

**ON THE HISTORICAL VALIDITY OF NOMINAL MONEY AS
A MEASURE OF ORGANIZATIONAL PERFORMANCE:
SOME EVIDENCE AND LOGICAL ANALYSIS**

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ABSTRACT

In the literature, nominal money has been decried as a reliable measure. However, before condemning money as a defective measure, it is necessary to examine in a historical context the nature and the role of money in a money economic system, and the changes over time in the types of money (commodity money versus paper money). Using historical evidence and logical analysis, this paper attempts to establish the validity of nominal money as a valid device for the measurement of organizational performance. This paper reveals that: (1) the deficiencies of commodity money (and the historical arguments associated with it) are attributed to paper (fiat) money; (2) in a historical setting, there are very restrictive conditions under which paper money would be a defective measuring device; and (3) under general economic conditions, paper money is a reliable measure.

THE NATURE OF MONEY: A HISTORICAL PERSPECTIVE

Why does money exist in the first place? Why is the economy monetized?

Money evolved out of social exchange as a social welfare maximizing device. It drastically reduces the number of intermediate transactions necessary to arrive at the desired exchange transaction. Money was assigned its roles in the transition from payment in kind to payment in nominal money terms; once the transition took hold, money emerged as the parameter of measurement of want satisfaction in the economic system.¹ Money was first introduced as a unit of account (an imaginary unit) for the purpose of facilitating exchange by translating the physical exchange ratios of all commodities into a series of relative money prices. Next, money as a medium of exchange was introduced through the use of documents which evidenced that exchanges had taken place--a credit instrument representing an obligation emerged and this was transferable in settlement of an exchange. Finally, with the rise of the money and capital markets--third party financing of production, money became a store of uncertain value. A system of monetary exchange emerged retaining the historical mechanism of exchange--the varying set of exchange ratios of commodities in the form of nominal money prices.

Monetization of the Economy

Ab initio, the institutional arrangement of money in society was to permit the expression of the relationship of all commodities-one to another and each to every other-at a given point in time.² Money was introduced as an arbitrary measure, which is to serve as a measure of the value of goods and services exchanged at a given point in time, and whenever the value of those goods and services should change, this money measure should clearly reflect such change. As one of several benefits to society, money removed some of the inequities that were existent in a barter economy by making clear the resultant inequities of changing conditions on the working populace; it made possible the means of income redistribution [Babbage 1835,309-311; Malynes 1622; Cunningham and McArthur 1896,165]. Money gave rise to the concept of price level, and permitted a measure of changes in the price level. Accordingly, it is possible to preserve an individual's earning power. This situation explains indexation in countries such as Brazil.

Money as a measure of value at times did not possess any physical quality; it was imaginary (conceptual).³ A value measure existed primarily for calculating. However, it was found necessary to introduce a money form (a medium of exchange) which would enhance exchange; by being generally acceptable it permitted a uniform command over purchasing power (goods and services). In so doing, money enhanced specialization and increased the efficiency of the economic system [Hendrickson 1970,29-30]; it provided a means of trading labor services for commodities without holding commodities. As Leijonhufvud [1981,68-70] puts it: Individuals seek money wages because firms do not produce a balanced basket of goods. Consumers do not commit themselves in advance to a specific future consumption pattern, and accordingly would want wealth in a form which would permit the potential of consuming in the future whatever is then desirable.

Money: An Allocative (Organizing) Agent

Money possesses a unique characteristic: general acceptability. It is this quality which makes it an effective agent for organizing economic activities [White 1984,703, 708; Smith 1985,1184; Hendrickson 1970,26-27]. Goods and services, in general, do not possess the quality of general acceptability by all members of society. This acceptance of

money is a form of "social action" [Weber 1947,112]. Money, being a fixed claim [Spindt 1985,177], is a buffer stock against transactions requirement. Money permits the extension of the production period and attaches divisibility to goods and services which are indivisible by means of its substitution for those goods and services.

Money has standardized and systematized the labor and commodities markets [Mitchell 1927,116;1967,603; Hendrickson 1970,21-22]. Thus, the possibilities of a monetary economic system are extended far beyond the normal possibilities of a barter economic system [Burstein 1963,504-506; Babbage 1835,309-311; Eiriksson 1954, 196; Lauderdale 1804,185-195,201].

Commodity Money vs Nominal Money

In the course of the social evolutionary process, nominal (paper) money has replaced commodity money.⁴ Why? Simply to overcome the inherent limitations of a commodity money.⁵

When a commodity serves as money, it creates two special problems: (1) its exchange relationship with each and every other commodity depending upon alternative uses for that commodity is subject to change; and (2) it creates the need for specialists in that commodity in the case of metallic currency (gold and silver) [Lees 1935,p.cii]. A cost is imposed by each of those two conditions. In the first case, there is the cost of acquiring the necessary information on the changing exchange relationships of the commodity [Bautier 1971,164,168,169]. In the second situation, there is the cost of determining the quality of the specific commodity--the commodity money being tendered in each exchange.

An attempt to overcome the change in the value of a commodity money (when a representative paper money is in use) is to assign an arbitrary value to the commodity in terms of the representative paper money. However, such an approach cannot overcome the problem, since the representative paper money is merely a convenient and efficient means of representing the commodity money. After all is said and done, the assigning of an arbitrary value cannot provide an unchanging value to the commodity money [Hendrickson 1970,39,42,45,53,300,301].

Paper money has an assured (certain) nominal value, which is conferred by official decree.⁶ The general acceptance of paper money as a medium of exchange is based upon the full faith of the populace in the credit worthiness of the issuing authority.⁷ Paper (fiat) money is essentially credit! Evidently, nominal money eliminates the two types of cost associated with commodity money. Since society moves in the direction of transaction cost reduction, it is with little wonder that society has adopted paper (fiat) money which is cost efficient [Alchian 1977]. Paper money reduces the cost of transactions by eliminating: (1) the vulnerability of the transactions to the fluctuations in the exchange ratio of the commodity money and (2) the cost of monitoring the quality of the commodity money. However, nominal (fiat) money is not a costless agent; it is available only at a cost: the rate of interest, which is determined by supply and demand. The cost associated with paper money is derived from the intensity of its use; it is actually the cost of credit.

Some money forms did (do) possess dual value, an extrinsic value (medium of exchange) and an intrinsic value (independent value) [Walsh 1903,31; Newlyn 1962,3]. Gold and silver coins⁸ were in this category since they not only were circulated but were ornate objects. However, in recent times most economies are based upon fiduciary (fiat) money. Owing to its assured (certain) nominal value, paper money currently provides a level of predictability which would be unattainable if it were an uncertain nominal value. While the primary use of a commodity, which is being used as money (the medium of exchange), may be that of facilitating exchange, fiat (nominal) money has no other economic use. The ability to effectively organize activities is its use par excellence.

Fiduciary (fiat) money is a store of uncertain future value, a nonspecified purchasing power [Hawtrey 1913,14-15]. Simply because it can be hoarded until it is needed for use in exchange, it is a store of uncertain value. Paper money, because of the general acceptability of its assured nominal value which is referred to as the purchasing power of money, is a reference frame for measuring the exchange ratios of commodities.

It is often said that purchasing power is the quantity of goods that can be purchased with money, and therefore, the value of money is inversely related to the price

level [Bernstein 1935,503].⁹ Although money is a frame of reference (an arbitrary measure), the preceding statement leads to the erroneous conclusion that: (1) commodities provide a measure of the value of money, and (2) it is money that is being measured and not commodities. The economic process of investment is considered as being $C \rightarrow M \rightarrow C$ instead of $M \rightarrow C \rightarrow M^*$. In reality, individuals hold money (M) because it is the medium of exchange, to acquire commodities (C), and produce commodities (C) to exchange for money (M*). These acts they do perform instead of holding commodities (C) to acquire money (M) and producing money (M) to acquire commodities (C).¹⁰ Full recognition should be given to the fact that paper money, exchanged for any commodity at any given point in time, simply represents the purchasing power of the commodity exchanged at that particular time.¹¹ A certain amount of purchasing power being stored (at any given point in time) is an uncertain value. Purchasing power is an uncertain value. This condition obtains because what is being stored is simply the nominal quantity of the medium of exchange by (for) which the purchasing power of the specific commodity, be it labor service or whatever, was measured (exchanged).

While the exchange ratio (purchasing power) of each and every commodity is subject to change, the nominal value of money is constant. Thus, money as the medium of exchange in a money economy means that its acceptance in exchange for commodities is an assured nominal worth (\$X) of commodities. How many commodities can be purchased is a function of time and space. The given purchasing power of available commodities or set of exchange ratios (the relationship of one commodity to another and each to every other) at each given point in time is a function of the demand and supply conditions. Unequivocally, the purchasing power of each commodity is subject to change.

Value Concepts and Constancy in Value

The change in prices of commodities does reflect (more often than not) change in relative utilities among commodities. It is for this basic reason that Bailey [1825,71-73], Pareto [1927,225], and Keynes [1930,95-120] questioned the propriety of making comparisons of physical units over time, since the utilities of the various physical units are not the same over time. While Samuelson [1961,154-162] had gone even further by

maintaining that the whole branch of index number theory is sterile. The condition is so since the knowledge of individual preference is expressed in the relative prices, and it is these same prices which are used to construct the index by which comparisons of "better-off" and "worse-off" are made. Like Keynes [1930,54], Samuelson [1961,161-162] concluded that any significance attaching to the numerical value of the index computed, except calculated for a special purpose, is misleading.

The change in the cost of money impinges on the purchasing power of commodities. This condition obtains because the manner and intensity of the use of money change the cost of its use, and the cost of the use of money does have an impact on the cost of production. However, to state that money is not stable, because it does not purchase the same quantities of commodities in different periods, is fallacious [Greidanus 1950,298]. Money is an endogenous variable; but an ad hoc monetary policy will alter the cost of the use of money and influence demand and supply conditions. Since the purchasing power of commodities is a function of market and technological forces, given change in market conditions, then there will be a change in price.

The level of prices can be kept or remain constant due to a certain constancy of the number of dollars required to acquire (measure in money terms the value of the exchange of) goods and services over time. However, this constancy in the value in exchange is accompanied by a lack of constancy in another respect. For instance, if, for whatever reason, there exists a certain scarcity of commodities, individuals would have to pay much more money for the few commodities. After the period of scarcity is overcome, due to whatever factors and there is now abundance, individuals would hope to be able to buy more than during the period of scarcity with the same quantity of money they had during the period of scarcity. In this situation, if the governmental authorities should wish to maintain a stable price level, it would be necessary through an artificial manner for each individual's nominal (money) earnings to be doubled (and to minimize friction the quantity of money increased) so that the high prices prevailing for the commodities during the period of scarcity are maintained. In an artificial sense, the constancy of the money value in exchange would be preserved. However, although no individual would be made worse-off, this stability of prices would be attacked on the

grounds that individuals are paying high prices in the presence of plenty. In this case, customary prices would prevail, and not prices based upon the law of supply and demand.

The constant value of money (a constant number of nominal dollars) to measure exchanges of goods and services at all time would in effect constitute a lack of constancy of nominal money as a measure. The required constancy implies that there is: (1) no change in taste or technology, and (2) that utility in times of scarcity of a certain quantity of a certain good is exactly the same as that derived from that same quantity of that good in a period of plenty. Jevons [1905,2,3,52,53] has argued that utility is not some physical characteristic which is inherently constant in an object, but it depends exclusively on existing conditions. To illustrate the point, Jevons stressed the lack of utility of gold in a drowning man's pocket. Based upon this same line of reasoning, Georgescu-Roegen [1971,282] echoed essentially the same point of view that want satisfaction is not some constant physical quantity:

[T]he true "output" of the economic process is not a physical outflow of waste, but the enjoyment of life. This point represents. . . [one] difference between. . . [t]he economic process and the entropic march of the material environment. . . .

It is thus seen that we cannot arrive at a completely intelligible description of the economic process as long as we limit ourselves to purely physical concepts. Without the concepts of purposive activity and enjoyment of life, we cannot be in the economic world. And neither of these concepts corresponds to an attribute of elementary matter or is expressible in terms of physical variables.

Accordingly, it is understandable why implicitly Samuelson [1961,150] maintained that one cannot look at two physical quantities, from two different time periods, as represented by two deflated value sums (constant dollars) and state whether the two value sums representing physical quantities reflect equally desirable situations, since the utilities can and do differ over time. When there has been no change in relative prices, one would be able to buy the same quantity of goods with the same amount of money as in the prior periods. However, money which at every given point in time under changing conditions (when relative prices are changing) buys the same quantities of commodities cannot be stable money [Greidanus 1950,297-300]. Stability of value in exchange (validity in the measurement of the exchange ratios of commodities) depends

upon the ability of money to reflect the changing conditions underlying or affecting commodities (including labor) in the market place [Greidanus 1950,228; Ensley 1958,6; Myrdal 1939,129-130].

Constancy as it relates to money would be a certain constancy in the manner in which money performs its function as a measure of the value of utility. Utility changes; therefore, if the exchange ratio (relative purchasing powers of commodities) as represented by nominal money can be artificially kept constant, money is clearly not performing its function because it will not be expressing the change in relationship which has occurred among the values (utilities) of the various commodities [Bernstein 1935,37-42; Jevons 1875,194]. This point can be appreciated by recognizing that a US dollar does not buy the same amount of goods and services on the same day and for extended periods of time in different parts of the US. Is it because some people in some parts of the US are not aware of the worth of the US dollar? Or is it that the value of the US dollar varies from region to region within the US? This apparent regional difference in a US dollar merely reflects differences in regional supply and demand conditions.

THE ROLE OF NOMINAL MONEY

If one abstracts from reality, one finds that the exchange system can be characterized as a system in which each exchange involves one party giving up points and another party earning those points. These points can be accounted for in a central recording place. However, to minimize checking with a central office on a person's stored entitlements (points), entitlement chips called money are used. Since exchange on open credit would require checking with the central entitlement office, an individual can hold chips (money) to expedite exchange.

The history of commodity money reveals that it has been plagued with problems [Burns 1927], and the movement to a paper money has been shown not to be the cause of general price level changes [Thornton 1802 (1939); Tooke 1844 (1959)]. Nominal (paper) money has removed the problem of instability associated with commodity money. Nominal money, just like the metre or the yard (each a measure of length), is arbitrary, and only in this sense is it absolute as a counting device.¹² Despite this dimension of

absoluteness, nominal money is still only a relative frame of reference. Unequivocally, nominal money is the basis of exchange in a money economy, and its stability can be demonstrated.

Money in Context of the Exchange Ratio

Arrow [1981,140] has stressed that: "all exchange ratios between pairs of goods can be determined by singling out a specific good and by knowing the exchange ratios of all other goods for it. These exchange ratios can be thought of as the prices of the goods." Accordingly, for any given commodity in relationship to all other commodities, a host of exchange ratios exist. Given this situation, *the role of money is to provide a homogeneous (standard) means of comparing exchange ratios among the various commodities.*

The difficulty in understanding the value constancy of nominal money rests with the dual function of nominal (paper) money: (1) a means of expressing price in an uniform and, hence, comparable manner, and (2) a means of payment (a medium of exchange which serves as an intermediary between needs). When one speaks of the value of a commodity one is really speaking of its purchasing power--the nominal money amount for which it can be exchanged (its exchange ratio against some other commodity) [Jevons 1875,3-11; Walsh 1903,8; Cassel 1935,30,54; Coulborn 1950,30-31]. This exchange ratio will be more or less depending on the commodity for which it is to be exchanged. As Jevons [1884,251] has emphasized:

There is no such thing as value intrinsic in any commodity but that, in an economic sense, the values of two things merely express the ratio in which they do as a fact exchange for each other.

Evidently, it is because of the use of money as a medium of exchange that one links price (the exchange ratio) with nominal money rather than view it (price) as a relationship of exchange ratios among commodities.

Money and Price Calculation: As stated earlier, nominal money serves an intermediation function between needs. Therefore, to understand better the exchange ratio, it is necessary to view money as a mechanism for price calculation but not as a medium of exchange (the means of payment).¹³ If it is assumed that ounces of gold would be used as the means of payment instead of nominal money, then it becomes much

easier to visualize the implication of the exchange ratio on the number of nominal dollars that would be required in a transaction.

For the purpose of analysis, a simple model is developed and presented in Tables 1 and 2. The economy consists of three sectors: A, B, and C. It is assumed that labor is divided into high-skill labor (HSL), medium-skill labor (MSL), and low-skill labor (LSL). The demand for high-skill labor is in sector A; low-skill labor is in sector B; and medium-skill labor is in sector C. Assume further that only commodities are produced by sectors A and B (products A and B). Section C produces services (C). The terms of exchange (the exchange ratios) are established based upon the utilities of each unit of output as follows: 10 Bs-1A; 5 Cs-1A; and 2 Bs-1C. A is being produced at full capacity, while B is being produced at around 80% of capacity. The supply of services from sector C is highly elastic. Based on Table 1, at the initial equilibrium level, the exchange ratio is 10 Bs for 1A. The members of HSL exchange 10 As at the central exchange market for a mixture of B and C units; likewise, the member of LSL exchange their 100 Bs for a mixture of A and C units. In this process, the 100 Bs and the 10 As are distributed to the society at large.

TABLE 1
Initial Equilibrium Output

Commodity Group	<u>A</u>	<u>B</u>	<u>C</u>
Output	<u>100</u>	<u>1,000</u>	<u>500</u>
Labor's Share:			
HSL	10	-	-
MSL	-	-	50
LSL	-	100	-
Recovery of Input	80	800	400
Entrepreneur's Share	<u>10</u>	<u>100</u>	<u>50</u>
Total	<u>100</u>	<u>1,000</u>	<u>500</u>

Assume further that: (1) output for B has increased by 20% (using up the excess capacity) due to an increase in demand; and (2) an increase in the demand for A (based upon its price reaction coefficient) reflects itself in a 20% increase in price, and HSL gets a pro-rata share of the increase. The effect is reflected in Table 2.

TABLE 2
Subsequent Equilibrium Output

Commodity Group Output	<u>A</u>	<u>B</u>	<u>C</u>
	<u>100</u>	<u>1,200</u>	<u>600</u>
Labor's Share:			
HSL	10	-	-
MSL	-	-	60
LSL	-	120	-
Recovery of Input	80	960	480
Entrepreneur's Share	<u>10</u>	<u>120</u>	<u>60</u>
Total	<u>100</u>	<u>1,200</u>	<u>600</u>

Based on Table 2, at the new equilibrium level 1A exchanges for 12 Bs. As is customary, HSL exchanges its 10 As; likewise, LSL exchanges its 120 Bs in the central exchange market. Now, if the transactions (exchanges) are cast in nominal money terms, then the number of dollars required in the transactions would increase for Table 2. It should be obvious that the increase in the amount paid for A is not due to a loss in value of nominal money. To illustrate, if the price per Table 1 of B is given at \$1.00 per unit, then the price of A is \$10.00 per unit. The total nominal money value is \$1,000 (100 As = 1,000 Bs). In Table 2, with no change in price of B (given the new exchange ratio of 12 Bs for 1A), then the price of A would be \$12.00. The total nominal money value is \$1,200 (100 As = 1,200 Bs). \$1,200 is now required to buy 100 As, when in the preceding period \$1,000 was required to buy the 100 As. Given that the price of one unit of B has not changed, is it correct to say that the value of money has fallen?

For the continuing purpose of analysis, nominal money would only express price and the means of payment would be in the physical form of ounces of gold. If an ounce of gold were valued at \$100 in the first period (represented in Table 1), then the settlement would have required 10 ounces of gold. Now assuming in the subsequent period, owing to an increase in demand for gold in a foreign country, the price of gold has risen to \$300 an ounce, then the settlement would require only 4 ounces of gold, which is the nominal money equivalent of \$1,200. Yet, in a physical sense, if real term settlement is required, then 10 ounces of gold would have to be issued in exchange. It would appear

that the party who is to receive the 10 ounces of gold would be getting an unfair advantage over the party who would be required to pay the 10 ounces of gold. Here, one experiences a decrease in the physical quantity (ounces of gold) required to pay for an increase in the physical quantity (output of B) or for an unchanged physical quantity (output of A).

The variation in the dollar magnitudes required to pay for A brings about the argument that the value of the dollar has fallen; whereas, it is the change in exchange ratio between the commodities A and B that has produced the effect, and not the instability of paper money.¹⁴ The emerging need at this stage is to address the factor that impinges upon the exchange ratios and, unequivocally, establish the stability of the money unit.

Monetary Policy and the Exchange Ratio: Undeniably, paper money can fail to be a consistent measure of exchange, if there is monetary dislocation: a loss of faith in the domestic currency (e.g., the assignats in the 1790's in France and the paper mark in 1923 in Germany). However, in the absence of monetary dislocation, the nominal money measure is stable. An ad hoc interest rate policy does alter the normal cost of the use of money. Its impact is on the cost of financing production. The variation in the exchange ratios, among the various commodities, will depend upon the extent to which the availability of money and the intensity of use of money vary among producers of commodities. Just as the demands of highskill labor can alter the exchange ratios among commodities, so does monetary policy alter the exchange ratios. Labor cost is a factor cost. An increase in this cost should simply reflect a change in labor demand and supply conditions; however, rigidity can be introduced by an institutional factor (e.g., unions). Likewise, an increase in the cost of money, which is a factor enabling production, should reflect a change in demand and supply conditions, but the change in cost could be due to an institutional factor (e.g., bank interest rate policy).

It follows from the foregoing discussion that alteration of the money supply without adherence to existing socio-economic needs, by increasing or decreasing the cost for the use of money (the interest rate), would increase or decrease the cost of commodities, this condition would alter the nominal money price of commodities.

However, the alteration of the nominal money price will not affect the additivity of the nominally defined parameter, it simply contributes (adds) to the problem of data comparability in terms of physical quantities.

Measures of Organizational Performance

Organizations constitute a mechanism for the efficient conduct of social exchange revolving around production and consumption decisions. Production and consumption activities are observed, measured, and recorded by financial accounting. These activities related to want satisfaction are measured in financial terms and not in physical units. Nominal money is the legitimate means of expressing want satisfaction in a money economy. As such, nominal money is used as the measuring unit in financial accounting. While the changing value of commodities due to demand and supply conditions, which is not a fault of paper money, invariably alters the existing income distribution, the stability of money as a measure is unimpaired. However, as stated' earlier, monetary policy does add to the problem that precludes interperiod data comparability in physical terms.

The utility of a commodity changes from one time to another based upon taste, technology and factors affecting availability (catastrophes, etc). While the physical substance of a commodity stays the same, its utility may be augmented or diminished. The utility of an object, unmistakably, is independent of the physical substance of its composition, but it is spatiotemporally dependent: the place (where) and the time (when) an object is traded will determine its value. This condition in financial accounting finds a counterpart in physics in which the mass of an object is dependent on its position in the universe [Haight, Jr. 1964,121].

Interperiod Comparisons

It should be quite clear that the physical attributes of an item cannot be equated with its want satisfaction qualities over time.¹⁵ The concern for interperiod physical comparability of economic activities manifests itself in the attempt to measure in real terms:

The essential feature of the quantity theory of money in both its older versions and its more recent and modern version is the assertion that what really matters to people is not the number of things called drachmas or dollars they hold but the real stock of money they have, the command which those pieces of paper give them over goods and services. . . . Thus when we talk about the

demand for money, we must be talking about the demand, for real balances [which are expressible in physical quantities] in the sense of command over goods and services [Friedman 1964,73-74].

However, in the foregoing passage, the absolute physical form of goods and services is confused with the relative want satisfaction. While form is constant, the want satisfaction is changing. It is a truism that the number of nominal money units required is a function of the prices of the goods and services which enter into the individual's or firm's budget. Given that the prices of goods and services are not constant [Hicks 1973, 152; Davisson and Harper 1972,51] because of changes in taste, technology and income, then the physical quantity that a specified number of nominal units can purchase (command) will not be constant. (The constancy issue has been addressed earlier on in this paper). Then what measure would be an effective guide for action in a complex, decentralized money economy? The following section provides an answer to the question.

RELEVANT MEASURES OF ACTIVITY

Let us examine the proposition that the financial measure is defective while the physical measure is correct. The following four value concepts of measurement are offered as relevant measures of organized activities [Eiriksson 1954,176]:

<u>Concept</u>	<u>Measure</u>	<u>Formula</u>
Physical Productivity	Quantity of Goods and Services -----Per Unit of Time----- Quantity of the Agent of Production	<u>Physical Quantity</u> Physical Quantity
Value Productivity	Value of Goods and Services -----Per Unit of Time----- Quantity of the Agent of Production	---Dollar Value--- Physical Quantity
Physical Return	Quantity of Goods and Services -----Per Unit of Time----- Value of the Agent of Production	<u>Physical Quantity</u> Dollar Value
Value Return	Value of Goods and Services -----Per Unit of Time----- Value of the Agent of Production	<u>Dollar Value</u> Dollar Value

"These ratios are not in the same dimension. For the service of money, the ratios reduce to only one, the last. . . which is the rate of interest [return] provided our unit of time is one year" [Eiriksson 1954,176]. The examination, which follows, of the four suggested possible measures pertinent to the system clearly reveals that *exchange value* productivity (rate of return) is the key measure for an efficient (money economy) market system.

Physical quantities in themselves are not capable of providing a means for ascertaining efficient resource (human and material) allocation. For instance, if physical productivity measures are used, when per capita output has increased, the economic system appears to be very effective. However, when value measures of those outputs are compared to the value of the inputs, it very well may be that the output achieved was significantly less than optimum output. Should more or less of a given item be produced?

There must be a means (a dynamic but uniform mechanism for capturing changing exchange ratios among physical quantities) to answer that question. The answer may be given that the "invisible hand" guides the market. However, anthropomorphism must give way to a view of economic behavior which is causal rather than teleological, and has quantitative and qualitative dimensions (want satisfaction is qualitative and is expressed quantitatively money expenditures) rather than merely quantitative (absolute physical quantities).

The **physical productivity** measure is unmistakably a useful measure in the case of determining the efficiency of a particular agent. For illustration, if labor is the agent then one appreciates the role of the physical productivity of labor; but one may have to answer the following questions: Should the items produced be produced? What quantities should be produced? When prices of goods and services are market determined, the answer to these questions can only come from *exchange value* productivity (rate of return).

The **value productivity** measure is also very useful for the purposes of comparing absolute per capita values of agents of production. For instance, it is quite useful to know the value of output per chemical worker and the value of output per electrical worker. However, if the concern is to determine which output is more remunerative, then the answer can only be found in *exchange value* productivity (rate of return) in which case nominal dollars of input are related to nominal dollars of output.

The **physical return** measure is an important measure which is of prime importance to philanthropic and not-for-profit organizations. Such a measure reflects the amount of physical output for one nominal dollar of input. For not-for-profit organizations, this measure is still not complete. Questions such as: What quality of services should be delivered? What quantity of services should be delivered? These require additional measures. If quality of service can be expressed in terms of price, since the denominator is already expressed in money terms, then the conditions for *exchange value* productivity exist and can provide a guide to action in an economy in which money is used as the medium of exchange.

The last measure, **value return**, is a measure of *exchange value* productivity. *It is a measure which incorporates both time and resource management.* Money, as the mechanism for exchange, creates a system of relative prices guided by the rate of return on money invested. A physical rate of return can be calculated but it suffers from the same defect as that of physical productivity measures. The rate of return on money provides a basis for comparing organizational performance. Thus, the problem of data comparability is overcome by the rate of return.

Money captures the psychological aspect of want satisfaction. The intensity of the want satisfaction of a particular commodity is reflected in the aggregate nominal money expended on that particular commodity. It is the expected nominal money expenditure (expected nominal money price) that guides initial output (physical quantities), and likewise adjustments of subsequent output is guided by expected nominal money expenditure on that output. Money lubricates the allocative process by permitting society to value, distribute and contract for commodities of various kinds in spite of inconsistent decisions among investors and savers, and producers and consumers [Goodhart 1975, 194,199,216,217]. Therefore, it is argued that the present nominal money measurements in financial statements are theoretically sound because the rate of return is a concept based on a purely monetary dimension while not having a physical volume interpretation.

The Rate of Return and Organizational Services

Invariably in a system of monetary exchange, the performance of the economy is

importantly dependent upon various nominally defined parameters. Such dependence cannot be prevented by "even the most rigid adherence to preconditions" for calculations in real terms: economic capital (physical goods) maintenance [Burstein 1963,473]. A money economy accommodates precise calculation and nominal quantities matter for they constitute the bases of all plans. These plans are an attempt to coordinate the management of time and resources. In such an economy, the comparison over time of two sets of physical output, or the review of a single period output in physical terms, cannot be meaningfully interpreted in financial terms. Yet, when such physical quantity flows are captured and expressed in financial terms, the efficiency of a money economic system is guided by the rate of return.

The rate of return,¹⁶ a ratio derived as an end product of periodic profit determination and asset valuation in financial accounting, is one of the most important nominally defined parameters. Investment in production of goods and services occurs over time and involves the use of resources. Accordingly, the rate of return on nominal money invested serves as a measure of time and resource management. The rate of return (r) is defined as P/M (P = nominal money profit for period; M = Money Outlay, the Investment on average during the period). These two values (P and M) are not in the same dimension, they are separated by time: the money outlay (M) precedes the money increment (P). The rate of return can be expressed as shown in equation 1 [Hotelling 1925,263].

$$1. \quad r(t) = \frac{1}{M} \frac{dM}{dt}$$

It is only through the rate of return that a value can be assigned to the service of money per a specific unit of time as related to the per unit of instantaneous value of money [Eiriksson 1954,62], and the rate of return is used to establish the capitalized value of a profit stream.

Pricing Organizational Services: In theory, a unit price always refers to a unit of physical quantity; but, because of its heterogeneous nature, organizational services cannot be expressed in units of physical terms. To measure the amount of services required, a

unit of monetary value is used, and it is the rate of return on money (a nominally defined parameter) which acts as a substitute for the unit price of the service of money; otherwise organizational services can neither be expressed nor measured [Eiriksson 1954,177-178].

THE ORGANIZATIONAL FUNCTION OF MONEY

Value Service

The acquisition of physical inputs to create physical outputs gives rise to monetary input values. Since there are many possible uses for a unit of physical output, the output value of a physical unit of output is dependent upon the particular usage of that output. Usage determines output value, and usage is only determinable upon transfer by contractual right or by physical transfer. Thus, input value is a stored value. The role of monetary exchange is to assign value, be it input or output value. Economic efficiency is contingent upon usage; use determines the monetary exchange. Consequently, input and output values are differentiated by time. Once as input, the physical unit is not separable from the input value measure; the separation only comes upon usage, and monetary exchange clears the way for the new (output) value. The time distinction between input value and output value is quite significant; it gives operational significance to the rate of return. The rate of return, which is based upon the relationship between the output nominal money value and the input nominal money, emerges as an important guide to economic efficiency.

Value Dynamics

In the absence of the special case of the monetarist view of price level changes, the rate of return is a particularly valid measure when the relative prices of goods and services have changed.¹⁷ This condition holds for a change in the interest rate, which indicates a change in the relative value of the services of money. In the special case of the monetarist view, an increase in the supply of money affects the absolute expression; the price level changes while relative prices remain unchanged. In that situation, the relative measurement capacity of the rate of return would be altered. However, invariably the change in price level is due to the net effect of change in relative prices brought about by demand and supply conditions; unmistakably, in such a situation the relative

measurement capacity of the rate of return is unimpaired. Also, the rate of return would be different for equal amounts of cash flows (earnings) from two *investments representing differing vintages*, but their capital market values would be the same. This condition obtains since it is the earnings stream that would be priced (capitalized) by the market. Hence, the rate of return on the *capitalized values* would be identical.

Implications for Financial Accounting

(1) The service of money is a storage service. The service of storage is in the nature of a value service, although being represented in a physical form (e.g., capital good). However, the service of money unlike other agents (e.g., laborer and land) cannot be separated into a physical and a value element. Whereas, the fluid movement of physical agents (laborer and land) is accommodated by the services of money [Eiriksson 1954,174].¹⁸

(2) The measure of value exchanged at a given point in time is a function of the given conditions in both the commodity and capital markets. Since the demand and supply conditions of a particular product affect the price of that product, and the intensity in the use of money affects the cost and availability of money (which is an agent in production), then an exchange ratio (a money price) is not and cannot be constant. A money price must reflect changing conditions if money is to fulfill its signalling function. It is for this basic reason that financial accounting measures the effect of the phenomena as they exist, not in some physical constant but in value dynamics as captured by a nominal money measure.¹⁹

CONCLUSION

The foregoing analysis, conducted within a historical setting, suggests that nominal money, as the measuring unit used for measuring organizational performance, is not defective under general economic conditions. Only commodities, and not money, determine purchasing power flows; purchasing power exists in commodities. Money serves as a means of facilitating exchange of goods and services. Within the transition from a barter sustenance-economy to a money surplus-economy, nominal money is a key factor in measuring and pricing of organizational services.

Given the evolution from a real exchange economy to a money economy in which paper money serves as the medium of exchange, want satisfaction (the basis for human behavior in markets) historically has been and currently is described and acted upon in nominal money terms, not in physical quantities or real money terms. Money prices and the rate of return serve as signalling devices. Accordingly, alteration of the current measurement of organizational performance (financial accounting measurement), to accommodate physical comparability, will diminish the signalling function of the rate of return. Thus, the efficiency of the economic system will be disrupted.

ENDNOTES

- 1 For an extensive development of this point, see Zimmern [1961, pp. 302-303].
- 2 The importance of this institutional arrangement is stressed by Bernstein [1935,37-42] and Jevons [1875,194].
- 3 For instance, the "change from a money to a natural economy" occurred in the Merovingian Period (400-600 A.D.). "[T]he *solidus* survived as a money of account only," and payments were made in kind during the Carolingian Period (800-900 A.D.) [Deanesly 1956,126-140]. Also, in the British colonies in America (pre U.S.A.), "Transactions were reckoned in shillings and pence, but where coins were used they were commonly of Spanish and Portuguese origin" (Bernstein 1935,91).
- 4 The terms: paper money, nominal money, fiat money, and fiduciary money, are used interchangeably.
- 5 For some of the limitations of commodity money, see White [1984] and Mill [1844,113,295]. When a commodity serves as money, market inefficiency may be experienced since the consumptive aspects of that commodity impinge upon its money function. For a good discussion of this point, see Sargent and Wallace [1983,170,171,173]. In this context, fiat (paper) money provides an additional benefit to society by releasing the commodity from its money function. For a good development of this point, see Sargent and Wallace [1982,1229,1231].
- 6 Nominal money in the international money market is sometimes referred to as a commodity (or preferably a financial asset). A demand and supply schedule for foreign currencies exists because of the need to settle trade balances arising from foreign trade. In this case, it can be asked how is the price (the foreign exchange rate) of a particular currency determined? To answer this question, it would be necessary to provide a discussion of the "Purchasing Power Parity Doctrine" which relates changes in exchange rates to changes in the domestic economy's level of prices.
- 7 "China was the first country to issue bank-notes, and the founder of the Ch'in dynasty, Shih Huang Ti (249-202 B.C.) was the first to experiment with this form of currency. Continual wars had ravaged the land for many centuries, and the currency was totally discredited; illicit minting and adulteration of coinage caused violent fluctuations of prices, adding to the miseries of the poor, embarrassing the Government and enriching speculators at no profit to the state" [Quiggin 1949,248]. Those conditions were responsible for the experimentation with and the ultimate adoption of paper money.
- 8 "...[G]old and silver...[were] regarded, in a world of steady farmers, as a convenient measure of value. For oxen...were not always of the same value, whereas a bar of gold was always a bar of gold..." [Zimmern 1961,302]. They were not used as a medium of exchange until 700 B.C. when coined currency (gold and silver) emerged. For it was then that "men began seriously to feel the need of a recognized common measure in their bargaining," to replace the time consuming effort of calculating the

exact value of everything else. Coin currency (precious metals) established at a recognized value was issued for use in daily transactions; thus, a monopoly in exchange was created with money being the monopolistic agent [Zimmern 1961,302-303].

- 9 This view has been criticized as follows: "[The]...concept *value of money* as something directly related to the inverse of the level of prices [is arid], however defined" [Hayek 1931,17].
- 10 If, in a bay, there is a ship which is one mile away from the dock in the harbor, one can say that the dock in the harbor is one mile away from the ship. However, since the dock is a constant frame of reference (a location point being that it is immobile), it is truly the ship that is one mile away from the dock and not the reverse. Also, one may say that the distance that the dock will be away from the ship (although it is really the distance that the ship will be away from the dock) is related to the direction of the movement of the ship. The "distance that the dock will be away" is equated with the "value of money," while the "direction of the movement of the ship" is equated with the "price level." Via the foregoing analogy, one can appreciate the problem of incorrect inferences from viewing the system as being concerned with measuring the change in the value of money (M) using changes in the prices of commodities (C) as opposed to recognizing that the changes in price as reflected in nominal money is measuring the change in the value (purchasing power) of the individual commodities (C).
- 11 According to Field [1984,44]: "money serves as a convenience and temporary repository of value in goods transactions."
- 12 A similar conceptualization of exchange seemingly is shared by Steuart [1767]. For instance, Steuart [1767,406-407] maintained that "[s]ymbolical or paper money is but a species of credit; it is no more than the measure by which credit is measured. Credit is the basis of all contracts . . . He who pays in paper puts his creditor in possession only of another person's obligation to make the value good to him: here credit is necessary even after the payments is made."
- 13 The problem is more pronounced with a commodity money than with paper money and the need for such separation (unit of measure vs. unit of exchange) becomes much more obvious. See for example, Walras [1926,333-334].
- 14 For a discussion along a similar point of view, see Jevons [1884, 32-33].
- 15 According to Sterling [1970,179]: "Under a stable level, . . . [a certain] amount of money would produce the same utility at all points in time. That is the meaning of a "stable price level." However, if we compare the amount of money to any particular good, instead of utility, it is not invariant. A constant quantity of money, then, is a temporally invariant sacrifice for utility, but it is a temporally variant sacrifice for any particular goods."
- 16 The rate of return is subject to distortions. However, the existence of systematic distortions (intentional bias in the selection among alternative accounting methods) and random distortions (ignorance of the preferred accounting method for the given circumstances, or negligence in the selection of accounting methods) should not obscure the merits of the argument on the role of the rate of return.
- 17 It has been demonstrated "that the adjustment of book values for changes in the price level biases estimates of the expected overall and period rates of return. The magnitude and direction of these biases are dependent, of course, on the precise changes in the index of prices used for such adjustment. As long as period rates are used as estimators of overall rates, the adjustments of book values for price-level changes caused biased predictors. The 'double counting' in the deterministic case [Bierman 1971] is shown for the stochastic case where estimation theory applies" [Jarrett 1974,65-66].
- 18 Similar views are expressed by Pareto [1927,225-228] and Myrdal [1939,21].
- 19 "Action is change, and change is in the temporal sequence. . . . Action is to make choices and to cope with an uncertain future. . . . The various complementary factors of productions cannot come together spontaneously. They need to be combined by the purposive effort of men aiming at certain aims and motivated by the urge to improve their state of satisfaction. Money is necessarily a 'dynamic .factor'; there is no room. . . for money in a 'static' system" [Von Mises 1949,249-250].

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