating relatively older combinations of fixed assets, and the comparability index will be biased in favor of the same firms. Other deficiencies will be discussed in the context of the judgment criteria.

B. The Rate of Profit Appropriation: The analysis will proceed on the basis of the objective of providing for the difference between acquisition cost and expected replacement cost of the same capacity. Two issues can be raised against the procedure followed. First, the treatment of the difference as an appropriation of profit rather than as a charge against it, is theoretically

incorrect. From an economic point of view the difference between historical cost and replacement cost is as much a measure of capital consumption as the depreciation charge based on historical cost. Actually the most important objective of depreciation calculation from a macro-economic point of view is to measure the current value of capital consumed in the current process of production. This objective is important to determine which portion of gross investment goes for new capital addition and which portion goes for old capital replacement. The accurate determination of these proportions is very important for the objectives of both macro and microeconomic projections and macro and microeconomic planning, especially in a planned economy. Of course, it may be maintained that for these purposes a simple addition of the depreciation charge and the 5 per cent profit retention can be used as a measure of the current value of capital consumption. This would be correct only if the amount of profit retention is exactly equal to the difference between depreciation based on current replacement cost and historical acquisition cost. But, even if this was the procedure actually followed, no profits can be retained unless there are profits to be retained, and there is no assurance of such an effect.

Therefore, it is much more appropriate to treat the difference as a charge against revenue rather than an appropriation of profits.

The second objection is based on the uniform rate of profit retention of 5 per cent. A simple example will demonstrate some of the points involved. Assume two firms, A and B, each owning identical machines. A acquired its machine at the beginning of year one for \$5,000 and B purchased its machine at the beginning of year three for \$7,500. The historical pattern of costs other than depreciation and revenue is the same for the two firms. Each machine is estimated to have a five-year life. Table 6 shows accumulated depreciation and the 5 per cent accumulated retained profit for each firm.

The following conclusions are drawn from many examples of which Table 6 is one:

1. The higher the proportion of the book value of depreciable fixed assets to the book value of total assets, the lower the proportion of retained profits to the book value of depreciable assets, other things being equal. This will be true regardless of the rate of price increase. However, given the same rate of price increase and maintaining other things equal, the equality of the proportion of retained profit to the book value of depreciable assets of various firms is one prerequisite for satisfying the objective of providing for the difference between acquisition cost and replacement. The second prerequisite is that the amount of retained profit should be exactly equal to that difference. This amount, however, is a function only of net profit according to the UARUS and since net

TABLE 6.--Accumulated Depreciation and Accumulated Profits for Each of Two Identical Firms at the End of the Useful Life of Each Firm's Machine According to the UARUS

Year	Revenue		Costs		Accum. Depr.		Profits		Accum. 5%	
	A	B	A	B	A	B	A	B	A	B
1	3000		500		1000		1500		75.0	
2	3000		550		2000		1450		147.5	
3	3000	3000	600	500	3000	1500	1400	1000	217.5	50.0
4	3000	3000	650	550	4000	3000	1350	950	285.0	97.5
5	3000	3000	700	600	5000	4500	1300	900	350.0	142.5
6		3000		650		6000		850		185.0
7		3000		700		7500		800		225.0
Total	15000	15000	3000	3000	5000	7500	7000	4500	350	225

profits will vary in amount between firms, the amount of retained profits will vary and the second condition may not be equally satisfied. This is made perfectly clear in the table above.

2. Other things being equal, firms with a high proportion of depreciation cost to total cost will be always at a disadvantage to firms with a low depreciation cost to total cost as far as providing for replacement through profit accumulation is concerned. This, however, would be a point in favor of the system if the objective was to discriminate in favor of labor intensive industries and against capital intensive industries (an objective which was argued above).

3. Unless the amount of profits available for distribution is at least equal to the book value of depreciable assets, and unless the rate of rising prices of replacement does not exceed 5 per cent, the objective of providing for the difference between acquisition cost and replacement will not be satisfied.

4. The younger the age distribution of depreciable assets of the firm the better the position of the firm as far as providing for replacement through depreciation under conditions of continuous rising prices is concerned.

From the above, it seems more appropriate to make the rate of profit retention a function of the book value of depreciable assets rather than a function of profit. This would overcome one source of deficiency which is the

variation of profits within and among firms. Yet the adequacy of the system would still depend on the sufficiency of each year's profit to cover the needed amount of profit retention unless any deficiency can be carried forward for more profitable years. However, the theoretical objections would still remain.

The analysis in the remainder of this section will concern the adequacy of depreciation treatment under the UARUS for various objectives within the context of the judgment criteria.

1. Relevance and Appropriateness to Expected Use:

The adequacy of the amount of annual depreciation of fixed capital in each economic unit in the UAR economy is a function of three main factors: the depreciation base, the depreciation method and the depreciation rate. A deficiency in any one or more of these renders the depreciation amount inadequate. The degree of inadequacy will vary however from one objective to another and for the same objective under different circumstances. A historical cost base will be adequate for many objectives under stationary conditions. Under variable conditions historical cost is not relevant for any economically sound objective. Even if the objective under these variable conditions was to match costs against revenues, the economically sound cost is current cost and not historical cost. On the other hand, given an appropriate depreciation base, an inadequate depreciation method or a too high or too low depreciation

rate will render the depreciation charge inadequate for many purposes.

For objectives of internal cost calculation on the level of the individual economic unit, depreciation is an uncontrollable element. The depreciation base, the depreciation method, and the depreciation rate are given by the UARUS and are not subject to change by management decisions. If depreciation was also treated as an uncontrollable element on the organization and national levels, no problems with regard to control or performance measurement will arise from possible inaccuracies in depreciation calculation. The organization or the ministry would simply avoid using any performance measurement index that is influenced directly or indirectly by the depreciation charge. But in practice things are not that simple. As has been stated in Chapter II of this study, profit is the most important index that is (or can be) used for the purpose of measurement of the aggregate performance of individual economic units. This was seen to be true in a market economy as well as in a planned economy. Consequently, as long as depreciation is a factor in the determination of net profit, the resulting performance index will be inaccurate if the depreciation figure is inaccurate. Inaccuracy, however, is a matter of degree and if this degree is (or can be made) the same for all economic units in the economy, the resulting partisanship will be substantially reduced. After all, equality of

punishment is more just than inequality of reward. The previous analysis, however, indicated the impossibility of this equality under the UARUS. Depreciable assets operated by various economic units in the same industry differ in many respects as to technical features, operating conditions, age distribution, and time and circumstances of acquisition. These factors make uniformity of depreciation variables extremely discriminatory and misleading. The resulting deception will increase if the depreciation method is inappropriate per se, and if uniformity is extended beyond the limits of single industries. Since these deficiencies are essentially present in the depreciation treatment under the UARUS, we can, therefore, conclude that such treatment is not relevant and is inappropriate for purposes of financial control and performance measurement.

The analysis in this chapter also indicates the inadequate quality and inappropriateness of depreciation treatment for the purpose of measurement of capital consumption. It was pointed out that capital consumption should be measured in current terms and its quantity should correspond to the reduction in the capital value of depreciable assets. Yet the depreciation base under the UARUS is historical cost and the pattern of capital consumption is set on a straight-line basis and both are inadequate. In addition, the depreciation rates were found to be much lower than in other countries despite

indications of the need that these rates should be higher.

As to depreciation as a tool of economic policy, the analysis indicates that its treatment under the UARUS may lead to results the opposite of those desired. It was argued that an appropriate acceleration of depreciation rates is needed on a discriminatory basis for capital and labor intensive industries in the UAR economy. It was also argued that a declining balance depreciation scheme would be more efficient in achieving the desired objectives than a straight-line scheme.

For the purpose of macroeconomic calculations, depreciation figures need to be adjusted for price changes, inadequacy of depreciation rates, and for inadequacies of the depreciation method. Such adjustments can be made on the aggregate level if the discrepancies between various firms and industries are fairly close to a weighted mean. But if this can be made for price changes, it will be extremely difficult with regard to depreciation rates and the depreciation method. It should be easier to make the latter two adjustments on the industry or even the firm level. For doing this, departure from national uniformity in depreciation accounting will be more appropriate. This would provide more appropriate depreciation information for purposes of macroeconomic calculations.

2. Feasibility and Quantifiability: These are generally nonbending constraints here. Actually

depreciation calculations under the UARUS are essentially a mechanical process as far as the individual economic units are concerned. The process of depreciation calculation is time consuming due to the fact that depreciation in most cases is computed for each individual asset (and in many cases to parts of the asset) separately. This is essentially true, in spite of the system's statement to the effect that assets can be classified into horizontal or vertical groups for the purpose of depreciation calculation,⁵³ for two reasons: (1) the depreciation rates given in the system are in most cases specified for individual assets under specific conditions and the system does not provide any clue for the computation of weighted-average rates for groups of assets, and (2) other statements in the system requires that each asset should be treated separately.⁵⁴

3. Additivity: Serious objections can be raised against depreciation treatment in the UARUS on the basis of additivity. The first objection is the well known and amply discussed one of the inequality of the monetary unit of measurement under changing price levels. The importance of the bias introduced by the aggregation of different measurement units will increase as we go from a lower to a

⁵³Op. cit., p. 113.

⁵⁴For example the system requires that the book value of any retired asset not fully depreciated be written off as a loss in the year of retirement (p. 112). This would require the maintenance of separate depreciation calculations for each asset individually.

higher level. The magnitude of the bias can be more easily identified on the level of the individual economic units than on the organization or national level. A uniform index of price changes applied on the organization or national level will not eliminate the bias unless such index is weighted by various value magnitudes to reflect the bias on the level of the individual economic units. These weights can only be determined by investigation on the lowest levels of disaggregation--the level of the individual economic unit. It is, therefore, necessary to correct for price level changes on the level of the individual economic units to eliminate the bias of aggregation and render the figures representing capital consumption on the disaggregate level additive to the aggregate figure. This is necessary if a significant portion of the bias involved is to be eliminated.

The best that can be done to reduce this bias on the aggregate levels is to make the corrections on the level of the organization rather than on the national level. The weighted-average index can then be more easily computed to represent the economic units affiliated to the same organization. However, there will still exist the bias introduced by the process of averaging and weighing and the representativeness of the resulting weighted-average index of different assets of different firms purchased at various price levels. We can therefore conclude that corrections for price level changes on the aggregate level will not

eliminate the bias that renders depreciation figures non-additive. The only practical way to eliminate such bias, or reduce its effect substantially, is to make the necessary corrections on the level of the individual economic units. This is not done under the UARUS.

Another objection against the UARUS on the basis of additivity concerns the discriminatory treatment of capital consumption rates on assets purchased new and assets purchased used. The bias introduced here results from the unequal treatment of the thing we are trying to measure rather than, and in addition to, the bias resulting from the measurement unit itself. If we are trying to measure the current value of capital consumed in the process of production, then it should make no difference whether the asset is purchased new or used as long as it contributes the same amount to the final product for the same period. Assuming that the treatment of depreciation on assets purchased new renders the correct amount of depreciation, then the treatment of depreciation on assets purchased used will definitely result in the incorrect amount. Addition of a correct amount to an incorrect amount renders the aggregate incorrect.

A third objection to depreciation treatment in the UARUS system can be based on the handling of fully depreciated assets. As was discussed before, 75 per cent of the normal rate will not necessarily, if at all, result in the correct measure of the amount of capital

consumption for all fully depreciated but still utilized assets.

In general, the conclusion reached is that the depreciation treatment under the UARUS does not satisfy the standard of additivity. It is expected that the resulting bias would be too significant to be ignored, especially when the aggregate depreciation figures constitute a part of the data used for macroeconomic calculations in a planned economy.

4. Freedom From Organizational Bias: Discussion of additivity clearly indicates the possibility of considerable bias in the measurement of capital consumption under the UARUS. Previous analysis also indicates that performance measurement indices will also be biased generally in favor of less desirable combinations of assets. Old technology may be favored to new technology and the demand for used assets may be expanded on account of the demand for new assets under a full average cost-plus pricing policy. Comparative efficiencies of various economic units will be misleading and misallocation of scarce economic resources may result.

4.4. Concluding Remarks:

One important objective of the UARUS is to provide appropriate data needed for macroeconomic planning and decentralized governmental control over the economic resources of the society. The most important requirements of such needed data are its economic relevance and its

freedom from bias. Depreciation policy influences, as has been shown, both the objectives of broad economic policy and the methods of its realization. Unless the depreciation policy is consistent with the general economic policy, the former will operate as a deterrent to the achievement of the latter's objectives. The conclusion, personally drawn with regard to the UARUS, is that its most important shortcoming is in the general treatment of depreciation. The treatment is not consistent, the method is inferior, and the rates are inadequate. The resulting depreciation policy contradicts the most important (or what should be the most important) objective of surplus agricultural labor absorption in industry. The bias in the aggregate depreciation figure representing capital consumption is too significant to make any calculations based on the net saving proportion reliable. The danger of misallocation of resources will increase if the depreciation charge enters into the process of price determination. Prices will not reflect the relative scarcity of various commodities due to the inaccuracy of depreciation data.

If the shortcomings are to be reduced to a reasonable level, the analysis in this chapter indicates the following:

1. An accelerated depreciation scheme is desirable and is urgently needed. Accelerated depreciation is more in line with the pattern of value erosion of most industrial

assets than straight-line depreciation and the resulting depreciation figure would be closer to the real amount of capital consumption.

2. Corrections for changes in the value of the measurement unit should be made at the level of the individual economic unit before aggregation.

3. Corrections for changes in specific prices of assets should be made directly to the value of assets on the books. Provisions for rising prices of specific assets would therefore become a charge against profits rather than an appropriation of profits.

4. Depreciation of assets purchased new should be consistent with depreciation treatment of assets purchased as used. This requires that the rates on used assets should be proportionate to the remaining useful life of each asset separately. No uniform rate can be applied to assets purchased used with different periods of useful life remaining.

5. An adequate estimate of the remaining useful life of fully depreciated assets should be made on the level of the economic unit and the appropriate amount of book value should be restated on the books. No uniform rate can be applied to various firms and various industries in this connection.

The importance of the objective of providing appropriate data for macroeconomic planning and control will be elaborated in the next chapter. How this objective

can influence the form and detail of financial statements will be treated therein. However, it is believed that the quality of the detail is much more important than the detail itself. Concerning depreciation, its quality under the UARUS seems inferior, and hopefully, it can be improved.

CHAPTER V

THE ACCOUNTING MESSAGE:

ITS INTENT AND CONTENT

5.1. Introduction:

In the second chapter of this study it was emphasized that the ultimate objective of accounting is to aid economic decision making. This is achieved by providing information which is mostly quantitative regarding the decision variables under consideration. Accordingly, accounting can be considered a communication process the object of which is to transmit informative messages about some part or the whole of the economic environment to actors acting in promotion of their goals in it. Accounting messages in this regard can be divided into two groups: special purpose messages and general messages. The first group includes all special purpose reports addressed to specific groups either inside or outside the economic entity under consideration and are mostly considered in the domain of managerial accounting. The second group includes mainly what is known as financial statements. These are supposed to serve a multiplicity of objectives and a variety of interest. The lasting traditional purpose of such

statements is to give as complete as possible a picture of the economic condition of a given economic entity at a moment of time and its economic performance over a past period of time. The intent of this group of accounting messages can be described by the phrase "to whom it may concern."

This chapter undertakes to examine this group of accounting messages--financial statements--to reveal the effects of variations in the economic organization of the society on the intent and content of such messages. The main subject of examination is the UARUS' prescribed set of financial statements relative to the organization of the Egyptian economy. Comparisons with other countries will be made to the extent necessary to illuminate the subject. The prime emphasis will be directed to the objectives and content of these statements, though a brief description of their form will be given. A complete set of financial statements in the form prescribed by the UARUS is given in the appendix to this chapter.

.2. The Accounting Message Under the UARUS:

The system requires every economic unit to prepare at a predetermined date six end-of-the-period accounting statements:¹ (1) a balance sheet, (2) a sources and uses of capital funds statement, (3) a current operations account, (4) a production and trading account, (5) a profit

¹(CAA), The Uniform System, p. 124.

and loss account, and (6) a cash budget. The system also prescribes the form and content of these accounts and statements.² The first five of these will be examined in the order stated above.

5.2.1. The Balance Sheet:

Akin to that in the United Kingdom, the balance sheet in the UAR was usually issued, before the Uniform System, in an account form. Assets were listed on the right side and equities on the left side. The order of items was similar to that followed by most European countries and the United States Public Utilities, i.e., on the asset side, fixed assets first, followed by investment and current assets; on the equity side, capital, provisions and surplus first, followed by long-term debt and current liabilities. Allowances were sometimes presented as contra to the appropriate assets and, at other times on the equity side following provisions.³ The Uniform System did not depart from this form of presentation except for allowances which are to be uniformly presented on the equity side following provisions.

The analysis in this section will deal with two main questions: (1) what is, or should be, the purpose of the

²Ibid., pp. 126-157.

³For various forms of financial statements presentation in European and other countries see, AICPA Committee on International relations, Professional Accounting in Countries (New York: AICPA, 1964), especially the appendix.

balance sheet in a planned economy and, (2) what should the balance sheet contain to satisfy this purpose? After examining these two questions, the balance sheet in the UAR will be evaluated.

A. Purpose of the Balance Sheet:

Forty years ago Professor Canning stated that "Every writer on accounts and every accountant asserts that the balance sheet is intended to reflect the 'financial position' or 'financial condition' of the enterprise reported on."⁴ This assertion is still being made today. But according to Canning, "a 'position' to be 'financial' must, therefore, be a position with respect both to fund procurements and to fund distributions"⁵ that are expected to occur sometime in the future. This is closely akin to Professor Chambers' definition of financial position as:

The capacity of an entity at a point of time to engage in indirect exchanges; it is represented by the relationship between the monetary properties of the means in possession and the monetary properties of the obligations of an entity.⁶

This definition is by far more illuminating than that presented by the AICPA's Committee on Terminology which defines the balance sheet as:

A tabular statement or summary of balances (debit and credit) carried forward after an

⁴Economics of Accountancy (The Ronald Press Co., 1929), p. 179.

⁵Ibid., pp. 181-82.

⁶Op. cit., p. 101.

actual or constructive closing of books of accounts kept according to principles of accounting.⁷

Chambers' definition is functional; that is, it gives the purpose and intention of the balance sheet. It contains economically significant implications to this analysis which the Committee's definition does not contain.⁸

In the second chapter of this study, it was emphasized that accounting information in a planned economy is intended to serve more definite groups with more precise objectives than in a market economy. On the basis of this previous analysis, this writer will attempt to state what are, or should be, the objectives of the balance sheet in a planned economy.

1. The balance sheet should reflect in an economically significant manner various groups of economic resources under the control of the economic entity reported upon. This can be achieved by segregating those resources that cannot be shifted to employment in alternative opportunities and those that are, or can be made, available for employment in alternative opportunities.

⁷Accounting Terminology Bulletins (New York: AICPAs, 1961), p. 12.

⁸Chambers' definition is consistent with Tatur's statement of the objectives of accounting in a planned economy:

- a. To reflect the value of the enterprise's sources and resources and the results of the work done.
 - b. Furnishes control over the plan quotas.
 - c. Functions as a major source of information for working out long-term plans covering specific periods.
- ergei Tatur "The Organization of Accounting in the Soviet Union," The Accountant Magazine (May, 1959), p. 378.

Another way of providing economically significant information is to show both the liquidation value and the running value of resources under the control of the enterprise. Liquidation value is used here to mean the current cash equivalent of all resources under the control of the enterprise, if these resources were to be sold at the date of the balance sheet or in a short period thereafter. The running value is here defined as the current value of replacement. The difference between the two values is sunk cost; that is, cost not escapable by liquidation. This segregation and/or multiple valuation will reflect the degree of flexibility available for national planners for resource shifting from one enterprise to another and from one industry to another. In addition an approximate criterion for resource reallocation can be based on this information. If the expected value added by employing the liquidation value in an alternative opportunity was found to be higher than the expected value added by continuing the enterprise, it will be worthwhile to explore the opportunity.

2. The balance sheet should reflect the value of economic resources under the control of the economic unit in such a way as to facilitate the computation of the following ratios in addition to the conventional ratios:

- a. Capital-output ratio: This is to be defined as the average annual sum of gross fixed and current capital divided by the annual amount of gross output.

- b. Fixed capital-output ratio: This is to be defined as the average annual amount of gross fixed capital to the annual amount of gross output.
- c. Incremental-capital output ratio: This is to be defined as the average annual amount of increase (or decrease) in total capital to the annual amount of increase (or decrease) in gross output.
- d. Incremental-fixed-capital output ratio: This is to be defined as the average annual amount of increase (or decrease) in fixed capital to the annual amount of increase (or decrease) in gross output.

The importance of these ratios for the purpose of control over efficient employment of capital is beyond dispute.⁹

In addition, such ratios are very important for macro-economic calculations for resource allocations.

3. The balance sheet should provide a budget achievement report on the structure of the economic resources controlled by the economic entity reported upon. Disclosure of budgeted amounts for various items on the balance sheet can achieve this objective. There is a current trend in

⁹See for example, P. Bunich, "Planning Indices and Economic Incentives for Effective Utilization of Fixed Assets," Voprosy ekonomiki, 1964, No. 6. Reprinted in English in Problems of Economics, VII (April, 1965), pp. 35-48, and "Economic Stimuli to Increase the Effectiveness of Capital Investment and the Output-to-Capital Ratio," Voprosy ekonomiki, 1965, No. 12. Reprinted in English in Problems of Economics, IX (Sept., 1966), pp. 37-49, and T. Machaturov, "Raising Investment Efficiency, and the Scientific Grounds for its Determination," Voprosy ekonomiki, 1966, No. 2. Reprinted in English in Problems of Economics, X (Nov., 1968), p. 3, and P. A. Malyshev "The Capital-Output Ratio and the Rate of Socialist Accumulation," Voprosy ekonomiki, 1965, No. 1, Reprinted in English in Problems of Economics, VIII (Sept., 1965), pp. 27-34.

the accounting profession in the United States advocating such budgetary disclosure.¹⁰ Its importance for exercising control over economic resources in a planned economy is by far greater than in a market economy. Central planning and control in the former and the absence of management self-centered urge for profits requires more effective controls on management performance. Budgetary disclosure will render the balance sheet dynamic by showing the goals as well as the results of efforts spent in their achievement.¹¹

Those objectives are in addition to the balance sheet's traditional objective of showing sources and resources of the economic entity reported upon at a point of time.

B. The Balance Sheet Content:

To achieve these objectives, it is proposed that three amounts would be shown for each item on the balance sheet: (1) the item's current cash value, (2) its running value, and (3) its budgeted value.

1. Current cash value: This is equal to the current cash equivalent of the item under question if it is to be

¹⁰See W. W. Cooper, N. Dopuch, and T. F. Keller, "Budgetary Disclosure and other Suggestions for Improving Accounting Reports," Accounting Review, XLIII (Oct., 1968), pp. 640-647, and Yuji Ijiri, "On Budgeting Principles and Budget Auditing Standards," Ibid., pp. 662-667.

¹¹For more discussion of the concept of a "dynamic" or "results" balance sheet see Eugene Schmalenbach, Dynamic Accounting (London: Gee & Company, 1959), Chs. II and III. Schmalenbach, however, did not introduce the concept of budgetary disclosure in his analysis.

exchanged for cash at the date of the balance sheet or shortly thereafter. This is what Professor Chambers proposes to be "the single financial property which is uniformly relevant at a point of time . . . for the purpose of adaptation".¹² It shows the opportunity cost of resources available for employment by the entity reported upon and which can be availed for employment by other entities. Either an asset can or cannot be used in alternative employments; accordingly, it will or will not have an opportunity cost. Either a liability can or cannot be paid currently with or without advantage and accordingly, such advantage or disadvantage will be apparent. In short, this type of information is very important for resource reallocation. Edwards and Bell describe the implications of this method of valuation to the balance sheet in the following:

All assets and (liabilities) held at the beginning of the fiscal period must be valued at the opportunity cost of those assets (and liabilities) on that date. The gains resulting from all prior production moments and holding intervals (less dividends plus new contributions to capital) are included in the net assets shown on this balance sheet. These values represent the amount which the firm is risking in the succeeding fiscal period. The values recorded at the end of the fiscal period will reflect the opportunity costs prevailing at that time.¹³

The current cash value concept of asset valuation is consistent with the criterion developed in Chapter II. Its relevance and appropriateness to expected use are

¹²Op. cit., p. 92.

¹³The Theory and Measurement of Business Income, p. 87.

unquestionable especially in a planned economy.¹⁴ It is economically feasible and objective in nature as was demonstrated in Chapter III.¹⁵ It is also quantifiable, additive in quality, and free from organizational bias. Its disclosure will be significant for purposes of economic resource allocation and reallocation.

2. The running value: This is defined as the cost currently of acquiring the same asset under consideration. It is based on the assumption that the firm's operations are continuous in the future beyond the point at which the services of assets already on hand will expire. It is consistent with the accounting postulate of a going concern. Its relevance as far as allocative decisions are concerned is limited to the long run. For short run allocative decisions, the relevant value is current cash value since it reflects the opportunity cost of resources on hand in the short run. The running value reflects long run opportunity costs on the basis of the assumption that the decision to continue the firm's operations is economically justified. That is, employment of resources held by the firm is expected to continue being more profitable than would be expected in the best alternative.

The running value is the most appropriate base for the measurement of the long run efficiency of the firm.

¹⁴See Chambers, op. cit., Ch. 9 and Edwards and Bell, Ibid., Ch. III.

¹⁵Also see Edwards and Bell, Ibid., p. 81.

Given the average running value of operating assets at the beginning and at the end of the period, the current operating profit index can be constructed (in terms of a rate of return on operating assets). Comparison of this index for various firms within the same industry and among industries will show the relative efficiency of various firms and industries in employing the economic resources of the society. Also, given the running value, various assets can be grouped in such a way as to facilitate the computations of various capital output ratios previously described.

Disclosure of the running values of various assets owned by different firms will enable comparisons that may lead to normative distribution of resources between various types of assets. This will provide a significant control mechanism on employment of economic resources and the discovery of excessive and unproductive investment. This control via normative ratios of asset groups to total assets is described by an eminent Egyptian accountant as follows:

Whereas such studies are undertaken in capitalist countries on the firm level, its importance under Arab Socialism is much deeper and more effective. It not only enables the analysis of the results on the firm level, but also facilitates various studies on the General Organization level, that will lead to various norms which can constitute an optimal framework for distribution of sources and resources.

It will also facilitate efficient planning and provide an effective control yardstick for the Organization over affiliated companies.¹⁶

3. The budgeted value: This is defined as the normative amount of various assets necessary to carry on the expected level of productive activities of a given

¹⁶Taher Ameen, "Valuation of Capital Owned by General Organizations," Economic Alahram, No. 254 (March 15, 1966), p. 295, (in Arabic, my translation). Professor Ameen's recommendations are based on a study undertaken by him of ratios of various asset groups to total assets of each of five textile companies before and after revaluation for purposes of the Presidential Decree No. 1025 for 1962 concerning the determination of capital share owned by General Organizations in affiliated companies. The following table shows these ratios.

Ratios of Asset Groups to Total Assets Book Value and Revaluation Results as of the Date of Revaluation, June 30, 1962.

Asset Group	Firm 1		Firm 2		Firm 3		Firm 4		Firm 5	
	Per Books	Reval-uation	Per Books	Reval-uation	Per Books	Reval-uation	Per Books	Reval-uation	Per Books	Reval-uation
	%	%	%	%	%	%	%	%	%	%
Fixed Assets	5.2	50.0	31.3	44.5	28.5	42.3	35.4	46.3	23.7	34.1
semi-fixed										
Assets	4.8	2.4	8.3	6.6	6.7	4.3	8.7	7.1	3.1	2.7
Inventories	47.3	26.0	36.2	29.6	33.8	29.9	24.5	20.9	24.1	20.9
Cash	9.7	4.9	.2	.1	2.2	1.7	.3	.3	4.7	4.1
Receivables and Other Debtor Balances	33.0	16.7	24.0	19.2	28.8	21.8	31.1	25.4	44.4	38.2
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Ibid., pp. 294-95.

economic unit for the period reported upon at current prices of replacement. Inter-firm and inter-industry comparisons of preferred asset ratios and idle capacity reports should be helpful in the determination of such values. Such norms would be important for the purposes of exercising control over excessive amounts of various types of assets especially those that are mobile and can be transferred to alternative employments. With regard to fixed assets, the norms will enable the discovery of concealed idle capacities and induce innovations for their more efficient utilization. In addition, such norms would facilitate the planning process and reduce inefficiencies in the allocation of resources to fixed investment.¹⁷

C. The Balance Sheet in the UARUS:

The objective of the balance sheet according to the UARUS is to "clearly present the financial position of the economic unit"¹⁸ reported upon at the reporting date. This is the same objective concurrent in the capitalist economies of the United States and other countries. But as we have noted before, for a position of an entity to be financial at any moment of time, it should reflect the

¹⁷In the Soviet economy, disclosure of norms on the balance sheet is only limited to inventories and prepaid expenses. The balance sheet is used as the main tool for exercising control over inventories. See Robert Campbell, op. cit., pp. 196-200. In the UAR, budgeted amounts for the balance sheet items are required to be shown in budget reports required for budgetary planning. The Uniform System, Chapter 4, Vol. I, pp. 159-211.

¹⁸(CAA) The Uniform System, p. 125.

economic value of the entity's resources and sources at that time. Unless the balance sheet information is based on such values (as described above), the probability of achieving its objective will be almost nil.

Asset values according to the UARUS are stated on the balance sheet strictly according to the historical cost rule. Actually, and as has been explained in the previous chapter, once historical cost expires by depreciation, valuable assets may be shown at a zero value on the balance sheet. Does this lead to a "clear presentation of the financial position?" The answer is definitely in the negative. According to the previous analysis in this study historical cost values contain no significance with regard to resource allocation or administration. Historical cost values reflect neither a short run nor a long run view of the financial position of the firm. Accordingly, they are not even necessary for decisions of resource reallocation. If the alternatives are either to continue operations of a given entity or reallocate its resources to another entity, the value of the two alternatives must be known. It becomes necessary to know the financial position in terms of current cash value and in terms of running value. No one single value is a sufficient base for such a decision. In free market economies, owners of economic resources can determine the current cash value of their investment holdings in various firms from current market quotations of prices of securities.

The running value of their investment, which is the other factor necessary for the decision as to buy-sell-or hold, is presumably expressed in the financial reports of the firm. This is the presumption although not the actual case in practice. In centralized economies, where capital resources are owned by the state, conditions for a reliable market of securities do not exist. It becomes necessary to know the current cash value through other alternatives. One such alternative is to present multiple valued statements of financial position expressing both current cash value and running value of the firm.

The question now can be raised as to what purposes, other than to assist in resource allocation and to enable the control of resource management, does the balance sheet serve in a planned economy so as to make historical cost values relevant? The author can conceive of none. Not even a time series of historical cost values seems to be as efficient in predicting the future as the same series expressed in terms of current values. The latter will at least be free from the bias introduced by changing prices.

One point can be made in favor of the Egyptian balance sheet. It contains more details to enable effective analysis than any other balance sheet the author has knowledge about (see the format in the appendix to this chapter). Such details are impelled by the requirements of social accounting and centralized planning. But

as was stated previously, it is the quality of the detail rather than its amount that is of primary importance.

There are some special characteristics of the Egyptian balance sheet which merit mentioning. On the asset side, land is always considered a fixed asset. Before the UARUS, land was treated as a fixed or current asset according to the purpose of its use and the activities of the entity owning it. The treatment accorded land in the UARUS is strictly in line with the point of view of the national economy. It is always a part of the fixed national wealth.

Also, on the assets side, the system separates assets that are not yet used in production due to their still being under construction. This is presumably intended to facilitate control over investment projects and separate currently productive assets from those not currently so. It also facilitates the computation of various capital-output ratios mentioned above. It should be noted, however, that for assets already complete the system does not differentiate between those currently productive and those currently non-productive. Such differentiation is of extreme importance for planning and control.

The system also considers organization cost, expenses incurred before operations, research costs, cost of technical documents, and interest incurred before operation as fixed assets under the title "deferred expenses." Such items were treated as intangibles before the UARUS. The

reasoning behind the new treatment is that such items are in essence a part of national investment contributing to the creation of productive facilities and therefore are considered as fixed assets.

On the equity side a new capital account was created to reflect the amounts of capital contributions repayable to the government. There is also no long term bond financing account since it was replaced by two accounts for long-term foreign and long-term national debts. The forwarded surplus account is not comparable to the retained earnings account. The former as it appears on the Egyptian balance sheet represents the amount in excess of both appropriated profits and profits earmarked for distribution. Profit appropriations are reflected in increases of various provision accounts and profit distributions are reflected in the account "Distributions Payable." See Current rates of profit distribution and appropriation of the UAR firms in the appendix to this chapter.

5.2.2. Statement of Sources and Uses of Capital:

The statement of sources and uses of capital funds in the UARUS system follows closely the balance sheet form and classification.¹⁹ It takes the account form with sources on the left side and uses on the right side. The fund concept on the basis of which the statement is prepared is very broad, thus covering all changes in assets

¹⁹ Ibid., pp. 130-135. The statement is reproduced in the appendix to this chapter.

and equities. Sources of funds are grouped into three main categories: internal financing, liquidity, and capital contributions and loans. Internal financing includes increases in all provisions (appropriated retained earnings), allowances and forwarded surplus, each stated separately. Liquidity includes decreases in inventory (each type stated separately), decreases in long-term lending, investment, debtors and cash. The category of capital contributions and loans includes increases in long-term local and foreign loans, government contributions which are to be paid back, and increases in creditors and banks each stated separately.

Uses of funds are grouped into two main categories: capital investment, and capital transfers. Capital investment includes increases in all fixed asset items except purchase price of land, increases in inventory items, taxes and tariffs on investment, and, projects under completion (excluding purchase price of land). Capital transfers include current purchases of used assets, increases in purchased land, interest accrued before operations, long-term lending, investment in securities, debtors and debtor balances, cash on hand and in bank, forwarded deficit, and decreases in long-term loans, creditor banks, creditors and creditor balances, and decreases in provisions and allowances.

The statement is designed primarily to serve the objectives of national planning and centralized control.

The influence of social accounting categories on the statement is apparent. Examples are:

(1) The distinction between capital investment and capital transfer categories in the statement is dictated by the needs of social accounting. Land improvement is a capital investment adding to the wealth of the society, while purchase price of land is no more than a mere transfer of resources from one economic unit to another resulting in no additions to such wealth. The same is true for purchases of used assets, investment in securities, and increases in accounts receivable.

(2) The separation of taxes and tariffs from the cost of fixed assets and inventory. This is designed for statistical as well as analytical purposes concerning the national financial policy. It also facilitates the computation of incremental capital output ratios that reflect the real cost of capital.

(3) The distinction between internal financing and other sources of funds is designed to facilitate the computation of gross and net savings of the economic unit.

(4) The distinction between local and foreign sources and uses of funds is designed to facilitate control over imports and exports.

The statement leaves the general impression of being satisfactory for the purposes it is intended to serve. In view of the inadequacies of the balance sheet cited above, the sources and uses of funds statements based on

the broad concept of funds as all sources and resources, and containing that much detail is quite helpful in analyzing the activities of the entity and the discovery of its points of strength and weakness. The bias introduced by the inadequacy of the value concept on which the balance sheet amounts are based is substantially reduced in the fund statement. The amounts appearing in the latter are increments of the current year and usually reflect current year prices. Calculations based on such amounts are more accurate and more adequate than those based on the balance sheet figures.

5.2.3. Current Operations Account:

The current operations account is intended to provide a link between social accounting and microaccounting.²⁰ Its intended counterpart in social accounting is the income and product account.²¹ This shows on one side gross national product as distributed between various factor payments, transfer payments, and depreciation, and on the other side gross national expenditures as distributed between sales for various sectors of the economy. The

²⁰Ibid., pp. 136-141. The account is reproduced in the appendix to this chapter.

²¹For a discussion of this account and other social accounting categories see, U.S. Department of Commerce: U.S. Income and Output, A Supplement to the Survey of Current Business, (1958 edition), United Nations; A System of National Accounts and Supporting Tables - Studies in Methods, No. 2 (New York, 1953); and The UAR Ministry of Planning, Framework of the Five Year Plan for Economic and Social Development: July 1960-June 1965 (Cairo, 1964), p. 209-215 (in Arabic).

national income and product account shows only the amounts of value added (that is, it excludes intermediate products to avoid double counting). This, of course, is supposed to be reflected in terms of current values. Let us examine the current operations account.

The account is prepared on three stages. The first stage is intended to show the value of gross product at market prices and its distribution between wages, depreciation, transfer payments and current operations surplus (or deficit). In the second stage the current surplus (or deficit) is adjusted to items of current transfer appropriations and transfer revenues to give the surplus available for distribution or current deficit. In the third stage the surplus available for distribution is distributed between appropriated retained earning items (various provisions) and distributed shares. An examination of some items in each of these stages follows.

1. Revenues from current operations: This is supposed to correspond to the social accounting categories of gross national expenditure. According to the UAR social accounting categories such revenues would be divided into sales to public and private business sectors, sales to the household sector, sales to the public administration sector, and sales to the foreign sector. To these, changes in inventories at market prices would be added and from current inputs of intermediate products would be deducted to give the amount of value added as computed

from the expenditure point of view. The system, however, did not follow this mode of classification. Revenues from current activities are divided into three categories: (1) production at selling prices which includes net sales of finished product, changes in finished product inventory at cost plus the difference between cost and selling prices, changes in unfinished product inventory at cost, works for internal use, revenues from works to others, and service sales; (2) merchandise for sale which includes net sales, and changes in merchandise for sale inventory at cost plus the difference between cost and selling price, and (3) subsidies as divided between production and export subsidies. The following is noted:

- a. The proposed classification does not correspond to social accounting categories. Any argument to the effect that such classification is not economical on the firm level is refuted on the grounds that the system requires that such classification be provided in the form No. 2 (statement of sources and uses of production).²² In addition, the classification of revenues from current operations provided in the current operations account is the same, item and value-wise, as that provided in the production and trading account for revenues from trading

²²(CAA) The Uniform System, pp. 178-179.

activities. The same information is provided in two supposedly different accounts under two different titles. It is not only redundant, but also confusing.

- b. Production and export subsidies are included in the revenues before arriving at the surplus (or deficit) of current operations. Such items are not revenues from current operations but rather transfer payments which do not add to the product of the economy. Its treatment as a determinant of the surplus (or deficit) of current operations becomes, therefore, misleading.
- c. Changes in unfinished product inventories are only valued at cost in contradiction to the rule of valuing production at current market prices. It appears that reasons of practicality are the main factors behind such contradiction.

2. Intermediate products: The system classified intermediate products into commodity requirements, service requirements, and purchases for sale under the heading of general expenses. Unlike the treatment of these items in the production and trading account where they are classified according to production and service activities, no such distinction is made in the current operations account. Such treatment does not correspond to social accounting categories stated above. If these items were classified according to social accounting categories, it would have

been of great help in the construction of input-output tables and interindustry analysis.

3. Rent and interest revenue and expense: Actual

and imputed rent expense and actual and imputed interest expense are charged to the revenues from current operations to arrive at the surplus (or deficit) of current operations in the first stage, while actual and imputed rent and interest revenues are considered a part of transfer revenues in the second stage of the account. Such treatment is inconsistent. What should be done is to separate rent and interest expenses each into two parts. One part representing actual and imputed interest and rent on capital used in the process of current operations should be charged to revenues from current operations in the first stage of the account. The other part representing actual and imputed rent and interest on capital not used in current operations should be charged against rent and interest revenues in the second stage.

4. The valuation differences: The differences

between finished product inventory changes and merchandise for sale inventory changes at cost and at market prices which are considered a part of revenues from current operations on the credit side of the account are cancelled on the debit side of the account. The surplus from current operations is therefore lower than it should be by the amount of holding gains on such inventory changes. This is a departure from social accounting categories

which seem to be intended to make the results reflected by the current operations account consistent with the results reflected by the production and trading account and the profit and loss account.

5. Provision for rising prices of assets: As

was discussed in the previous chapter, this provision is intended mainly to accumulate from profit a provision for the difference between depreciation on a historical cost basis and depreciation on a current replacement basis. It was argued that such treatment is consistent with neither economic nor accounting concepts. Since the current operations account is intended to be based on economic rather than on accounting concepts, depreciation should be based on current replacement values to represent capital values consumed in the current process of production and therefore, correspond to the social accounting category of capital consumption. The account, however, reflects depreciation in terms of historical acquisition cost. It would be, then, more appropriate to add the amount appropriated to the provision for rising prices of assets to the depreciation charges.

The current operations account leaves the general impression of not being as satisfactory as it should be for the purposes it is intended to serve. It is no more than a conventional profit and loss statement containing more unconventional details. These details, however, seem to be unsatisfactory for the purposes

sought. The same details can be obtained with little or no manipulation to the information provided by the production and trading accounts and the profit and loss account prescribed by the UARUS. The current operations account can be of immense analytical importance if it is made to correspond more closely to social accounting categories. An alternative account which the author believes to be more adequate for satisfying this objective is proposed in Exhibit I. Notes regarding it follow:

1. The account adds no new requirements on the accounting systems of economic units subject to the UARUS. All information required to prepare the account is required by the UARUS to satisfy other purposes.

2. The account is prepared from the individual entity's point of view and the titles are accordingly modified. To be used for social accounting analysis, the heading of "Gross Product" in the account is synonymous to "Gross National Expenditure" in social accounting categories, and the heading of "Gross Expenditure" is synonymous to "Gross National Product" in social accounting categories.

3. For purposes of input-output tables and analysis, sectors in the intermediate inputs portion of the account can be classified into more detail than that given in the account.

4. Wages can be classified into cash and non-cash wages to facilitate household demand projections on cash

Account No.	Account Title	Business Sector		Household Sector	Govt. Sector	Foreign Trade Sector	Total	Comparative
		Public	Private					
<u>Gross Product:</u>								
411	Net Sales: Finished Product	xx	xx	xx	xx	xx	xxxx	xxxx
4181	Merchandise	xx	xx	xx	xx	xx	xxxx	xxxx
<u>Changes in Inventory at Market Prices:</u>								
412-413	Finished Product	xx	xx				xx	xx
4182-83	Merchandise	xx	xx				xx	xx
414	Unfinished Product	xx	xx				xx	xx
415-417	Other Services at Market Prices	xx	xx	xx	xx	xx	xxx	xxx
<u>Gross Accounting Production</u>								
		xxx	xxx	xxx	xxx	xxx	xxxx	xxxx
<u>Deduct Intermediate Inputs:</u>								
32	of Commodities	xx	xx	xx	xx	xx	(xxx)	(xxx)
33	of Services	xx	xx	xx	xx	xx	(xxx)	(xxx)
34	of Purchases for Sale	xx	xx	xx	xx	xx	(xxx)	(xxx)
<u>Gross Product</u>								
		xxx	xxx	xxx	xxx	xxx	xxx	xxx
<u>Expenditures and Distributions:</u>								
311-313	Wages			xx			xxx	xxx
353-54	Rent (on Capital Used in Production)	xx	xx	xx	xx	xx	xxx	xxx
355-57	Interest (on Capital Used in Production)	xx	xx	xx	xx	xx	xxx	xxx
3522-28	Depreciation	xxx	xx	xx	xx	xx	xxx	xxx
2641-44	Dividends	xx	xx	xx	xx	xx	xxx	xxx
221-28	Retained Surplus	xxx					xxx	xxx
<u>Total Expenses and Distributions:</u>								
		xxx	xxx	xxx	xxx	xxx	xxxx	xxxx
<u>Other Distributions and Transfers</u>								
369	Taxes on Income				xxx		xxx	xxx
421	Deduct Production Subsidies	(xxx)					(xxx)	(xxx)
368	Taxes on Property				xxx		xxx	xxx
3511	Tariffs				xxx		xxx	xxx
422	Deduct Export Subsidies	(xxx)					(xxx)	(xxx)
3512-14	Other Taxes				xx		xx	xx
X	Rent on Capital not Used in Production			xx	xx	xx	xx	xx
441	Rent Revenues	(xx)					(xx)	(xx)
X	Interest on Capital not Used in Production			xx	xx	xx	xx	xx
442	Interest Revenue	xx	xx	xx	xx	xx	xxx	xxx
364	Capital Losses	(xx)					(xx)	(xx)
443	Capital Gains	xxx					xxx	xxx
365	Expenses of Previous Years	(xxx)					(xxx)	(xxx)
444	Revenues of Previous Years	xx	xx	xx	xx	xx	xxx	xxx
366	Bad Debt Expense	(xx)	(xx)	(xx)	(xx)	(xx)	(xxx)	(xxx)
XX	Other Expenses & Transfers	xxx	xx	xx	xx	xx	xxx	xxx
XX	Other Revenues & Transfers	(xxx)	(xx)	(xx)	(xx)	(xx)	(xxx)	(xxx)
<u>Gross Expenditure</u>								
		xxx	xxx	xxx	xxx	xxx	xxxx	xxxx

goods. Other items of the account are assumed to be valued and treated as was suggested before in this section.

5.2.4. The Production and Trading Account:

This account is intended to show the results of production and trading activities as based on conventional accounting principles. The account is prepared in three stages: the first stage reflects the cost of production during the period; the second stage is supposed to show the results of production activities; and the third stage is supposed to show the combined results of production and trading activities.

Expenses are classified according to nature and according to cost centers. According to nature they are classified into four categories: wages, commodity inputs, service inputs, and current transfer expenses. According to cost centers they are classified into production cost, cost of services for production, and cost of marketing services.

In the first stage unfinished product inventory changes at cost are deducted from the sum of production cost and cost of services for production to give the cost of current production (according to the principles of absorption costing). In the second stage the cost of current production is added to the cost of merchandise for sale on the debit side and matched against net sales of finished product, net sales of merchandise, revenues

from works to others, changes in finished product and merchandise inventories at cost, and revenues from service sales to give what is called "gross production surplus" (or deficit). Also in this stage the difference between cost and selling price of the changes in finished product and merchandise inventories is reflected on both sides of the account.

In the third stage, production and export subsidies are added to gross production surplus (if any) on the credit side and the total is matched against the cost of marketing services (in case of deficit, the amount is stated on the debit side) on the debit side to arrive at the "gross production and trading surplus" or "deficit."

The following points are noted about the account.²⁴

1. Unlike the current operations account, depreciation does not appear in the production and trading account as a separate item of expense. Depreciation is allocated to various production and service centers and included in each center's expense category of "current transfer expenses." This is dictated by the need to classify expenses by cost centers and to avoid redundancy between the two accounts.

2. Inventory valuation differences are stated on both sides of the account as is done in the current operations account. In addition to its being redundant, such

²⁴See format in the appendix to this chapter.

disclosure is of no value since it does not affect the results of the account. If such disclosure is dictated by the needs of the social accountant it should be enough to make it in the account designed to satisfy such needs.

3. The amount designated as "gross production surplus" or "deficit" does not reflect the results of production efforts alone. It reflects the results of both production and selling effort and its designation as production surplus is misleading. It gives the impression that selling efforts are non-productive since the amount of gross production and trading surplus will be always lower than gross production surplus alone unless the amount of subsidies is greater than the amount of marketing expenses. If the selling efforts are really unproductive there should be no need for incurring any expenses on them or otherwise resources would be wasted. If they are productive their productivity should be disclosed to prevent any misconceptions.

4. The treatment of production subsidies in the last stage of the account is misleading. This stage should reflect the effect of selling efforts on the net productivity of the firm. A more adequate treatment for production subsidies is to deduct them from the cost of production sold. Also a more adequate treatment of export subsidies is to add them to net sales. In effect, the third stage of the production and trading account would be combined with the second stage. The result of the second stage

would be designated as "gross production and trading surplus" or "deficit." The designation "gross production surplus" would be, accordingly, deleted. If the separation of production and marketing results is desirable, then total revenues can be apportioned between production and selling efforts according to the method suggested in Chapter III of this study.

5. As was suggested in the balance sheet discussion, disclosure of budgeted amounts of various items in the account would make it a valuable tool for exercising control over the firm's activities. But to be of significant usefulness for planning and control, a product rather than an entity point of view should be the basis for the preparation of the account. The main purpose of the account is to provide a basis for the valuation and control of the firm's activities by the mother organization. Product line reporting is more relevant and significant for such purposes. The needed cost classification and allocation is required by the UARUS to satisfy other purposes.²⁵ The use of this information in product line reporting will provide a valuable tool of control, the benefit of which increases the economic value of information without any significant addition to its cost.

²⁵See Chapter 4 of the Uniform System, Vol. I, dealing with budgetary planning, pp. 159-211.

5.2.5. The Profit and Loss Account:

This account takes over where the production and trading account leaves off. All other expenses and revenues not included in the latter account are included in the profit and loss account. The account is prepared on two stages: the first stage is intended to determine the current surplus or deficit, and the second stage distributes the surplus, if any, between appropriated retained earnings items and between items of distributed earnings. In the first stage two classes of expenses are matched against two classes of revenues in addition to the production and trading surplus or deficit. The two expense classes are cost of administrative and financing services, and current transfer appropriations. Revenues are classified into transfer revenues and miscellaneous revenues. Revenues from investment in securities are stated separately. The result of the matching would be the surplus (or deficit) which is to be reduced by the amount of income taxes to give the "surplus available for distribution" or "current deficit."

The account in its present form and content has no counterpart in the financial reports of economic units in any capitalist country. On the other hand, the combination of the production and trading account and the profit and loss account are no more than a significantly detailed picture of the income statement presented by economic units in such countries. Some of the intermediate results

appearing in the two accounts are comparable to those appearing in a multiple-step income statement of a United States company. For example, "gross production surplus" as it appears in the production and trading account is comparable to "gross profit on sales" as it usually appears in the income statement of United States companies. However, "gross production and trading surplus" is not comparable to "current operating profit", since the former does not include administrative expenses.

The concept of income on the basis of which the two accounts are prepared in the UAR is in essence an all inclusive concept of money income as is known in the United States. However, with a little manipulation "Current operating income" as known in the U.S. can be determined from the UAR accounts. Just deduct the expense category of administrative and financing services from the "gross production and trading surplus" to get a figure very much comparable to "current operating profits."

The most significant difference between the combination of production and trading account and the profit and loss account and the income statement is the amount of detail included. Given approximately the same quality of information the first combination presents much more detail than is usually presented in the income statement. This makes the result statement (accounts) in the UAR, besides being conventional reports on total performance, a valuable control tool in the hands of the General

Organization. For example, ratios of various cost categories--either by nature or by cost center--to revenues can be computed easily and inter-firm comparisons can be made to determine relative efficiencies in cost savings.

5.3. Responsibility Accounting and Accounting Reports in Planned Economies:

Responsibility accounting is an administrative tool to exercise control over resource allocation and administration. Accountability is centered around a responsibility center rather than an entity or a product. A responsibility center may be a person (or group) charged with the responsibility of performing a defined set of tasks using a defined set of means, all variables of which tasks and means are supposed to be under his control. A predetermined level of each of these variables is usually set as a norm, which should be known to the responsibility center, to guide actual performance. The accounting function is normally limited to the measurement of the actual performance as compared to the norms. The accuracy of accounting measurement and the adequacy of the standard norms are two of the main factors determining the usefulness of responsibility accounting in meeting its objectives.

The function of responsibility accounting in a capitalist economy is usually an intra-firm function. In a socialist economy such function extends beyond the single firm limit to include inter-firm and inter-industry comparisons. In this regard a socialist economy is

like a very gigantic corporation with an extremely diversified assortment of activities. With respect to the whole giant responsibility accounting performs an intra-entity function. With regard to the parts responsibility accounting performs an intra as well as an inter-entity function.

This multiplicity of functions which responsibility accounting is supposed to perform may create many problems. A most important problem is created by the inconsistencies in control information requirements at various levels of the organization. A product line or a cost nature view of information may be required at higher levels for inter-firm comparisons while a responsibility-center view is required for intra-firm control. To satisfy both requirements the burden falling on the accounting department may increase to such a magnitude as to reduce the level of accuracy substantially. This will be essentially true if the accounting function is being performed manually as is the case in the UAR.

Under these conditions it would be advisable to reduce the number of external accounting reports to a reasonable level so as to enable the accounting department providing internal information requirements to do so in an efficient manner. This will require selectivity and prudent design of external reports so as to contain the most relevant information with the least effort and redundancy. It will also be quite helpful if the same

information can serve both inter-firm and intra-firm objectives.

As we have seen above, the financial statements of a public firm in the UAR are intended mainly to reflect total performance. Although expenses are classified in two ways--by cost center and by nature--none of these ways can adequately serve as a substitute for responsibility accounting for internal management. Even its adequacy for inter-firm comparisons is expected to be limited in effectiveness due to variations in the technical production coefficients between firms and due to the inclusion of depreciation in cost classification. Some firms may show a higher level of labor cost while others may show a higher level of transfer expenses for the same level of output due to variations in capital/labor intensities. Actually under the existing depreciation scheme, two firms having the same capital intensity may show different depreciation charges to the same level of output according to the age distribution of their machine stocks, whether some of the machines are fully depreciated or not, and whether the machines were purchased new or used. Inter-firm comparisons of cost centers' expenses will also be limited for the same reasons.

The UARUS system did not limit external reporting requirements to the financial statements previously described. It also required each firm to prepare a set of standard reports in a specific form and supplying specific

information. These forms are designed "so that they can serve both planning and follow-up mechanisms."²⁶ A brief comment on some of these is undertaken to illuminate the discussion.

1. Production capacity and production program:

This form shows both maximum and available production capacity at the beginning of the period, expected additions to each during the period, expected elimination from each during the period, and the net of each for the period. Capacity is measured in terms of units of product or service. Maximum capacity is defined by the system as:

That which is determined according to production coefficients on the basis of certain assumptions such as regular maintenance, trained labor force and availability of production requirements. Maximum capacity should not include set up time. . . . Maximum capacity should be measured for each process or operation according to its own production capacity without regard to bottlenecks in other processes or operations. Maximum capacity on the level of the economic unit is to be measured by the maximum capacity of the principal process . . .²⁷

Available capacity is defined as:

Maximum capacity after allowing for bottlenecks. . . . Available capacity is to be measured for the weakest process or operation.²⁸

²⁶Ibid., p. 160. The total number of reports inclusive of financial statements is 26.

²⁷Ibid., p. 116.

²⁸Ibid., p. 117.

This form also shows the production program during the period as well as the level of capacity utilization.

The usefulness of this form for determining the productive capacities of the economy and pointing at the areas of bottlenecks is apparent. Its usefulness for purposes of responsibility accounting may be limited, however, and for the following reasons:

a. Capacities are not distributed according to responsibility centers, and even if such can be accomplished, the existence of bottleneck operations and/or processes will make the capacity utilization index for other processes and operations useless unless all production processes and operations are completely independent.

b. The production program which is the most important determinant of capacity utilization is usually set by higher levels of management and is also influenced by the General Organization and higher organizational levels. The level of capacity utilization is, therefore, uncontrollable by responsibility centers.

2. Forms of production capacity and production program by processes, operations, or cost centers: These are four in number. One of these shows the distribution of machinery (or productive units) on the production processes, operations, or cost center. The second form shows the production program as measured in process time per unit of output. It shows the estimated time allocated to each commodity (or service) in each of the production

processes. The comparison between these two forms will show the expected level of capacity utilization in each process during the period.

The third form is in essence a performance report on the production program. It shows the actual as well as the estimated process time per unit of output. Comparison of this form to the first form will show the actual level of capacity utilization during the period.

The fourth form is intended to measure the unutilized capacity during the period for each process. This is done twice, once at the beginning of the period by comparing the production capacity of machinery to the production program, and once at the end of the period by comparing the production capacity of machinery to the actual production. The form also provides for the analysis of the gross amount of idle capacity to its constituting elements.

The comments applying to the previous form are also applicable to these forms. The other forms required are helpful in planning at higher levels and in setting performance standards and production coefficients. Their usefulness in exercising control on the level of the General Organization is limited to total performance of each of the economic units under its control. Their usefulness for purposes of responsibility accounting is, therefore, limited. Their limitation as far as intra-firm responsibility accounting is concerned is even greater. What is needed then is to supplement these

reports with an additional set built on the basis of responsibility centers so as to be helpful in exercising intra-firm control. Apparently this issue was given only a little consideration by the UARUS as its orientation is mainly to serve social accounting and higher levels of organization of the economy. The efficiency of the economy, however, is dependent on the efficiency of its parts from within as well as from without. Inducement for efficiency via controls from within is totally neglected by the UARUS. This omission is a significant cause for the expansion of bureaucracy and bureaucratic organizations in the economy.

CHAPTER VI

THE INFLUENCE OF THE SOCIO- ECONOMIC ORGANIZATION AND SOCIAL ACCOUNTING ON MICROACCOUNTING

6.1. Introduction:

This chapter undertakes to examine the influence of social accounting on the concepts and methodologies of microaccounting as induced by variations in the socio-economic organization of the society. Three types of economic organizations will be examined for this purpose; two of which can be considered as variants of the soviet type economy, and the third is market capitalism.

The first variant of soviet type economies is the soviet economic organization itself, which is characterized by social ownership of resources and central allocation, distribution, and administration of these resources by the government, without allowing for market forces in any of these activities to any significant extent. The second variant of soviet type economies is best exemplified by the Yugoslav current economic system, which is also characterized by social ownership of economic resources and the dominant role of the government in their direction

and allocation, but with the significant differences of granting autonomy to the individual firm and of allowing for market forces to play the dominant role in the administration of these resources.¹ The third type of economic organization to be considered is market capitalism which is exemplified in most Western economies. The analysis with reference to this type, however, will concentrate on the economy of the United States. This third type will be examined first.

6.2. Social Accounting and Microaccounting under Market Capitalism:

The object of the analysis is not to get concerned with the historical development of either branch of accounting, but rather to examine present ties and future prospects. But since present ties depend on past development, at least to a certain extent, it seems fair to say that the development of social accounting was largely, if not wholly, undertaken by economists without any significant participation by accountants.² The unconvinced reader

¹For a more thorough description of the Yugoslav economic organization see Svetuzar Pejovich, The Market-Planned Economy of Yugoslavia (University of Minnesota Press, 1966) especially Ch. IV. For a description of the Soviet Economic system see Hans Hirsch, Quantity planning and price planning in the Soviet Union (Philadelphia: University of Pennsylvania Press, 1961), translated from the German by Karl Scholz.

²The reader may consult the chapter on Social Accounting by Mary Murphy in Morton Backer (ed.), Modern Accounting Theory (Englewood Cliffs: Prentice-Hall, Inc., 1966) for a short description of the historical development of social accounting. Ch. 22, pp. 485-510.

may see the reasons for such separate and distinct development of social accounting in the following quotation from a major accounting contribution to the subject:

Economic accounting is a means of releasing scholarly accountants from the horizons of the business firm which have long confined them. As a field it will not greatly affect the practices and traditions of certified public accountants, nor will it reform the methods of controllers and industrial accountants, and its impact on operations research and other types of microanalysis, will be a limited one. Instead its effect is to expand the use of accounting procedures and tools, in their broadest sense, in a study of human behavior.³

With such attitude and restricted vision of one sided benefit, it is no wonder that economists and statisticians have found little or no help in the development of social accounting. John T. Wheeler acknowledges that "economists have actively tried to get the help of accountants in this area and although this help has not been all that it could have been the accountants have started serious work on the subject."⁴ In spite of the accountant's neglect of the subject, a large body of social accounting information has been developed all over the world in the last two decades, mainly on the basis of a microaccounting framework. Richard Stone considers such development as being:

³American Accounting Association's National Income Committee, A survey of Economic Accounting (1958), p. 1, emphasis added.

⁴"Economics and Accounting" in Morton Backer (ed.) Handbook of Modern Accounting Theory (New York: Prentice-Hall, Inc., 1955), ch. 2, 54.

. . . largely the work of economic statisticians and is based on a thorough examination of existing sources and the collection of new statistics to make possible greater accuracy and detail. Accounting data are used where they are suitable, but outside the sphere of government they are rarely so. Accountants are often shocked and dismayed when they are told this, but it is not really at all surprising.⁵

In the nineteen twenties two prophecies have taken place with regard to the prospect of accounting contribution to economic knowledge. The first was written by Josiah Stamp in 1925.

I dare to prophesy that in forty years we shall have a precision of economic knowledge, due to aggregated accountancy throwing light on underlying economic theory, which is beyond the dreams (or nightmares) of ninety-nine percent of our present professional community.⁶

The second was written by John B. Canning in 1929, when he conceived of:

. . . little reason to suppose that any great body of statistical data about the conduct of enterprise affairs that is independent of the work of accountants will become available in the near future. Much as the economist might like to have statistical information collected and compiled with special regard for his professional use, there is little prospect of his being able to induce either private persons or the state to undertake either the duty or the expense.⁷

Canning's perception seems to be significantly out of line. This depends, however, on how near the future he had conceived was. Economists and statisticians have

⁵A Social Accounting Matrix for 1960 (London: Chapman & Hall, 1962), p. v.

⁶Quoted by Richard Stone from Incorporated Accountants' Journal (October, 1925) in his forward to Ibid.

⁷Economics of Accountancy, p. 323.

undertaken the duty themselves, and almost always on the state's expense. Stamp's prophecy still came to be true.

It is, therefore, fair to say that there is currently little or no mutual interdependence between social and microaccounting under a capitalist economic organization. This, apparently, seems to be true with regard to both concepts and methodologies. Examples follow:⁸

1. The Concept of Value: Social accounting is largely based on concepts of real value and current prices. Micro-accounting is largely based on concepts of money value and historical prices. The inadequacy of the microaccounting value concepts is clearly recognized by accountants and a huge volume of academic research has been and is currently being undertaken on the subject. The most promising development came in 1966 when the American Accounting Association issued its recommendation regarding the presentation of multi-valued accounting statements based on both current and historical prices.⁹ The adoption of the Association's recommendation in practice will surely increase the dependence of social accounting on microaccounting information.

2. The Concept of Income:¹⁰ Differences in the concept of income are to a great extent due to differences

⁸For other examples of areas of differences and similarities see S. C. Yu, "Microaccounting and Macroaccounting," The Accounting Review, XLI (January, 1966), pp. 8-20.

⁹A Statement of Basic Accounting Theory, (A.A.A., 1966).

¹⁰For more discussion concerning differences between the net income boundaries in accounting and economics see Robert B. Bangs, "The Definition and Measurement of Income," The Accounting Review, XV (September, 1940), p. 371.

in the concept of value. But they are also due to differences in the concept of expense and revenue recognition and to differences in the boundaries of income recipients. Social accounting measures inputs and outputs at current prices, recognizes expenses and revenues at the point of production, and considers as income all values added to inputs of intermediate products regardless of the recipients and the point of realization. Microaccounting measures inputs at historical prices, measures output at current prices only to the extent that such output is sold, otherwise output is usually measured at historical prices of inputs, and income is defined such as to exclude any portions that are unrealized and to deduct all payments to factors of production other than owned capital. The most difficult problem, however, is that of valuation and timely recognition of inputs and outputs and not of classification.

3. The Concept of Entity: Both social and micro-accounting endeavor to account for the activities of a socio-economic entity. The social accounting entity, however, has much broader boundaries and usually includes many microaccounting entities. This creates problems of interdependence and double counting in social accounting which are not present in microaccounting. To overcome these problems, social accountants have developed techniques and methods which are quite foreign to the technology of microaccounting. Techniques dealing with the

statistical estimation of missing information and coefficients of interdependence (in input output analysis) are seldom used in microaccounting whereas they are abundantly used in social accounting. This has rendered social accounting a very close associate of mathematical-statistical science, although in an inexact sense, while microaccounting is still mainly considered an art of double-entry bookkeeping relying heavily on simple arithmetical techniques. There are developments currently underway in microaccounting which may result in more reliance on statistical and mathematical techniques. Several mathematical models have been developed for microaccounting and many statistical techniques have been applied to solve microaccounting problems.¹¹ Almost all of these deal with problems in the managerial area of microaccounting where much closer ties between accounting and economics can be found.

4. The Underlying Theory: Social accounting relies heavily on considerations of economic theory while microaccounting relies heavily on considerations of business practices and legal arrangements. This is described by Raymond Goldsmith in the following:

¹¹See for example, Richard Mattessick, Accounting and Analytical Methods (Homewood, Ill.: Richard D. Irwin, Inc., 1964) especially Appendix A on Set-Theory and The Axiomization of Accounting; Thomas H. Williams and Charles H. Griffin, The Mathematical Dimension of Accountancy (Cincinnati: South-Western Publishing Co., 1964); Yuji Ijiri, Goal Oriented Models for Accounting and Control (Amsterdam: North-Holland Publishing Company, 1965); B. Curtis Eaves "Operational Axiomatic Accounting Mechanics," The Accounting Review, XLI (July, 1966), pp. 426-442.

(a) A relevant fact, to be recorded by the system of accounts, is determined in social accounting by considerations of economic theory and not by the habits guiding business accountants, who in this respect are influenced primarily by contemporary legal arrangements.¹²

5. Standardization Among Entities and Consistency

Through Time: Social accounting is regularly guided by a set of principles explicitly laid down on the basis of which a derived set of uniform rules can be applied by anybody to obtain the same results with very minor deviation reflecting personal judgment. In addition, the same rules are usually consistently applied through time. In

Thoman A. Morrison and Eugene Kaczka "A New Application of Calculus and Risk Analysis to Cost-Volume-Profit Changes," The Accounting Review XLIV (April, 1969), pp. 330-343; Irving H. LaValle and Alfred Rappaport "On The Economics of Acquiring Information of Perfect Reliability," The Accounting Review, XLIII (April, 1968), pp. 225-230; Shawkī M. Farag, "A Planning Model for the Divisionalized Enterprise," The Accounting Review, XLIII (April, 1968), pp. 312-320; Robert E. Jensen and C. Torben Thomsen "Statistical Analysis in Cost Measurement and Control," The Accounting Review, XLIII (January, 1968), pp. 83-93; and many others.

¹²A Study of Saving in The United States (Princeton University Press, 1955), Vol. II, pp. 6-7. Other differences given by Goldsmith between social and microaccounting are:

"(b) Social accounting places much greater emphasis on standardization and consistency than business accounting does. This is only natural as business accounting is interested primarily in an individual enterprise, while one of the main problems confronting social accounting is the combination of the accounts of large numbers of economic units often of different types.

"(c) Social accounting is not bound in the same way to the acceptance of the legal monetary unit of time and place as business accounting is . . .

"(d) Social accounting is free to deviate in other respects too from customary procedures of business accounting if consideration of economic theory call for it . . .

"(f) Social accounting is not guided by the 'principle of conservatism' . . .", p. 7.

microaccounting, especially in the United States, this uniformity is a rare case and can be found only to a limited extent in the area of public utilities. Even in such rare cases, the standardization does not aim much at conformity with economic principles as it aims at conformity with legal requirements. Public utilities in the United States are subject to governmental regulations as to rates and activities. Conformity with such regulations are checked by appropriate commissions which are usually authorized to impose uniform accounting rules on public utility companies. Each of these commissions, however, imposes its own rules on companies subject to its supervision without consideration to the uniformity of its rules with the rules of other commissions. This has resulted in the disuniformity among the several uniform systems of accounts developed and applied by various commissions.¹³

Uniformity in microaccounting rules and procedures between firms and industries are extremely important if the output of microaccounting is to serve the needs of social accounting. This is not however, the only requirement. More important, perhaps, is the conformity of these rules and procedures to the requirements of economic principles on the basis of which social accounting is based.

¹³For a discussion of uniform accounting in regulated industries in the U.S. see, J. H. Price, Jr., R. Walker, and L. Spacek "Accounting Uniformity in The Regulated Industries," Law and Contemporary Problems, XXX (Autumn, 1965), No. 4, pp. 824-849.

It should be noted though that if one of these requirements is satisfied, the other would be easier to satisfy by supplementary calculations, than if none at all is satisfied.

Uniformity in microaccounting can be considered as a significant indicator as to the influence of social accounting on microaccounting under various types of socio-economic organizations. As we will see later, the more active the role of the government in the direction and administration of economic activities, the more uniform is microaccounting among firms and industries.

Uniformity of microaccounting is a loose expression and needs to be defined. Basically there are four dimensions to uniformity: uniformity as to classification of accounts into standardized groups; uniformity as to valuation methods and methodologies; uniformity as to the number and type of reporting formats used; and uniformity as to extent of national or sectoral coverage. The interaction of these four dimensions yields three essentially different patterns of uniformity each of which can be applied to either the national or sectoral levels of economic activity. These three patterns are (1) A uniform chart of accounts, (2) A uniform plan of accounting, and (3) Comprehensive uniformity in accounting.¹⁴

¹⁴This distinction is advanced by Gerhard G. Mueller, International Accounting (Macmillan, 1967), Ch. 4, which is essentially a reproduction of his "International Experience with Uniformity" in Law and Contemporary Problems, XXX, No. 4 (Autumn, 1965), pp. 850-873.

A uniform chart of accounts is no more than a classification device assigning numbers or letters to various groups and subgroups of accounts and providing rules for the assignments of accounts to each of these groups and subgroups. It can be applied to the national level as in the case of Egypt, France and Germany or it can be applied to sectors or industries as is the case of the Swedish "M Chart" which is employed by members of the Association of Metal-working Industries.¹⁵ The number of account grouping and the relative emphasis on financial and cost accounting vary from one chart to another. In the Egyptian uniform chart there are four main groups of accounts and relative emphasis is accorded functional as well as natural classification of expenses. The four groups are: Assets, Equities, Uses of Resources, and Sources. The first two groups constitute the balance sheet accounts and the last two groups constitute the operating and result accounts. The emphasis on expense classification is apparent in the following chart (Exhibit 2).

A uniform plan of accounting presupposes the existence of a uniform chart of accounts. In addition it provides rules and procedures for classification, summarization and reporting of accounting data. It may or may not include uniform rules of valuation but if such rules are included flexibility of treatment and choice among methods is usually allowed. If rules of valuation and accounting methods and

¹⁵For a discussion of the French uniform chart and the Swedish "M Chart," see Mueller, Ibid., pp. 96 and 103-111.

BALANCE SHEET ACCOUNTS		OPERATING AND RESULT ACCOUNTS		ANALYSIS OF USES				
1. Assets	2. Equities	3. Uses of Re-sources	4. Sources	5. Production Centers Control	6. Production Service Center Control	7. Marketing Service Center Control	8. Administrative and Financial Services Control	9. Capital Transactions Control
11. Fixed Assets	21. Capital	31. Wages	41. Revenues from current operations	531. Wages	631. Wages	731. Wages	831. Wages	931. Wages
12. Projects under completion	22. Provisions and forward- pietion surplus	32. Commodity Requirements	42. Subsidies	532. Commodity Requirements	632. Commodity Requirements	732. Commodity Requirements	832. Commodity Requirements	932. Commodity Requirements
13. Inventory	23. Allowances	33. Service Requirements	43. Revenues from Se- curities	533. Service Requirements	633. Service Requirements	733. Service Requirements	833. Service Requirements	933. Service Requirements
14. Long Term Lending	24. Long Term Loans	34. Purchases For Sale	44. Transfer Re- venues	534. Purchases For Sale				
15. Financial Investment	25. Creditor Banks	35. Current Transfer Ex- penses	45.	535. Current Transfer Ex- penses	635. Current Transfer Ex- penses	735. Current Transfer Ex- penses	835. Current Transfer Ex- penses	935. Current Transfer Ex- penses
16. Debtors	26. Creditors	36. Current Ap- propriated Transfers					836. Current Ap- propriated Transfers	
17. Miscellaneous Debitor Accounts	27. Miscellaneous Debitor Accounts	37.						
18. Cash on Hand and in Bank	28. Results of the Year							
19.								

Source: The Uniform System, p. 25.

concepts are standardized such as no alternative rules or methods are permitted, the result would be comprehensive uniformity. In short, the difference between plan uniformity and comprehensive uniformity lies in the degree of flexibility allowed in the former and the rigidity characterizing the latter regarding valuation rules.

Comprehensive uniformity is a close associate of economic planning. Almost all cases of national comprehensive uniformity in microaccounting can be found in economies where government planning plays a central role in the direction and administration of economic activities. Examples are the French economic planning and the French Plan Comptable Général for uniformity in accounting, the UAR economic planning and the UARUS, and the Soviet planning and the Uniform Soviet Accounting.

Comprehensive uniformity in microaccounting, however, usually precludes the theoretical orientation of social accounting with regard to the heavy reliance on economic principles. With minor exceptions, comprehensive uniformity of microaccounting as is currently in existence is based on historical cost while social accounting is largely based on current cost. Where comprehensive economic planning exists however, microaccounting is required to provide an extensive volume of subsidiary and specialized information which make the tasks of the social accountant easier to accomplish. This will be discussed in later sections.

In spite of the fact that social accounting in a capitalist market economy has not influenced microaccounting in either concept or methodology, the reliance of the former on the latter has been great. The dependence of social accounting on microaccounting information, especially with regard to the business sector of the economy is well recognized by social accountants. More important, the basic microaccounting framework which is currently adopted by most western economies in the construction of their social accounts is an indication of such heavy reliance. Accordingly, it may be "safe to say that without the tools of (micro) accounting and the basic accounting data available today there would be no national income statistics of any importance. The use of the accounting approach with its basis of double entry has been of great value to the economist . . ." ¹⁶ Richard Stone states the following

¹⁶John T. Wheeler, op. cit., p. 58. Wheeler justifies his statement by the classic statement advanced by Milton Gilbert, George Jaszi, Edward Denison and Charles Schwartz in reply to Professor Kuznets' criticism of using the accounting approach in social accounting. The statement can be summarized as follows:

1. A system of social accounting based on a micro-accounting framework reveals the structure of the economy and aids in understanding of its functions.
 2. It provides a powerful tool for the solution of many intricate problems especially those of imputations by setting the relevant transactions on the debit and credit sides of a system of accounts.
 3. It is useful as a pedagogical device for explaining the nature of national income statistics and the inter-relationship of various aggregates and their components.
 4. It is a great aid in defining the task of statistical collection.
 5. It facilitates the estimation of various national income aggregates and their components from the available statistical materials.
- See the original statement in "Objectives of National Income

advantages for a system of social accounting based on a microaccounting framework:

1. Classification of transactions

(a) An accounting approach provides a powerful means of handling the problems of consistency in definitions when we pass from general theoretical definitions to detailed descriptions of their empirical correlates . . .

(b) . . . (It) provides a meeting place for economic theory and practical measurement. To be successful a classification of transactions must satisfy as far as possible both theoretical and practical criteria at the same time. By means of an accounting approach the practical implications of any desired theoretical system can be readily worked out in detail . . .

2. A basis for collecting economic information

(a) An accounting approach indicates what information must be collected and how it must be arranged in order to realize in numerical terms any particular theoretical system capable of such realization . . .

(b) . . . (It) provides a basis for collecting economic information by means of sampling surveys . . .

(c) . . . (It) enables the most efficient use to be made of the information available by bringing to light the many relationships connecting elements in a system of transactions, thus providing a basis for the adjustment of the observations . . .

3. The presentation of information on economic transactions

(a) An accounting approach seems to provide the best means of showing the structure of the economy . . . contributes to better understanding of the way in which its parts are related and the way in which it works.

(b) From a teaching point of view . . . an accounting approach provides a better means of describing and explaining national income statistics than any other . . . it is also the best means of explaining the economic identities . . .

(c) In connexion with government policy an accounting approach is particularly useful in forecasting . . .

(d) In connexion with international comparisons a system of social accounting is helpful in showing how the economic structure of different countries are related and in providing a basis on which the statistical information of different countries can be improved in comparability.¹⁷

Subject to further discussion in the next section, the following statements are advanced to conclude this section:

(1) Experience shows that a precondition for closer ties between social accounting and microaccounting is the active involvement on the part of the government in the direction and administration of economic activities either directly or through extensive regulations.

(2) Closer ties are achieved only in areas where not much subjectivity is introduced in the microaccounting process. Thus we find that where uniformity in microaccounting is imposed, it is usually based on historical cost rules for assets valuation and income determination.

(3) An immediate corollary of (2), is that comprehensive uniformity can be achieved, if condition (1) is satisfied but such uniformity will not be based at least in the near future, on subjective current valuation of assets and liabilities and the recognition of revenues at the point of production, which are desirable ends for the purposes of social accounting.

(4) The nature of the socio-economic organization of the country can affect the functioning of microaccounting

¹⁷ "Functions and Criteria of a System of Social Accounting" in Erik Lundberg (ed.) Income and Wealth, Series I (Cambridge: Bowes & Bowes, 1951), pp. 7-8.

to the direction of more consideration to the needs of social accounting. A market capitalist economy will have the least influence and a non-market socialist economy will have the most influence.

6.3. Social Accounting and Microaccounting Under Market Socialism:

The analysis in this section will be concerned mainly with the Yugoslav current economic organization. I would note though at the beginning that not many materials are available in the area of Yugoslav microaccounting in languages which are readable to me. Those available on social accounting are fragmentary as to coverage and widely scattered in literature concerning Eastern Europe in general. The analysis is accordingly fragmentary. The reasons for my choice of Yugoslavia in spite of the inadequate availability of data are twofold: first, the economy is unique as it combines features of free market competition, central planning, and public ownership of resources and is administered through a novel process of democratic management applied to autonomous public enterprises. It, therefore, serves as a most suitable link between market capitalism and non-market socialism. The second reason for my choice is the existence of some significant similarities between the Yugoslav economic organization and the Egyptian economic organization, especially with regard to the degree of autonomy granted to public enterprises.

If we regard both micro and social accounting as complementary parts of a statistical system, then it may be of interest to start our analysis with a brief description of the statistical system of Yugoslavia. Statistical service in Yugoslavia is intended to provide data for planning and following of economic development as well as necessary data for scientific research and public information.¹⁸ The centers of the Yugoslav statistics are the Statistical Institutes which are set in each of the people's Republics, autonomous units, seventy-five district and larger municipalities.¹⁹ "It is the aim of the Yugoslav statistical service to have all statistical data linked into a consistent and readily comparable whole. This is achieved through the use of common methods, standardized definitions and classification, a rational distribution of work, and coordination among individual statistical branches."²⁰ All enterprises are to provide monthly and annual reports to serve the computation of indices of industrial production and labor and to determine the pattern and value of production. All enterprises, government bodies, and economic and social organizations are bound to supply the required statistical data within a determined time.

¹⁸See "Statistical System in The Federal People's Republic of Yugoslavia," Yugoslav Survey, No. 8 (January-March, 1962), pp. 1104-1110.

¹⁹Ibid., p. 1105

²⁰Ibid.

The organization of the Yugoslav firm and its relationship with federal and local organs of the government and the banking system is described elsewhere.²¹ For the reader's convenience, a brief sketch of such organization and relationships is given in the appendix to this chapter. The reader may find it more useful to consult the appendix before proceeding with the rest of this section. The analysis here will be mainly involved with legal considerations involving accounting due to the lack of information on what is actually going on in practice. Such legal considerations can be discussed under the two headings: considerations involving the assets of the Yugoslav enterprise, and considerations involving its income determination and distribution.

A. The Assets of the Enterprise:

The Yugoslav enterprise may acquire assets on the basis of bank credit, from funds allocated from the General Investment Fund (GIF), or from its internal accumulation of income. Regardless of the source of financing the assets acquired, the enterprise exercises only the right to use these assets, with the right of ownership being reserved to the society. These rights are clearly established by the Yugoslav laws as follows:

²¹See for example Svetozar Pejovich, The Market Planned Economy of Yugoslavia, Ch. IV; Albert Watterson, Planning in Yugoslavia (John Hopkins Press, 1962) Ch. IV and V; and "Collective Economy in Yugoslavia," Annals of Collective Economy; International Review (Geneva)XXX, No. 213 (April/November, 1958), pp. 105-363.

The Basic Law of Enterprises:²²

An enterprise shall create the resources needed for the exercise of its activities by means of its operations.

An enterprise may also obtain resources on the basis of credit, as well as in other ways as provided for by the law.

The assets of an enterprise shall be social property (Article 16).

An enterprise shall be bound to preserve intact the value of the social assets under its management. (Article 17).

An enterprise shall be liable to its obligations to the amount of all the assets used by it and at its disposal. (Article 21)

The Law on Assets of Economic Organizations:²³

An economic organization shall be entitled to use (the right to use) the assets created by it through its activity or on the basis of credits and other credit transactions or on other accounts pursuant to the provisions of this Law.

The right to use shall also include the right to dispose of assets as well as to combine them for realizing business objectives (Article 8).

According to the law each enterprise is bound to classify its assets into two main groups according to the source of financing and into five categories according to the function and use of assets. According to the source of financing, assets can be classified into those deriving from credit and other credit transactions and assets deriving from internal financing. This presumably gives the classification of the equity side of the balance sheet.

²²Institute of Comparative Law, Collections of Yugoslov Laws: Laws on Joint Investments of Interprises, XVII (Beograd, 1967), pp. 41-42. Emphasis added.

²³Ibid., p. 77.

According to the function or use, assets can be classified into fixed assets, working assets, common consumption assets, monetary means of the operating fund, and means of the reserve fund. The monetary means of the operating fund can be used to finance fixed assets, working assets, and/or common consumption assets. The means of the Reserve Fund can be used to cover operating losses, to pay the personal income of workers, to make payments to the operating fund or the common consumption fund, or to provide cover against risks under guarantees for quality of goods or services involving periods longer than one year.²⁴ The relevant portions of the appropriate laws are given in a footnote below.²⁵

²⁴Article 57 of Law of Assets of Economic Organization, Ibid., pp. 87-88.

²⁵Law on Assets of Economic Organizations, Ibid., pp. 81-83.

"The workers' council of an economic organization shall affect the allocation to its funds of the part of its income which has been set aside for the purpose.

An economic organization shall have the following funds:

- (1) The operating fund;
- (2) The reserve fund;
- (3) The common consumption fund." (Article 25).

"Assets which are acquired by an economic organization by virtue of credits and other credit transactions may be used by it in accordance with the function of the assets . . . Accordingly, an economic organization shall classify its assets as follows:

- (1) Fixed assets;
- (2) Working assets;
- (3) Common consumption assets." (Article 37).

"An economic organization shall repay the assets acquired by it by virtue of credits . . . from its fixed

The law also establishes the rules on the basis of which assets of enterprises are to be valued. Emphasis on the preservation of the social means of production is

assets and working assets or common consumption assets, depending on the purpose for which a credit has been given." (Article 38).

"Economic organization may use the resources of the operating fund for joint investment in property constituting fixed assets or working assets . . ." (Article 43).

"The Fixed assets of an economic organization shall consist of property and interests constituting fixed assets as well as the monetary means intended for the purchase of such property and interests." (Article 46).

"Fixed assets shall be constituted by the following property:

- (1) Instruments of work;
- (2) Buildings of an economic character;
- (3) Long term plantations;
- (4) The basic flock.

Lands serving for economic purposes, forests, and forest land shall also be considered as fixed assets . . .

Fixed assets shall also include the property (referred to in the first paragraph of this article) which is under construction or in the process of being made, rights acquired in connection with the construction or making of such property, as well as founder's investments.

Patents and licenses shall also constitute fixed assets." (Article 47).

"Working assets . . . shall be constituted by . . . raw material supplies, unfinished products, semifinished products and finished products, by . . . monetary means intended for the purchase of such items and claims . . .

Working assets shall also include property serving as instruments of work whose life is less than one year

. . . The Federal Secretary of Finance shall determine instruments of work which shall not be treated as fixed, but as working assets, in view of their value, life and importance." (Article 52).

apparent even in the Constitution of the Socialist Federal Republic of Yugoslavia which states:²⁶

"The working organization shall preserve undiminished the value of the social means in its possession.

The working organization shall be responsible for its obligations with the social means in its possession." (Article 15).

". . . an economic organization may be dissolved if it is unable to renew the means of production and other means of work which it manages . . ." (Article 18).

This emphasis is also renewed in the Basic Law of Enterprises which states:²⁷

"An enterprise shall be bound to preserve intact the value of the social assets under its management." (Article 17).

The Law on Assets of Economic Organizations also states:²⁸

"An economic organization shall be bound to compensate the value of assets expended in exercising economic activities . . . from the total income realized by it." (Article 26).

Valuation rules given in the law for various assets are generally based on historical cost. Fixed assets and common consumption assets are valued at acquisition price plus transportation and installation costs minus depreciation which is usually computed on a straight-line

²⁶Ibid., p. 32.

²⁷Ibid., p. 41.

²⁸Ibid., p. 95.

basis.²⁹ Raw materials and supplies are valued at purchase price plus transportation cost to the warehouses.

Unfinished, semifinished and finished products:

. . . shall be valued at the amount equivalent to the value of raw materials and supplies consumed, to the amount of compensation paid to other parties, to the appropriate amount of depreciation and to the obligations which an economic organization is meeting from its total income before the establishment and distribution of profits, as well as the cost of carriage . . . from the place of production to the warehouse . . . The value . . . shall also include the personal income of workers, computed in accordance with the general administrative rules of an economic organization.

By way of exception . . . the value of raw materials, supplies, and merchandise procured, . . . of the unfinished, semifinished and finished products be established as follows:

(1) in the amount of the market value, provided that such value is lower than the value which would be established pursuant to the said provisions;

²⁹The Law on Assets of Economic Organizations, Ibid., pp. 96-99, states:

"The value of the property constituting fixed assets and common consumption assets which have been acquired by virtue of a contract of purchase, manufacture or construction shall be established in accordance with the invoice (purchase) price of such property and the transportation and installation costs.

. . . fixed assets and common consumption assets . . . produced independently shall consist of the market value of the property and of the installation costs.

. . . property constituting fixed assets and common consumption assets . . . transferred without compensation . . . consists of the value registered at the time of transfer in the books of the enterprise from which the transfer has been affected . . ." (Article 71).

"At the end of a business year an economic organization shall revise the values of its fixed assets and common consumption assets by the amount of computed depreciation.

An economic organization shall spread the total amount of depreciation for the group of fixed assets over each single item comprised in the group." (Article 75).

An economic organization may decide to offset the cost of replacement from its total income, as a rule at an

(2) in an amount corresponding to the prescribed or determined ceiling price, provided that such amount is lower than the value which would be established pursuant to the provisions of the first paragraph of this article . . .

Any difference in the value of stocks established by virtue of prescriptions issued on the basis of the second paragraph of this article shall be offset by the economic organization concerned from its total income prior to the establishment of its profits."³⁰ (Article 77).

In other words, such provisions tend to approximate the Western rule of the lower of cost or market for inventory valuation. Inventories can be valued at a ceiling price which may be higher than the market price but not exceeding established costs. The established cost does not exactly correspond to the Western concept of absorption costing as we will see later.

In spite of the autonomy granted to the Yugoslav enterprise, a reading of the governing laws shows a heavy emphasis on uniformity in various avenues of economic and social life. The following quotations reveal such emphasis:³¹

"Control and supervision over the socially-owned means, as well as supervision over the meeting of obligations by the working and other autonomous organizations and social-political communities shall be performed by a unified social accounting service.

The social accounting service shall be autonomous in its work." (Article 31).

even rate during all the settlement periods. The total of such costs and settlement periods . . . shall be established by an economic organization in its estimate of the costs." (Article 93).

³⁰Ibid., pp. 98-99.

³¹The Constitution, Ibid., pp. 29-38.

"The means of the working organization . . . (shall be employed) . . . in accordance with uniform principles of utilization . . . determined by the Federal law." (Article 11).

"In order to secure conditions for the most favorable economic and social development, to equalize general conditions of work and acquisition of income, to determine general standards for distribution . . . , the socio-political communities shall undertake . . . measures to develop a unified economic system, to plan economic development . . . , and to this end they shall adopt social plans . . ." (Article 6).

"Money and the credit system shall be uniform. Financial transactions shall be carried on in accordance with uniform principles." (Article 29).

". . . means shall be used in accord with the uniform principles for using the means of social economic growth and under the conditions and standards determined by the regulations . . . " (Article 27).

From this rather fragmentary evidence we get the impression that uniformity is one of the important principles of economic organization in Yugoslavia. This is necessarily so if a unified social accounting service is to efficiently discharge its responsibilities toward the control and the supervision of the socially-owned means of production. Although the rules on the basis of which assets are valued in Yugoslavia are no closer to economic principles than these in the United States, it is apparent that the mode of asset classification and the heavy reliance on the fund approach in this regard is more in accord with social objectives and makes the job of the social accountant much easier to achieve. This is further explained below.

B. The Income of the Yugoslav Enterprise

The income of the Yugoslav enterprise is approximately equal in Western terminology to value added minus depreciation. From the amount of total revenues the value of intermediate products plus the depreciation charge is deducted to give the enterprise income. The distribution of this income is illustrated in the following income statement of a Yugoslav enterprise (Table 7).

A brief explanation of some of these items in the statement follows:³²

Amortization: This is the amount of the depreciated value of fixed assets as computed on a straight-line-historical-cost basis. The rate usually ranges from 4 to 6 per cent. The enterprise may use the depreciation fund to maintain its assets or purchase additional assets.

Material Expenditure: Includes expenditure on raw materials and other purchased services of non-employees, interest on short-term loans, insurance on total capital less depreciation, transportation expense, and 90 per cent of advertising expenses (10 per cent is not tax deductible).

Turnover Tax: This is an indirect tax on sales which is similar to the sales tax in the United States. Its rates vary from zero to 60 per cent of the selling price according to the aims of government policy and the

³²See Pejovich, op. cit., pp. 26-32 and 94-102, and Weterston, op. cit., Appendix E, pp. 101-105.

TABLE 7.--Income Statement of Metalna of^a Maribor, Slovenia

Item	1958	1959
Total Revenue	4,791.1	6,597.5
Less:		
Amortization	156.2	179.7
Material Expenditure	3,441.9	4,494.4
Income of the enterprise	1,293.0	1,923.4
Less:		
Turnover Tax	17.0	20.4
Interest on fixed capital (6%)	145.0	151.7
Interest on circulating capital (6%)	139.0	178.6
Rent and other contributions	31.8	43.0
Social security and similar payments	77.8	101.6
Payroll	433.4	603.8
Profit	449.0	824.3
Gross Profit		
Less:		
Federal Tax	163.6	260.4
Local government and people's republic tax	34.0	52.5
Net profit	251.4	511.4
Less:		
Additional income to the employees	213.0	311.1
Extra Tax	2.8	0
Reserve fund	25.0	65.5
Other funds	10.6	134.8
Number of workers	1,498	2,142
Capital-Labor ratio ^b	3,688,100	2,669,900

Source: Reproduced in Svetozar pejovich, op. cit., p. 100, from pregled podataka iz Završnih Racuna Rudarskih i privrednih Organizacija 1958 i 1959 (Belgrade: Narodna Banka Jugoslavije, 1960), pp. 100-101.

- a. All but the last two items are in millions of dinars.
 b. The ratio of the value of total capital to the number of workers

rates are subject to frequent changes. "This is an instrument used for regulating the market as well as for increasing or restricting the consumption of specific goods . . . it insures that the conditions of economic activity and the position of the enterprises in the market are made equal to a maximum degree."³³ Turnover tax accounts for more than 50 per cent of government revenues in Yugoslavia.³⁴

Interest on Capital: Each enterprise pays interest on its aggregate assets (excluding depreciation) which usually amounts to 6 per cent of the book value of these assets. The Law on Institution of Interest payments on Funds in The Economy states:³⁵

"All social assets which are used in the economy shall be subject to payment of a contribution to the economy in the form of interest (the interest on funds in the economy)." (Article 1).

"Economic organizations and banks shall pay interest on the operating fund for all resources thereof in accordance with the statement of accounts of the organizations for the preceding year . . . " (Article 4).

"If an economic organization or bank fails to pay the due amount of interest on the operating fund or the credit fund, it shall also be charged penalty interest at the rate of 0.1% for each day of tarrying in paying the unpaid amount." (Article 10).

³³M. Spiljak, Systems of Renumeration in Yugoslavia (Belgrade: Yugoslav publishing House, 1961), p. 14. Cited by Pejovich, Ibid., p. 26.

³⁴Pejovich, Ibid., p. 26. For an illustration of the effect of turnover tax on labor supply and demand see Ibid., pp. 96-97.

³⁵In Collection of Yugoslav Laws, op. cit., pp. 110-113.

The rate may be smaller or nothing for certain firms or industries according to the object of government policy.

Rent: Rent is an amount determined by the government and is paid by enterprises making high profits due to favorable conditions or monopoly.³⁶ It is usually paid by mining and petroleum enterprises which realize higher profits relative to other branches of the industry.³⁷

Employees' Income: The basic pay of employees is part of the Yugoslav enterprise income which is determined by the Worker's Council usually on the basis of the point system. This constitutes a part of the personal income of workers which the enterprise has to cover in order not to suffer any loss. Another part of the personal income of workers is paid from the net profit of the enterprise. The ratio of each of these two parts to the total income of employees depends upon the amount of income, the amount of profit, and the worker's council decision with regard to profit distribution. Some or all of these factors may vary

³⁶The term "monopoly" is substitute for land in Yugoslav usage. See Benjamin Ward, "Marxism-Horvatism: A Yugoslav Theory of Socialism," American Economic Review, LVII (June, 1967), p. 512.

³⁷Some writers define this rent as Recardian rent, see for example, Waterston, op. cit., p. 104 and Joseph T. Bombells, Economic Development of Communist Yugoslavia 1947-1964 (Stanford University, 1968), pp. 59-69. It seems to me, however, that rent used in the Yugoslav practice is more akin to the Paretian concept of rent that it is to the Recardian concept. The Paretian conception defines rent as the excess over the normal amount of earning necessary to keep an economic factor in its present employment. In the Recardian conception, rent is defined as the excess amount earned by a factor over the sum necessary to induce it to do its work. For analysis of the difference between the

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from one enterprise to another thus rendering substantially different ratios as shown in Table 8.

Federal Tax: After 1961 a flat rate of 15 per cent on the sum of the gross profit and the basic payroll of employees was levied and is still being paid to the Federal government out of the enterprise gross profit.³⁸ Such flat rate makes higher profits more attractive, however, imposing a heavier burden on the low-profit enterprise.

From the analysis in this section the following statements are advanced:

1. Microaccounting classification of assets in Yugoslavia according to the nature and source of finance and the reliance on the fund concept in this regard makes microaccounting information easier to handle and manipulate by the social accountant, It also enables more effective control over resources by social accounting services and social auditing services.

2. Although valuation rules of assets are based on historical cost and permit a limited number of alternatives in some cases, (as in the case of the optional lower of

two concepts see, Robert H. Wessel "A Note on Economic Rent," American Economic Review, LVII (December, 1967), pp. 1221-26.

³⁸For other tax scales used before 1961, see Pejovich, op. cit., pp. 97-99. For other taxes on enterprise profit and personal income of employees, see Waterson, op. cit., pp. 101-105, Bombelles, op. cit., pp. 59-62, and Institute of Comparative Law, op. cit., Basic Law on Contributions and Taxes of Citizens, pp. 124-135.

TABLE 8.--Relation Between Profits of Three Yugoslav Firms
and Earnings of the Employees.

Average Annual Earning per worker	Metalna		Tovarja poljoprivrednih Spraua		Vaga
	1958	1959	1958	1959	1959
Basic Wage	67%	67%	78%	70%	123%
Pay from Profit	33%	33%	22%	30%	-23%
Total	100%	100%	100%	100%	100%

Source: Calculated from Table 21, p. 102, in Pejovich,
op. cit.

cost or market rule for inventories) a higher degree of comprehensive uniformity in accounting seems to be apparent than is the case in market-non-planned-capitalist economics.

3. The concept of income and the structure of the income statement of enterprises in Yugoslavia corresponds more closely to the Yugoslav social accounting categories than does the concept of income and the structure of the income statement of the enterprise in the United States correspond to Western social accounting categories.

4. The Income Statement of the Yugoslav enterprise shows clearly and in detail the effect of various instruments of economic policy on the income and behavior of the enterprise and provides information relevant to decisions as to changes in such policies and instruments.

5. Accordingly, it may be concluded that social accounting has much more noticeable influence on micro-accounting in Yugoslavia than in non-planned capitalist economies. The observation is still noted that such influence is short of changes in historical cost rules for asset valuation.

6.4. Social Accounting and Microaccounting in the UAR:

The main links between social accounting and micro-accounting under the UARUS were discussed in Chapter V above. To shed some more light on the previous discussion, a brief description of the UAR social accounting system will be given.

The first attempt to formulate a comprehensive set of social accounts in the UAR was undertaken by the Technical Planning Administration (TPA) in 1955, which resulted in a series of social accounting statistics starting by the year 1953. Since then the construction of social accounts became a part of the activities of (TPA). The Framework of the First Five-Year Plan states:

Experience of other countries with respect to planning was considered in the choice of a social accounting framework . . . Accordingly it was possible to formulate a framework to record and uncover the most important economic transactions and distinguish between the parties involved in such transactions. The framework is flexible enough to answer various questions and help solve various problems of planning . . .

It was a prime consideration in the choice of the social accounting framework that it be useful in analyzing the consistency of individual investment projects with any public investment program which provides for specific production targets from a given amount of resources. It was also considered that the framework must be useful for economic analysis necessary to choose optimum criteria for the allocation of economic resources. And due to the importance of the problem of financing . . . it was decided that the framework should show lending and borrowing transactions and their interrelationships with the real flows of commodities and the parallel money flows.³⁹

The quotation shows clearly the criteria used in constructing the social accounting framework and the influential interdependence between social accounting and planning in the UAR. The analysis in the previous chapters has also shown the significant interdependence between microaccounting techniques and information and the tools

³⁹National Planning Commission (Cairo, 1964), p. 191. (In Arabic, my translation).

of economic policy used to execute the plan and follow it up. Hence, the tying link between social accounting and microaccounting in the UAR seems to be implicit in the planning process itself and the reliance of such process on both micro and social accounting information.

The framework of the UAR social accounting is built on a three-way classification system for grouping economic transactions.⁴⁰

(1) The Functional Basis of Classification:

Transactions are grouped according to sector of origin as follows:

a. Business Sector:

public
private
government

b. Household Sector

c. General Government Sector

d. Rest of the World Account

(2) According to the Nature of the Transaction:

Transactions are grouped into:

a. Commodity Transactions, i.e., transactions involving commodities and services produced.

b. Income and Transfer Transactions, i.e., dealing with payments of factors of production, taxes, subsidies, and other transfers.

c. Lending and Borrowing Transactions.

⁴⁰Ibid., p. 208.

(3) According to the Economic Activities Involved
in the Transaction:

- a. Transactions dealing with productive activities: recorded in the production account.
- b. Transactions dealing with consumption activities: recorded in the appropriation account.
- c. Transactions dealing with investment activities: recorded in the capital account.

The first classification defines the social accounting entities, the second and the third classifications determine the number of accounts and the amount of detail involved. The following matrix shows the number and type of accounts prepared for each social accounting entity in the UAR economy for 1961 (Exhibit 3).

The Revenue and Expenditure account is prepared for the whole economy. It provides analytical aggregates for each of the three sectors and the rest of the world with revenues and expenditures classified to correspond to the social accounting categories in class (2) above. It is accordingly prepared on three stages. The first stage shows commodity transactions with value added and the balance of payment deficit as the main sources of revenue on the revenue side and the distribution of this amount between consumption expenditure and capital accumulation on the expenditure side. The second stage shows the distribution of the amount of value added and other transfer revenues between wages, profits and interest, direct and

EXHIBIT 3.--The Social Accounts Matrix of the UAR, 1961

Social Accounting Entity	The Economy	Business Sector	Household Sector	Government Sector	Rest of the World Account
Revenues and Expenditure Account	X	X	X	X	
Production Account		X			
Appropriation Account		X	X	X	
Capital Account		X	X	X	
Export and Import Account					X
Domestic production at market prices and domestic income at factor cost	X				

Source: Based on the set of social accounts provided in the Framework of the First Five Year Plan, Ibid., pp. 195-237.

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indirect taxes and other transfer payments. The third stage shows the financial transactions of borrowing and lending which reconciles the sum total of each sector's expenditures with its revenues.

As we have seen in the previous chapter, the Current Operations Account for the firm was designed with the intention that it will provide microaccounting categories which will correspond closely to the social accounting categories in the Revenue and Expenditure Account. It was also stated that the resulting correspondence is not as close as it could have been and a modified form of the Current Operations Account was suggested. The fact remains, though, that it is much easier to manipulate the microaccounting categories in the Current Operations Accounts of business firms to obtain the desired social accounting aggregates than it is to obtain such aggregates from conventional financial statements.

The production account is prepared for each of the business sectors but not for the household or government sectors by virtue of their being mainly consuming and saving entities. The account is prepared in an analytical T form with sources of production on one side and uses of the product on the other. Sources and uses are classified according to origin into sources and uses of Agriculture, Industry, Construction, Transport and Communication, Suez Canal, Finance, Housing, Commerce, and Other Services. Sources and uses are also classified according to their

economic nature, i.e., value added, wages, social insurance, . . . etc. Table 9 shows the production account of the Business Sector in the UAR for 1959-60.

The Appropriation Account for the Business Sector shows the distribution of gross production profit forwarded from the production account into government and household shares, direct taxes, other fees and transfers and the balance to be forwarded to the capital account, where it is to be divided into capital formation, payment on loans, and purchases of used assets.

The Appropriation Account for the General Government Sector shows on one side the sources of revenues from direct and indirect taxes, tariffs, other fees, and the profits of the government subdivision of the business sector, and on the other side the general government expenditure. The balance of the account is forwarded to the capital account to be allocated into three main uses: capital formation, capital subsidies to the government division of the business sector, and payment on loans.

The Appropriation Account of the Household Sector shows sources of household income and the uses of this income for consumption, tax payments, and saving. In the Capital Account, the amount of saving is allocated to its various uses by the household sector.

The Statement of Domestic Production at Market prices and Domestic Income at Factor cost gives, in addition to

TABLE 9.---The Business Sector Production Account for 1959-60 in Million L. E.

SOURCES										USES										
Other Services	Commerce	Housing	Finance	Suez Canal	Transport and Communication	Construction	Industry	Agriculture	Total Sources	EXPLANATION	Total Uses	Other Services	Commerce	Housing	Finance	Suez Canal	Transport and Communication	Construction	Industry	Agriculture
101.3	213.5	73.0	13.2	40.7	57.5	52.0	273.0	400.0	1224.2	Value Added	17.1	0.3	3.4	5.9	3.4	0.3	0.3	0.7	6.1	5.5
			23.2						23.2	Interest	405.5	42.6	59.7	7.2	35.6	35.6	35.6	33.6	90.1	135.0
			17.1					17.1	17.1	Wages and Salaries	2.5	0.3	0.5						0.3	
			3.8					3.8	3.8	Premiums										
										Social Contributions										
										Compensation on Public Insurance										
										Compensation on Life Insurance										
										Production Subsidies										
							1.3	10.8	10.8	Tariffs										
										Indirect Taxes										
										Production Fees										
										Miscellaneous Fees										
										Various Payment to Administration										
										Revenues and Expenditure of the rest of the world										
			1.3	1.3	0.4		7.6	11.2	11.2	Gross Production Profits	655.1	57.2	40.3	34.3	39.0	18.7	17.3	141.0	264.3	
										TOTAL	101.7	101.7	222.1	73.0	56.6	4.6	57.9	52.0	281.9	400.0

Source: Ibid., p. 219.

these two social accounting categories, National Income at factor cost and National Product at market prices.

As was mentioned briefly in Chapter V above, each firm has to fill in two standard forms showing Gross and Net Production at market prices and Gross and Net Production at factor costs.⁴¹ The two microaccounting statements and the statement of Domestic Production at Market prices and Domestic Income at factor costs are reproduced in Tables 10, 11, and 12, respectively. Examination of the above statements shows clearly the direct relationship between microaccounting categories that are designed to facilitate the task of deriving social accounting aggregates. Also there is a close correspondence between the items in Form (7a) and the items in the Production Account of the Business Sector reproduced above. This section is concluded with some observations on the UAR social accounting system.

1. The main concepts: Concepts of production and national income employed by the UAR social accounting system are essentially Western concepts in spite of the fact that the UAR is a socialist planned economy. The UAR national income and product statistics are fundamentally based on Keynesian concepts of macroeconomic aggregates rather than on the Marxist concept of material social production. This implies that social ownership of resources and economic planning in the UAR are essentially considered

⁴¹The Uniform System, pp. 209-211.

TABLE 10.--Form No. 7, Production and Value Added

Acct. No.	Acct. Title	Value
<u>Value of Gross production at Market prices:</u>		
1.	<u>Production at selling prices</u>	
411	a. Sales of finished product	
412	b. Changes in finished product Inventory at cost	
413	c. Valuation difference of finished product inventory changes (selling price-cost)	
416	2. Revenues from works to others	
415	3. Works for internal use at cost	
414	4. Changes in unfinished product Inventory at cost	
417	5. Service sales	
	6. Merchandise for sale:	
4181	a. Sales	
4182	b. Changes in Inventory at cost	
4183	c. Valuation difference of changes in inventory (selling price-cost)	
34	<u>Less purchases for sale</u>	Total
<u>Value of Gross production at Factor Cost:</u>		
<u>Value of Gross production at Market prices</u>		
3511	<u>Less:</u> Tariffs	
3512	Production Fees	
3513	Treasury Fees	
3514	Other	
421	<u>Plus:</u> Production subsidies	
422	Export subsidies	

Source: The Uniform System, p. 209.

TABLE 11.--Form No. 7a, Production and Value Added

ACCT. NO.	ACCT. TITLE	VALUE
	<u>Net Production at Market Prices:</u>	
	Gross production at market prices	xxx
3522-3528	<u>Less:</u> Depreciation	xxx
	<u>Value Added:</u>	
	Gross production at Factor Cost	xxx
32	<u>Less:</u> Commodity Requirements)	xxx
33	Service Requirements)	xxx
	Above not including tariffs	
3522-3528	Depreciation	xxx
		<u>xxx</u>
		xxx
	<u>Distribution of Value Added:</u>	
	1. Wages:	
311	Cash	xxx
312	Non cash	xxx
313	Social insurance	<u>xxx</u>
		xxx
	2. Rent:	
353	Actual	xxx
354	Imputed	<u>xxx</u> xxx
	3. Interest:	
355	Actual total	xxx
357	Imputed	xxx
356	Foreign	<u>xxx</u> xxx
358	4. Valuation difference of finished inventory changes	xxx
	5. Surplus of current operations	<u>xxx</u>
		xxx

Source, Ibid., p. 211.

TABLE 12.--Domestic Production at Market Prices and Domestic Income at Factor Cost
For the UAR 1959-1960 (L.E. Million).

	Domestic Production at Market Prices	Domestic Income at Factor Cost
Domestic production	1224.2	1224.2
Less: Indirect Taxes	--	(177.7)
Plus: Subsidies	--	13.9
Domestic Income at Factor Cost		<u>1060.4</u>
Service of Government Employees	135.3	135.3
Household Services	16.0	16.0
Other Services	2.0	2.0
	<u>1377.5</u>	<u>1213.7</u>
Total	1377.5	1213.7
Return to Foreign Factors of Production	.4	.4
National Product	<u>1377.9</u>	<u>1214.1</u>

Source: The Framework of the First Five Year Plan, op. cit., p. 237.

as a means of realizing faster economic growth rather than as prerequisites of realizing socialist ideologies. Even if such ideologies are present, they are substantially different than Eastern ideologies of socio-political economy.

Concepts of value, profits and marginalism as they are known in Western economic thought, rather than the concepts stemming from the labor theory of value, are employed in the UAR. Perhaps this is the most significant difference between socialist economic thinking in the UAR and the Eastern world. It provides for greater flexibility and for a greater number of tools for economic analysis and more efficient schemes of incentives than is allowed under strict Marxist socialism.

2. The Sectoring of the Economy: The sectoring of the UAR economy for purposes of social accounting follows closely the method employed by the United States,⁴² the United Nations,⁴³ the United Kingdom,⁴⁴ and The Organization for European Economic Co-operation.⁴⁵ In each of these the economy is divided into three main sectors--business,

⁴²U. S. Dept. of Commerce, Income and Output: a supplement to the survey of current business (Washington, 1958); and National Income 1954 Edition (Washington, 1954).

⁴³U. N. Dept. of Economic and Social Affairs, A System of National Accounts and Supporting Tables, Studies in Methods, Series F, No. 2 Rev. 2 (New York, 1964).

⁴⁴U. K. Central Statistical Office: National Income Statistics - Sources & Methods (London, 1956) and National Income and Expenditure 1960 (London, 1961).

⁴⁵A Standardized System of National Accounts, 1958 ed. (Paris, 1959).

household, and government--and one foreign account. To be sure there are minor variations with regard to the content of and the name given to each sector, but the underlying principles are the same. For example unincorporated enterprises are included in the personal (household) sector in the U. K., while they constitute a part of the business sector in the U. S., and UN systems.

In fact the sectoral boundaries in the UAR social system of accounts is virtually identical to those employed by the U. N. Standard System.⁴⁶ The Business Sector is defined in both systems to include all unincorporated private enterprises including farms, housing whether owner occupied or leased to others, all private and public corporations and nonprofit institutions serving enterprises, and all public enterprises which are owned or controlled by public authorities. In effect, the Business Sector includes all economic units engaged directly or indirectly in production of goods and services (other than collective services provided by the government like justice and internal security or national defense, and services provided by nonprofit institutions such as clubs and charitable foundations) whether they are publicly or privately owned and whether they are profit or nonprofit seeking units.

The Household Sector is defined to include all persons in their capacity as consuming units and nonprofit

⁴⁶ Compare pp. 11-12 in the UN Standard System and pp. 192-193 in The Framework of the UAR First Five-Year plan.

institutions not mainly rendering services for enterprises. The General Government Sector comprises government agencies, whether they be central or local, which provide collective services to the society such as education, health, justice or defense.

3. Forms of Economic Activities and Types of Economic Transactions: As in the UAR social accounting system, the U. N. standard system distinguishes between four types of activities; production, consumption, capital formation, and activities with the rest of the world. According to this distinction, the production, appropriation, capital, and rest of the world accounts are constructed. In both systems the accounts do not articulate with each other due to the inclusion of the financial transactions of lending and borrowing.

This dual distinction between economic activities according to the type of economic transaction in those dealing with production, consumption and capital accumulation on the one hand, and according to whether the transaction deals with commodity flows or money flows on the other hand was advocated by Richard Stone in 1950.⁴⁷ He recommended the division of the economy into five sectors: enterprises, households, government, labor services, and lending, and the preparation of three accounts for each: production, appropriation; and resting (capital). What happened in the UAR and the UN systems is that the economy

⁴⁷"Function and Criteria of a System of Social Accounting," op. cit., pp. 14-38.

was divided into three sectors thus absorbing the labor and lending service sectors into the three other sectors. The labor and lending sectors were considered by Richard Stone as not being of "much importance and indeed would essentially be dummies if introduced into contemporary statistical presentation."⁴⁸ His production, appropriation, and capital accounts are essentially the same used by the UAR social accounting system and are to a great extent represented in the UN Standard System.

6.5. Social Accounting and Microaccounting in the U.S.S.R.

Social accounting and microaccounting in the U.S.S.R. are completely integrated in the sense that there is no distinction as to where the one leaves off and the other takes over. The functions of both are essentially to provide needed information for comprehensive quantity and price planning and to provide means for exercising control over plan fulfillment. That is, they both perform the function of economic accounting calculations necessary to replace quantity-price information provided by a market economic organization. It is, therefore, necessary that they both become vertically and horizontally integrated to enable the management of the giant corporation of the soviet economy.

⁴⁸Ibid., p. 12.

The management of the national economic accounting in the USSR is conducted by the Central Statistical Administration in cooperation with the Ministry of Finance. All basic record-keeping⁴⁹ questions are defined by law in various statutes.

The statutes, which are binding on all Union Republics, insure a uniform system of bookkeeping at all enterprises of the Soviet Union, and as a result accounting data can be compiled for the individual branches of the national economy as a whole. These consolidated data on the results of fulfillment of the national economic plans make it possible to use the resources of the socialist economy most expediently.⁵⁰

The mechanism of Soviet accounting has been described by Richard Purdue as having:

. . . the advantage of uniformity and apparent orderliness. It offers a vast array of uniform accounting techniques, uniform accounting documents and financial statistics highly comparable between enterprises and industries. It has the simple beauty and the complex ugliness of a monolith.⁵¹

As the most important part of the information system of the gigantic soviet corporation, accounting in the Soviet Union, places its emphasis on the planning and control aspects rather than the financial aspects. In fact cost accounting is considered as:

One of those objectively necessary categories of the socialist economy which are causatively

⁴⁹Record keeping is defined in the Soviet Union to include accounting, statistics and technical records. See Robert Campbell, op. cit., p. 3.

⁵⁰Sergei Tatur, op. cit., p. 380.

⁵¹"Techniques of Soviet Accounting," Journal of Accountancy CVIII (July, 1959), p. 48.

connected with the commodity-money relations existing in (the Soviet Union). . . , with the influence of the law of value on production

. . .

Cost accounting is a means of stimulating a steady reduction of the outlays of past and living labor specific for the given enterprise and thereby, of reducing the socially necessary expenditures. Cost accounting also serves as a means of checking that the output of each enterprise corresponds to the needs of society as regards quantity, quality and assortment, and that the goods are put out on time.⁵²

The following statement made by V. Slarovskii, Chief of the USSR Central Statistical Administration, defines the boundaries of Soviet statistics within which accounting operates:

The tasks of Soviet statistics were defined by the historic decisions of our party's 23rd Congress . . . (as) those of improving the methods of managing the economy, and of the scientific methods of planning economic information . . .

The system of indices for planning and statistics has to provide a characterization of the effectiveness of social production, its profitability, the level of technical progress, and the productivity of labor. All this has to find reflection in the reporting system and the methods of analysis of reporting, so as to assure receipt of the required data.⁵³

The organization history of the Soviet statistical apparatus, its ideological foundation and methodological unity are elegantly discussed by Gregory Grossman in his

⁵²E. G. Liberman "Cost Accounting and Material Encouragement of Industrial Personnel," Voprosy e Konomiki (1955) No. 6, Reproduced in Problems of Economics, VIII (June, 1965), pp. 3-12.

⁵³"The Immediate Tasks of Soviet Statistics," Planovoe Khoziastvo (1967), No. 7. Reproduced in Problems of Economics, X (February, 1968), pp. 48-55 from pp. 48-49.

study of Soviet Statistics of Physical Output of Industrial Commodities: Their Compilation and Quality.⁵⁴ He states:

The launching of comprehensive and detailed national economic planning brought up the necessity for thorough consistency and comparability of statistical data, i.e., for a 'uniform system of record-keeping' (edinaia sistema ucheta) for the entire economy. Considerable efforts were made, especially in the thirties, to realize this goal. It involved essentially working out (1) standard definitions, (2) mutually consistent definitions for such different items as might be brought together in the course of economic analysis and planning and, (3) uniform and standardized methods of collecting, reporting, and classifying data.

To this end, the power to prescribe, supervise and direct statistical work throughout the whole economy has been centralized in TsSU (Central Statistical Administration) which has been carrying out this function primarily by standardizing the statistical reporting forms throughout the economy, providing detailed instructions for them . . .

. . . two features that strike the outside observer: the extremely early due dates for the regular reports and the enormous volume of reporting in general to which Soviet enterprises are subject . . . Comprehensive monthly and quarterly reports must be submitted within 15 days of the end of the reporting period . . . Reporting by the individual enterprise is rigidly governed by its prescribed roster of reports . . .

Commodity nomenclature, specifications, and units of measure appear to be standardized . . . and elaborate commodity classification appears to be in effect . . . These are the categories in terms of which plans are drawn up, production commands issued allocation of chronically scarce supplies made, and last, but decidedly not least, the performance of

⁵⁴(Princeton University Press, 1960).

enterprise judged. The statistical categories automatically become, in Alec Nove's apt phrase, 'success indicators'.⁵⁵

As an integral part of the Soviet statistical apparatus, and as the most important source of quantitative data for economic planning of the socialist production and for the measurement of plan fulfillment at all levels, Soviet accounting had to be based on Marxist ideologies of socialist production and its constituting statistical categories.⁵⁶ Thus we find for example, one of the most important success indicators at the enterprise level is the physical quantity of gross output and its assortment which has to be reported sometimes on a daily basis by telegraph.

The gross output index has found its particular application in planning: to facilitate tracing inter-industry flows; to plan investments, material supply, wage fund, and employment, and to permit intertemporal international comparisons . . . the central planner predominantly calculates physical magnitudes . . . In addition, the calculations in natura are recomputed in value terms . . . for the construction of the various financial and monetary balances.⁵⁷

⁵⁵Ibid., pp. 27-36. For an enlightening discussion of the effect of "success indicators" on the behavior of the socialist firm see Janusz G. Zielinski "The Theory of Success Indicators," Economics of Planning, VII, No. 1 (1967), pp. 1-28.

⁵⁶Socialist production is measured by the amount of material output gross of depreciation and gross of intermediate inputs in Soviet (and the rest of East Europe) practice. For an argument to the effect that such practice is not traceable to Marxist concepts, see Vaclav Holesovsky "Karl Marx and Soviet National Income Theory," American Economic Review, LI (June, 1961), pp. 325-342.

⁵⁷George R. Feiwel, The Soviet Quest for Economic Efficiency (New York: Frederick Praeger, 1967), p. 134.

Other examples of accounting being influenced by Marxist ideologies are, the exclusion of land and natural resources from assets, the absorption of organization costs by the state, the unimportance of profit (compared to plan fulfillment of gross output, composition, and assortment, material and labor input norms, inventory norms, etc.) as criteria of the enterprise success, the unlawfulness of charging for rent and interest, and the division of the enterprise's gross output into Marx's three main value components of $c + v + m$ where c is equal to labor embodied in intermediate inputs of materials and depreciation, v is equal to the amount of wages paid for labor expended in the production of output, and m is equal to surplus value created by living labor alone in excess of the necessary rewards and is designated to pay for capital formation and non-productive services of the government.

In effect this section is concluded with the following statements:

1. Social accounting and microaccounting in the Soviet Union are completely integrated under the management of the national economic accounting by the USSR Central Statistical Administration and the Ministry of Finance.

2. Microaccounting is comprehensively uniform among enterprises, industries, and all levels of the national economy. The main accounting categories derive from the categories of the social plan and its success indicators.

3. Accounting is based on historical cost which is equal in the Soviet Union case and under usual conditions to current price in the case of current assets. This is due to the fact that almost all prices (with the exception of prices of some agricultural products) are determined centrally and do not change frequently.

4. The whole statistical system which includes micro and social accounting is founded on Marxist concepts drawn from Marxist ideologies. A high degree of uniformity with regard to concepts is, therefore, established between social and microaccounting.

5. From the above it seems very plausible to conclude that the more centralized the economy, the more uniform is accounting, and the more integrated are social and microaccounting.

CHAPTER VII

CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

7.1. Conclusions and Recommendations

From the analysis thus far undertaken the following conclusions and recommendations are drawn:

1. The objectives of accounting are conditioned and structured to satisfy the demands and limitations of the socioeconomic organizational arrangement of the society. In a market capitalist economy, accounting serves the needs of the private owners and managers of economic resources without much attention being given to the collective needs of the society for information. The roles played by accounting in such an economy are auxiliary to the market and dependent on it as being the main mechanism assuring the efficient allocation and administration of the resources of the society (at least in theory). In a non-market planned economy, the objectives of accounting are broadened to provide the information needs of the society as well as the management of the individual economic unit. In essence, accounting-economic calculations replace market calculations in the

allocation and administration of the economic resources of the society. Thus the orientation of accounting follows to a large extent the scheme of ownership of economic resources prevailing in the society. Where resources are privately owned accounting serves private needs for information, and where resources are publicly owned accounting serves social needs for information.

2. Since the management of the individual enterprise is a common need in both planned and market economies, it follows that the objectives of accounting in a planned economy not only serve social objectives but also the objectives of the proper management of the individual enterprise. This makes the demands imposed on accounting much more complicated and difficult to satisfy in a planned than in a market economy.

3. Because the invisible hand of the market is not available for a socialist planned economy to insure the efficient allocation of its resources, and because economic accounting information is depended upon to achieve this objective without the market, it follows that unless such information is based on appropriate economic principles, a high degree of waste and misallocation of resources would be expected to result. Examples of such waste and misallocation are over investment in inventories and higher degrees of technological obsolescence of fixed capital stock.

4. To avoid such waste and misallocation with regard to overinvestment in inventories it becomes necessary to isolate the results from inventory holding activities from the other productive activities of the firm and to insure that inventory investment earns the opportunity cost of capital invested in it. To insure efficiency in production (form-utility creating activities) it should be charged with the utilization cost (UC) rather than the acquisition cost (AC) of inputs. Production accomplishments should also be recognized separately from selling accomplishments.

Accordingly three species of cost should be distinguished: Acquisition cost (AC), imputed opportunity cost (IC), and utilization opportunity cost of production inputs (UC). The difference between AC and IC reflects the opportunity cost of capital invested in asset holdings for the period assets are held. The difference between IC and UC gives the holding accomplishment of management holding activities and can be used to construct the Perceptive Efficiency of Management Index (PEMI). Such distinction was found to be most relevant, appropriate, and capable of being accounted for in quantifiable, measurable, and additive terms in practice.

5. Inventory valuation methods adopted by the UARUS, although practical, and much easier to apply, provide information which suffers from the significant shortcomings of being irrelevant and inappropriate for

proper decision making, non-additive, and concealing inefficient activities of the firm. This is shown in Chapter III.

6. The depreciation policy and the depreciation rates allowed in an economy are very important factors in determining the technological composition of the fixed capital stock and the degree of its obsolescence. Higher depreciation rates and/or accelerated depreciation schemes result in a more technologically advanced composition and lower rates of obsolescence of fixed capital. Lower depreciation rates and/or straight-line depreciation schemes result in a more technologically obsolete composition of fixed capital stock.

7. No positive rate of growth of fixed capital stock can be maintained indefinitely from depreciation funds alone regardless of the rate of acceleration allowed. Acceleration of depreciation will allow a decreasing rate of growth in physical fixed capital stock until the longest lived unit in it is replaced and thereafter the average long run rate of growth will become zero. To maintain any positive rate of growth, internally financed, the firm should retain a portion of its profits equal to the desired rate of growth multiplied by the value of its fixed capital stock.

8. In a surplus labor economy such as that of the UAR, allowing higher rates of accelerated depreciation in labor intensive industries relative to capital intensive

industries will be consistent with the objectives of an economic policy aiming at the absorption of surplus agricultural labor in industry. Depreciation should, therefore, be considered as an instrument of economic policy and should be manipulated to serve the objectives of such a policy, rather than being considered as a process of cost allocation.

9. For purposes of macroeconomic calculations, depreciation should measure the current and not the historical value of fixed capital assets consumed in the process of production. A current value concept and a depreciation pattern consistent with the pattern of value erosion are needed for such purposes of depreciation calculation. The most reasonable depreciation scheme found to be consistent with the pattern of value erosion is accelerated depreciation.

10. The straight-line depreciation method adopted by the UARUS is deficient both as an instrument of economic policy and as a basis for the calculation of the current value of capital consumed in the current process of production.

11. Depreciation rates recommended by the UARUS are generally lower than what is currently allowed in the United States for tax purposes; they are higher than was allowed by Bulletin "F"; and they are significantly higher than depreciation rates adopted in the USSR. In some cases depreciation rates in the UARUS are as high as

200 per cent of their counterpart rates for capital replacement in the USSR. The UAR rates however, are generally too low to permit a rapid enough rate of technical advance compatible with current growth objectives.

12. The discrimination between assets purchased used and assets purchased new with regard to applicable depreciation rates is expected to have a deterrent effect on technical progress. Higher rates allowed for assets purchased used will induce higher demands for assets in the secondhand market, especially under a pricing mechanism based on full cost plus a fair profit margin policy. Under such conditions, utilization of secondhand, and perhaps technologically obsolete assets, will look more profitable than utilization of technologically modern and in most cases more efficient (inputs and outputs wise) assets.

13. Some of the shortcomings of the depreciation scheme adopted by the UARUS can be reduced if the recommendations given at the end of Chapter IV are adopted.

14. In a planned socialist economy, the accounting messages tend to be oriented to the service of social objectives of efficient planning and adequate plan flow-up in addition to their traditional objectives. In a market capitalist economy, the accounting messages are designed to serve the traditional purposes of private owners and managers of economic resources. It follows that in a planned economy, accounting messages will tend to be uniform with regard to underlying principles and rules of

valuation, methods of information classification and amount and detail of information content among both firms and industries. This was observed in all cases of planned economies examined in this study. On the other hand, it is observed that in a market capitalist economy no, or substantially less, uniformity in accounting exists among firms and industries.

15. In a planned economy, the balance sheet should not only provide the value of the resource possession of the entity under consideration, but it should also provide this value measured in more than one alternative method of measurement. Three values are suggested to be given for both assets and equities of the economic unit: the current cash value, the running value, and the budgeted value. The definition and significance of each is given in section 5.2.1 of Chapter V.

16. The operating accounts should give a more detailed analysis of the activities of the economic unit to enable efficient control from within and without. They also should provide information in such a way as to enable proper aggregation for purposes of social accounting.

17. The set of financial statements and reports on the operations of the individual economic unit prescribed by the UARUS provides more detailed and more informative data than is currently provided in any capitalist country. The valuation rules upon which this information is based suffers, however, from the numerous shortcomings of

historical cost based information provided by financial accounting in these countries.

18. The usefulness of information provided by the UARUS for the purpose of exercising control over the economic unit by the mother General Organization is limited to total performance. As was seen in Chapter III, control via activity performance is more appropriate and more effective than control via total performance.

19. Controls from within are totally neglected by the UARUS and emphasis in reporting is placed on controls from without the reporting economic unit. This omission is a significant contribution by the system to the expansion of bureaucracy and bureaucratic organizations in the economy. What is needed, therefore, is to supplement the current set of financial reports with an additional set built on the basis of responsibility centers so as to be helpful in exercising intrafirm control.

20. The nature of the socioeconomic organization of the country can affect the functioning of microaccounting to the direction of more consideration to the needs of social accounting. A market capitalist economy will have the least influence and a non-market socialist economy will have the most influence.

21. A higher degree of comprehensive uniformity in microaccounting is observed to exist in socialist planned economies than in market capitalist economies. The more centralized the economy, the more uniform is

microaccounting, and the more integrated it is with social accounting. Valuation rules are still based in most cases, however, on historical cost.

22. Although not fully integrated with social accounting, microaccounting in the UAR under the UARUS generates information specially designed to serve the objectives of social accounting. This supports the conclusion that the governmental regulation of economic activities is a prerequisite for microaccounting being more responsive to the needs of social accounting. The more regulated the economy, the more integrated is social and microaccounting.

23. With regard to the objectives of the UARUS, stated in Chapter II of this study, the following is observed.

- a. The system does not provide "the basic information and analytical tools and methods necessary for planning, execution of plans, and control at all levels,"¹ in the most adequate way. The adequacy of a piece of information in serving a given objective can be appropriately measured by its relevance, quality, detail, and practicality. As was seen, information provided by the UARUS is not the most relevant for its objectives within the limits of reasonable cost and effort.

¹Op. cit., p. 8.

The quality of information provided by the system is poor relative to the criterion stated at the end of Chapter II; it is more satisfactory, however, than information provided by accounting in most other countries considered in the study. Information provided by the UARUS is also practical, comprehensive with regard to detail and coverage, and is flavored with the simple beauty of uniformity.

- b. The links provided by the system between accounting on the level of the individual economic unit and social accounting are relatively poor and not soundly constructed. Suggestions for improvement including a new design for the Current Operations Account are made in Chapter V above.
- c. As to the objectives of facilitating the collection, organization and storage of accounting information, the system--being based on comprehensive uniformity of accounting--provides well enough for it.

7.2 Suggestions for Further Research

This study has dealt with the theoretical aspects underlying the UARUS. A fruitful avenue for further research would be to inquire into the practical issue of providing information for economic planning. This would

include: A survey of the information problems facing the planners, how these problems are currently solved, the role played by accounting in their solution, whether such roles can be improved, and the practical difficulties of their improvement.

Another avenue for research would be to test the dependence of the four organizational levels in the UAR economy--the enterprise, the Organization, the Ministry, and the Economy--on information provided by the UARUS in exercising their duties of planning and controlling the economic activities involved in each level. Such research would indicate which information is useful, which is useless, which is needed, which is already provided, and which has to be provided and, therefore, induce activities for improvement.

A third avenue for research would be to try to reconcile Marxist economics with Western economic thought in their relation to concepts such as economic efficiency, value, and profit and examine the impact of such reconciliation on accounting.

A fourth research project would be to construct a simulation model for an economy having the properties of the UAR and apply to it the discriminatory depreciation policy recommended in this study to examine its effects on surplus agricultural labor absorption in industry.

Finally, another research project can be undertaken to examine the effects of the actual application of our

recommended valuation methods for inventories, and the calculation of cost of production on the behavior of management. Management decisions with regard to the levels of inventory holding, production scheduling, and selling policies would be examined for an adequate period before and after the valuation scheme is applied.

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APPENDICES

APPENDIX TO CHAPTER V

FORMATS OF FINAL ACCOUNTS AND STATEMENTS
IN THE UARUS

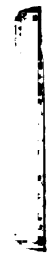
1. Balance Sheet
2. Statement of Sources and Uses of Capital
3. Current Operations Account
4. Production and Trading Account
5. Profit and Loss Account
6. An Actual Distribution of Profit Account
for a Typical UAR Enterprise

The Balance Sheet
As of _____

Comparative	Acct. No.	Equities	L.E.	L.E.	L.E.	Comparative	Acct. No.	Assets	L.E.	L.E.	L.E.
		<u>Capital:</u>									
xxx	211	Owned Capital	xxx			xxx	111	Land			xxx
	212	Government Share (to be paid)	xxx			xxx	112	Bldgs., Constructions, Facilities & Roads			xxx
				xxx		xxx	113	Machinery & Equipment			xxx
						xxx	114	Transportation & Delivery Facilities			xxx
		<u>Provisions and Forwarded Surplus:</u>				xxx	115	Tools			xxx
xxx	221	Legal Provision	xxx			xxx	116	Furniture & Fixture			xxx
xxx	222	Provision for Investment in Government Bonds	xxx			xxx	117	Animal & Water Resources			xxx
	223	Provision for Renewal and Expansion	xxx			xxxx	118	Deferred Expenses			xxx
xxx	224	General Provision	xxx			xxx		<u>Projects Under Completion:</u>			xxxx
xxx	225	Provision to Pay Government Share of Capital	xxx			xxx	121	Commodity Build Up			xxx
xxx	226	Provision for Rising Prices of Assets	xxx			xxxx	122	Investment Expenditure (advance payments)			xxx
xxx	227	Other Provisions	xxx			xxx		<u>Inventory:</u>			xxxx
xxx	228	Forwarded Surplus	xxx	xxx		xxx	1311	Raw Materials	xxx		
		<u>Allowances:</u>				xxx	1312	Fuel	xxx		
xxx	231	For Depreciation	xxx			xxx	1313	Spare Parts & Supplies	xxx		
xxx	232	For Contingent Taxes	xxx			xxx	1314	Packing & Wrapping Materials	xxx		
xxx	233	For Uncollectable Accounts	xxx			xxx	1315	Salvage	xxx		
xxx	234	Other Allowances	xxx	xxxx		xxx	132	Unfinished Product & Work in Process	xxx		
		<u>Long Term Debt:</u>				xxx	133	Finished Product	xxx		
xxx	241	National	xxx			xxx	134	Merchandise on Consignment	xxx		
xxx	242	Foreign	xxx	xxxx		xxx	135	Merchandise for Sale	xxx		
						xxx	136	Certified Accounts for Merchandise Imports	xxx		
						xxx		<u>Long Term Lending:</u>			xxxx
						xxx	141	National	xxx		
						xxx	142	Foreign	xxx		xxxx
		<u>Creditor Banks:</u>						<u>Investment in Securities:</u>			
xxx	251	Overdrawing Accounts	xxx			xxx	151	Government Bonds	xxx		
xxx	252	Secured Short Term Loans	xxx			xxx	152	National Securities	xxx		
xxx	253	Credit on Certified Accounts	xxx	xxxx		xxx	153	Foreign Securities	xxx		xxxx
		<u>Creditors:</u>						<u>Debitors:</u>			
xxx	261	Suppliers	xxx			xxx	161	Accounts Receivable	xxx		
xxx	262	Notes Payable	xxx			xxx	162	Notes Receivable	xxx		
xxx	263	Miscellaneous Creditors	xxx			xxx	163	Miscellaneous Debtors	xxx		xxxx
xxx	264	Distributions Payable	xxx	xxxx		xxx		<u>Various Debtor Accounts:</u>			
		<u>Various Creditor Accounts:</u>				xxx	171	Various Debtors	xxx		
xxx	272	Various Creditors	xxx			xxx	172	Other Debtor Balances	xxx		
xxx	273	Other Creditor Balances	xxx			xxx	173	Current & Appropriated Revenues Receivable	xxx		
xxx	274	Accrued Current & Appropriated Expenses Payable	xxx	xxxx		xxx		<u>Cash on Hand and In Bank:</u>			xxxx
						xxx	182	Bank-Demand Deposits	xxx		
						xxx	183	Bank-Time Deposits	xxx		
						xxx	181	Cash on Hand	xxx		
											xxxx
											xxxx
											xxx
								Forwarded Deficit (if any)			xxx
		<u>Total Equities</u>			xxxx			<u>Total Assets</u>			xxxx

1

xxx	Surplus of Current Operations	xxx	Deficit of Current Operations	xxx
xxx	43 Revenues From Investment	xxx	Current Transfer	
xxx	441 Transfer Revenues:		Appropriations:	xxx
xxx	442 Interest	xxx	Charities	xxx
xxx	443 Rent	xxx	Subsidies	xxx
xxx	444 Capital Gains	xxx	Fines and Benefits	xxx
xxx	445 Revenues From Previous Years	xxx	Capital Losses	xxx
xxx	446 Fines and Benefits	xxx	Expenses of Previous Years	xxx
xxx	447 Miscellaneous Revenues	xxx	Bad Debt	xxx
xxx	448 Imputed Rent Variance	xxx	Allowances (Other Than Depreciation)	xxx
xxx	Imputed Interest Variance	xxxx	Real Estate Taxes	xxx
			Income Taxes	xxx
xxx	2812 Current Deficit	xxx	Surplus Available for Distribution	xxxx
xxxx		xxxx		xxx
xxx	281 Surplus Available for Distribution	xxxx	Current Deficit	xxx
			Retained Surplus:	
			Legal Provision	xxx
			Provision for Investment in Government Bonds	xxx
			Provision for Renewal and Expansion	xxx
			General Provision	xxx
			Provision to Pay Government Share	xxx
			Provision for Rising Prices of Assets	xxx
			Other Provisions	xxx
			Forwarded Surplus	xxx
			Distributed Surplus:	xxxx
			Workers Share	xxx
			Government Share	xxx
			Shareholders Share	xxx
			Other Shares	xxx
xxx		xxxx		xxxx
xxxx		xxxx		xxxx
xxx		xxx		xxx



Ministry of Industry
 General Organization of Chemical Industries
 The Public Company for Paper Production (Rakta)
 Distribution of Profits for the Fiscal Year
 Ending June 30, 1968

	<u>L.E.</u>	<u>L.E.</u>
Net Profit Available for Distribution		721,168.119
Deduct:		
5% Legal Provision	36,508.406	
5% Provision for Investment in Government Bonds	36,058.406	
5% Provision for rising prices of Fixed Assets	36,058.406	
Dividends to Shareholders and Workers:		
	<u>L.E.</u>	
Government Share	96,068.000	
Other Shareholders	53,932.000	
Workers (25%)	<u>50,000.000</u>	
	200,000.000	
Supervision expenses of the General Organization of Chem. Industries	<u>31,299.290</u>	
		<u>339,474.508</u>
Balance credited to the Provision for Renewal and Expansion		<u>381,693.611</u>

APPENDIX TO CHAPTER VI

ORGANIZATION OF THE YUGOSLAV
FIRM AND ITS INTERRELATIONS
WITH OTHER ORGANIZATIONS¹

The Yugoslav firm is autonomous with regard to most decisions, i.e., product-price relations, and distribution of income. The firm draws its own plan and determines the price of its product (with ceiling prices being imposed in some cases) as to maximize its own profits.

Three management levels can be observed in the Yugoslav firm. The basic managing body is the Workers' Council, which numbers from 15 to 120 members according to the size of the firm. Members of the Worker's Council are elected by and from the firm's employees for two years

¹Material in this appendix is based on information from the following sources: Aleksander Bajt "Decentralized Decision-Making Structure in the Yugoslav Economy," Economic of Planning, VII, No. 1 (1967), pp. 73-85; Benjamin Ward, "Political Power and Economic Change in Yugoslavia," American Economic Review, Papers and Proceedings (May, 1965), pp. 65-74, and "Workers Management in Yugoslavia," Journal of Political Economy (October, 1967), pp. 373-86, Pejovich, op. cit., Chs. I and IV; Waterson, op. cit., Chs. III-VI; F. E. Ian Hamilton, Yugoslavia: Patterns of Economic Activity (London: G. Bell & Sons, 1968), Ch. 16; Bombelles, op. cit., Chs. III-V; Radmila Stojanovic (ed.) Yugoslav Economists on Problems of a Socialist Economy (New York: International Art and Science, 1964); United Nations, "Economic Planning and Management in Yugoslavia," Economic Bulletin for Europe, X, No. 3 (Geneva, 1958), E. Neuberger, "The Yugoslav Investment Auction," Quarterly Journal of Economics (February, 1959), pp. 34-35; and Institute of Comparative Law, op. cit.

and are not renewable. In addition, half of the members must be elected each year and 75 per cent of the members must be blue-collar workers. The Workers' Council plays the role of the stockholders in a free market economy. Because of this system of rotation the Workers' Council is not politically controlled by the party from inside. The duties of the Workers' Council are defined by law. They include the adoption or modification of the statute of the enterprise, the adoption of production and development plans, decisions on the operational policy of the enterprise, and decisions concerning the distribution of income.

Since the Workers' Council is usually a huge body, the law requires that it elect from its members a Managing Board numbering at least five members. The Board decides concerning the operational and development plans, sees to the enforcement of the decisions of the Workers' Council and assures the proper functioning of the enterprise.

The third managing level is the enterprise director who is elected by a commission appointed by the Workers' Council and the local government. According to the law he is independent in his work and personally responsible to the Workers' Council and the Managing Board. He conducts the operation of the enterprise, sees to the lawfulness of such operations and executes the decisions of the Workers' Council. He participates in the duties and

rights of the Workers' Council without the right to vote and he is an ex-officio member of the Managing Board.

A Yugoslav enterprise may be founded by social-political communities, local communities, working organizations, association of citizens, and citizens. The assets for the formation and commencement of the enterprise may be furnished by founders or obtained by way of credit from the banking system. Once established the enterprise assets and any additions to it, whether by way of credit or internal financing, are social property. Assets are classified into funds as described in the text of the chapter and the enterprise has the right to use of such assets.

The enterprise may obtain funds by way of credit from the General Investment Fund or from other funds of commercial banks. The total amount of General Investment Fund is determined by the social plan and is administered by the national bank which allocates these funds to the commercial banks.² The national bank performs the functions of a central bank, and a bureau of the budget in addition to its important overall duty of allocating resources from the G.I.F. to the commercial banks and supervising their distribution to assure that there is

²Since 1948 the banking system in Yugoslavia has gone through revolutionary changes. What is described here is the current arrangement. For description of the changes since 1948, see Pejovich, op. cit., Chapter I.

agreement between the basic proportions of the social plan and the distribution of the G.I.F. among various industries. In addition to the normal duties, commercial banks also perform the functions of local bureaus of the budget.

Funds are allocated to enterprises through competitive bidding. An enterprise desiring to get funds from the G.I.F. or other commercial bank funds has to submit detailed plans as to the intended uses of these funds, the expected rate of return, the expected repayment period, and the maximum rate of interest the enterprise is willing to pay on such funds. In addition to fully elaborated projects, the law requires that the financial status of the enterprise and the extent of internal financing should be considered in case of allocating credit from the G.I.F. Once the marginal rate of interest is established by competitive bidding to balance the supply and demand for funds, the scheme of priorities of allocating these funds is determined and all enterprises are charged the same rate on funds allocated to them.

The planning mechanism in Yugoslavia constitutes a pyramid of hierarchal levels with each level being fairly independent though consistent with other levels. The highest level is the social plan for Socialist Federal People's Republic of Yugoslavia. The social plan sets the basic proportions of the whole economy leaving the quality, quantity, and price of each product to be

determined by the producing economic units.³ The plan determines the minimum utilization of capacity in each branch of industry, that is, the minimum aggregate supply, the distribution of the G.I.F. by industry, the aggregate wage bill, the rate of gross and net saving in each branch of industry, the rate of social contribution (taxes and interest on capital) by producers and their allocation to the G.I.F., and the Federal, Republican, and other budgets, and the determination of funds distributed through the federal budget. The social plan is drafted as follows: The Federal planning institute prepares a detailed macroeconomic survey indicating present possibilities and future prospects. On the basis of this analysis, the Federal Executive Council and the Federal people's assembly define the general objectives of the plan. On the basis of these, estimates of possible development of production, national income, investment, and personal income are made for the whole economy, and for each sector, the most favorable alternatives are selected and coordinated, allocation is made to the G.I.F. and to other funds, and finally economic measures by which the plan is to be implemented are formulated. Two independent chambers discuss the plan, the Federal Chamber

³Before 1951 economic planning of Yugoslavia followed closely the Soviet type.

of Producers and the Communal Chamber. For any measure or provision to be instituted in the plan, each of the two chambers must agree on it independently.

The second higher level is the Republican plan for each of the six Republics. Republican plans are drawn independently by the Republic following approximately the same procedure for the social plan. Consistency between Republican and Federal plans is assured through the designed proportions of the Federal plan and the allocation of the G.I.F. For the Republic to get its share, its plan should be consistent with the proportions and objectives of the social plan.

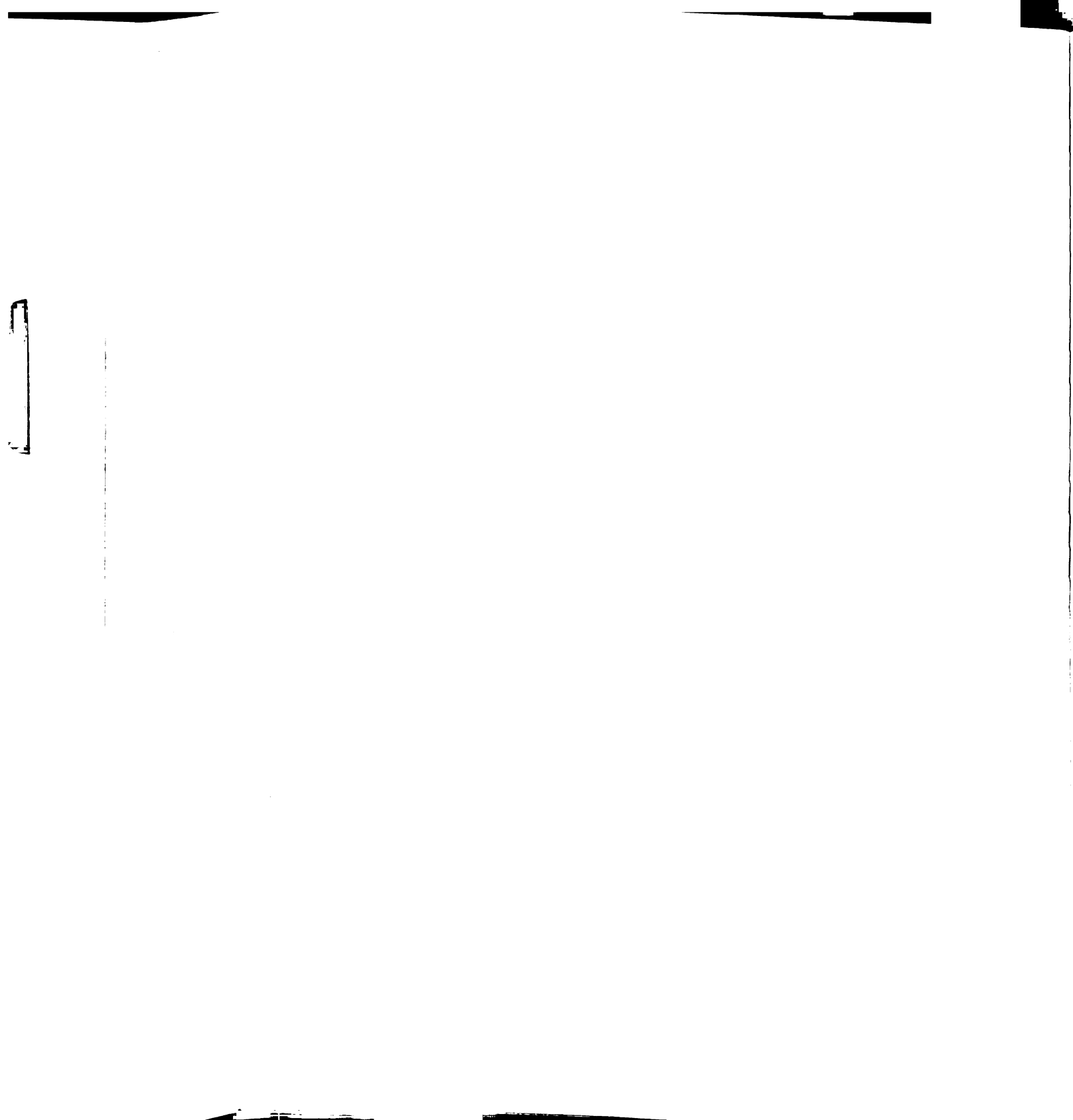
The third level is the Region. It also draws its plan independently provided it is consistent with the Republican and Federal plans.

The fourth level is the District and the commune within districts. Each of these draws its plans independently provided they are consistent with higher levels plans.

The fifth level is the enterprise or the economic organization which is usually the executing organ of all higher levels plans. It also draws its plan autonomously within the limitations of available sources of finance which were discussed above. Consistency of the enterprise plans with the Federal plan is assured through the banking system, the communal assembly of the commune within which the enterprise is located, and various provisions of the law.

Each lower level plan is usually prepared after and takes account of resources made available by higher level plans. In effect the Republican plans may be considered as territorial segments of the Federal plan suitably modified in each case to take care of special Republican problems. The regional plans in each republic may also be considered as the sum total of communal plans which is equal to the Republican plans.

Legal regulations which directly or indirectly assure the consistency of the enterprise plans with other higher level plans are discussed in the chapter.



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