BUSINESS FLUCTUATIONS AND FINANCIAL ACCOUNTING MEASUREMENT: HISTORICAL COMMENTS

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ABSTRACT

This paper addresses a theme in an historical setting that financial accounting measurement contributes to: (1) retardation of national economic growth by the failure of financial accounting to provide for the replacement of capital goods in its measurement process; and (2) the business cycle owing to the illusory profits reported in financial statements. The author explores the issues and concludes that the arguments against accounting are based upon misunderstandings.

INTRODUCTION

In 1936, Keynes expressed concern over depreciation in financial accounting as a factor which could inhibit economic growth. Lacey [1944 and 1952] and Bach [1958] advanced the proposition that financial accounting measurements do contribute to the business cycle. Baxter [1955, revised 1969] has argued that financial accounting measurements 'accentuate business cycles. Arguments have been made by Norris [1944], Domar [1957], and Ray [1960] to refute the foregoing positions. .

Historically, it is maintained that, in a money economy, producers suffer from a money illusion. It is in this context that the accountant is accused of contributing to the business cycles [Lacey 1952,25]. The accountant's measure is said to produce illusory profits which lead to over-investment; it is maintained that two specific measures, depreciation and cost of goods sold, are inadequate, and this inadequacy denies the savings necessary for maintenance of the steady state.

The question to be answered is: does the accountant's measure of profit for the individual business enterprise, which is the cause of great concern [Lacey 1944 and 1952; Baxter 1955], produce irrational behavior (waves of optimism and waves of pessimism) and thus it contributes to the business cycles? Ray [1960] analysed the arguments which blamed accounting measurements for business cycles and was able to conclude that they were not valid. Ray's writing was spurred by Fritz Schmidt's articles written in 1927.

Schmidt (the eminent German accounting theorist) had attributed the cause of business cycles to accounting measurement. Ray focused on business attitudes and surveys to arrive at his conclusion. Norris [1944] presented a theoretical argument (based upon the concepts of social income and business income) to rebut the contention of Lacey [1944].

This author uses historical comments to: (1) show how misunderstandings could have been introduced in the literature, (2) disentangle the concepts, and (3) nullify the allegation that financial accounting causes business cycles and retards economic growth.

ACCOUNTING MEASUREMENTS

Accounting involves two distinct types of calculus: an ex-ante and an ex-post. The ex-ante calculus, which entails a prospective calculation, is reflected in financial budgets; while the ex-post calculus, which involves a retrospective calculation, is reflected in financial statements. The budget (except for sunk costs) does provide for future price level changes, while the financial statements reflect the actual changes of those items that were subject to change. The projected and resulting cash flows as depicted in the ex-ante and ex-post calculi are in *nominal* terms and not in "real" terms. Furthermore, even *if* calculated in "real" terms, all obligations in general are settled in *nominal* terms.

If it can be assumed that the budgetary process involves some type of maximization which is expressed in financial terms, then it would seem that to maximize "real" dollars, it would be necessary to maximize nominal dollars. Since it is only nominal dollars that circulate, "real" dollars are a function of nominal dollars. Naturally, the firm then attempts to maximize that which has general acceptability--nominal money.[1]

Financial budgets focus on money inflows and outflows as necessitated by the action(s) contemplated and the consequence(s) anticipated. Changes in prices of new inputs as anticipated are provided for as they involve cash outflows in the budget period; the sunk costs, those costs paid for in advance in order to minimize cost, involve no cash outflow in the budget period, and hence are not subject to price changes. Similarly, some new costs involving cash flows are governed by fixed price contracts; those costs are for services not subject to price changes because the purpose of the contracts are to preclude those services from being affected by any unanticipated price changes in the budget period.

Accounting recognizes the nature of *a money economy*, the role of *contracts*, and the *unavoidable time gap* between production and ultimate disposal.

A Subsistence Economy vs. A Money Economy

In a subsistence economy without money, the measure is in purely physical terms, e.g., bushels of wheat, tons of iron, and heads of pigs [Sraffa 1960]. Physical replacement of the input is a necessary condition for maintaining the existing steady state, while output must exceed input if there is to be growth. In a surplus economy, luxuries are produced, and taste plays a major role in what will be consumed. In a money economy, nominal money is the unit of measure, since nominal money is the only item in a money economy that has general acceptability [White 1984].

Contracts

Financial accounting recognizes the role of contracts and the role of the capital market. A contract is an attempt to control input cost--cost minimization. The capital market is the means by which individual savings can be channeled into investment opportunities. Once an investment in capital and vendible goods has been made, then investment (asset) consumption, in the form of depreciation and cost-of-goods sold, is a natural consequence.

The entrepreneur recognizes that cost control is critical to profit maximization--to achieve that end *contracts* are used. Also, money capital is necessary to store services via contracts; accordingly, the capital market is tapped by the entrepreneur. Money provides a storage service which is critical to production and distribution decisions. When the entrepreneur makes expenditures on stored services (durable agents-machines), the money outlays remain money-capital [Ashley 1912,482-483], as each such expenditure is a fixed *contract* for future services.

The Unavoidable Time Gap.

The accountant expressly accepts the proposition that: "Time is a device to prevent everything from happening at once."[2] In a market economy in which prices are expressed in nominal money terms, the firm is confronted with planned outputs or inputs over time in response to certain nominal money price expectations [Lutz 1951,15]. In a money

economy, the following characteristics are present: (1) The investment decision (money commitment) is based upon expected output prices (in period t) and input costs (in period t-1), the difference between the two money values determine expected nominal money return. (2) Management uses those prices and costs in its planning (e.g., a linear programming) model. (3) The resource allocation process involves a sum of money being committed (in period t-1) to a plan of action; the sum of money resurfaces (in period t+n) periodically or at the end of the plan's fulfillment. .

The characteristics of a money economy, as described above, explain why the accountant measures business profits as the difference between nominal money inputs and nominal money outputs. Given this measurement approach which is different from the social income measurement approach, the accountant is accused of contributing to the instability of the economy: the retardation of *economic growth* and, in part, creating *business cycles* [Lacey 1944 and 1952; Baxter 1955; Bach 1958].

Research Issue

Does the accountant's measure of a firm's performance contribute to or cause the business cycles? To answer this question, it is necessary to determine the nature of the firm and to whom and for what it is accountable. Such a determination would provide a clue to the measurement problem of *capital maintenance* which involves the issue of depreciation and inventory valuation.

THE FIRM AND ACCOUNTABILITY

The firm is an adaptation by society to its changing needs. According to Buchanan [1940], some form of organizing production in an efficient manner is necessary for an efficient economic system, but the firm *per se* is not essential to the economy. This condition is so since the emergence of the firm is precisely to overcome the burdensome and grossly inefficient cost of continuous renegotiation in the various markets for factors, which requires the continuous monitoring of relevant prices. Basically, any means which can be developed to handle that function better than the firm will replace the firm in society.

Following Copeland's [1937,129-132] analysis, transactors in the economy are

business firms and final owners of wealth. Final owners of wealth are households, governments, and not-for-profit institutions; business firms are merely intermediaries which are factored out in a national balance sheet. The firm enables society to maximize the use of its resources--human and material [Coase 1937,392]. *The firm can only be considered as* a *conduit through which money flows as* a *result of the given economic arrangement.*

The firm receives *capital* to coordinate the factors of production. Capital is essentially money [Buchanan 1940,33-34]; for in general, only means of payment are capital, and money is the means of payment in advanced economies [Schumpeter 1939, 42,110,129; Neibyl 1946,19]. The capital (money savings) is raised from suppliers of capital in exchange for claim instruments (financial assets), and the savings are invested--used to acquire the factors of production which constitute the investment (real assets). Unmistakably, real assets are money in use [Hollis 1934,127], and this fact led Von Mises [1960,146] to conclude that the function of monetary calculation is to enable the recognition of the path which leads to the goal sought after with the least expenditure of means.

Since money is an agent involved in the allocation of resources (materials and human) within and among firms, herein lies the need for a measurement in *the use of money:* the efficiency of *time and other resources management.* At this stage, an accountability emerges to recognize (1) the risk-sharing arrangement entered into among suppliers of money; (2) the surrogate-market nature of the firm; and (3) the element which constitutes capital: money and credit. Profit (the difference between two sums of money: money output less money input) as a measure of efficiency accommodates the new accountability. This new accountability (micro-level accounting) does not supercede nor duplicate the old accountability (macro-level accounting).

MACRO VS MICRO LEVEL ACCOUNTING

There are two distinct levels of accounting--national or social (macro) accounting, and organizational or firm (micro) accounting. The valuation used in each are different owing to the differences in the underlying functions of the two levels. In national or social accounting, the function of financial accounting is the determination of the wealth of the nation and the distribution of such wealth [Copeland 1937,6]. In organizational or firm

accounting, the objective is primarily the control of flows of the allocated amounts of the unit of accounts among the various organizations.

The difference between the functions of the two levels of accounting is subtle but significant. In the literature there is a very insightful and explicit recognition of this difference; however, the terms used are slightly different from the levels discussed above.

Goldsmith [1950,24] takes the position that the common term "accounting" is more appropriately termed social accounting, and then identifies two levels: *national business accounting* and *national economic accounting.* Goldsmith [1950] emphasized why different levels of accounting are necessary:

> The periodic inventory may have one of two functions: it may be designed to show the amount that can be realized if the business is liquidated or sold or regarded as a statement of unrecovered cost. The first lacks meaning if applied to a community. The economic equipment of a community, particularly one as large as a nation, can neither be sold as a whole nor liquidated piecemeal. To measure the unrecovered cost of a community's physical assets is possible and not without interest, but it is not the primary purpose of the periodic economic inventory, in business parlance, the balance sheet of a community. That purpose rather is to determine the total assets and the total net worth of all economic units that make up the community, primarily to the end of analyzing asset composition, wealth distribution, and claim and liability interrelations... [Goldsmith, 1950,24-25]

The failure to recognize the nature and functions of these two levels of accounting has contributed significantly to serious misunderstandings in this historical setting in the fields of accounting and economics. The misunderstandings are reflected in the debate on the maintenance of physical capital versus maintenance of financial capital. The difference between social accounting and organizational (business) accounting are based upon the following assumptions:

(1) Society is a natural state of nature; whereas, the firm is an artifice of society.[3]
(2) The resources of a society are allocated by that society to segments within that society.
(3) The discipline of accounting emerged to facilitate the control and planning of the allocation of resources among segments of society.
(4) The separation of the ownership from the use of resources was made possible and to great human advantage by the accounting process.
(5) The firm emerged as a result of social advances (a social evolutionary process), and necessitated a new accountability: micro-level accounting. .

The failure to recognize the difference between micro- and macro-level accounting was not important at the time of Adam Smith, David Ricardo, and John Stuart Mill; for it was not until 1844 (with the enactment of the British Companies Act) that financial reporting for enterprises was a required phenomenon. Only then can the distinction between accounting for a nation and an enterprise be fully appreciated.

Macro-level Accounting

Ricardo's [1823,94-95] concern for replacing of resources was not enterprise oriented but was national (social welfare) oriented. The most explicit view of this national accounting approach is found in the work of Mill [1830]:

> The net produce of a country is whatever is annually produced beyond what is necessary for maintaining the stock of materials and implements unimpaired, for keeping all productive labourers alive and in condition for work and for just keeping up their numbers without increase. [Mill 1830,88-89]

At the national level, national income is a distribution of Net National Product. National income, which is a summation of the payments for factors (materials, wages, rents, interest, and profits), is a macroeconomic concept. Equation 1, which reflects the aggregation of micro-units, is in static equilibrium.

$$\mathbf{1.} \qquad Y = C + I + Ex + G$$

However, at the micro-level, profit is the motivation for production; it is not a factor cost but a residual amount which can be negative (a loss) at times. Thus, the summation of compensation (**E**) to all factors used by the firm can be equal to, greater than, or less than the firm's revenue (**R**), the value of its output. Equation 2, which reflects aggregation at the micro-level, is in dynamic disequilibrium.

$$\mathbf{2.} \qquad R \geq E$$

Equality in equation 2 is achieved by adding the variable **P** (profit) or **L** (Loss).

$$\mathbf{3.} \qquad R = E + P\,(L)$$

Since financing is internal at the macro-level (for a nation) in a closed economy, it is assumed that financing is internal at the micro-level (the firm). However, Von Mises

[1949] and Goldsmith [1950] have drawn out the difference between the macro-level (society) and the micro-level (the firm). The firm *can* sell *all* its resources to other firms or individuals, but society *cannot.* So the issue of *maintaining the "real" (physical) capital is a truism for the economy, but not for the firm.*

At the macroeconomic level, for the purpose of calculating national income, the replacement cost of worn out capacity is deducted from Gross National Product; only net investment is included in national income. Also, depreciation is seen as a savings which will be available for investment [Lacey 1952,6; Hicks 1965,304; Shackle 1968,70-71]. It seems that it is the existence of depreciation allowances which permits capital accumulation (formation) at the macro (national) level [Hicks 1965,307]. Accordingly, the argument is made that at the micro-economic level when calculating the firm's profit, depreciation should be based on the replacement cost of equipment in use, rather than on the committed finance in the equipment, in order for a firm to maintain its physical capacity.

The difference in social accounting and business accounting is further accentuated by the controlling mechanisms: national (social) accounting--marginal cost (social well being--costs vs benefits); organizational (business) accounting--price (money revenues and money costs) [Goldsmith 1950,29-30]. The foregoing discussion sets the stage for a review of the two concepts of capital maintenance.

NATIONAL VS ORGANIZATIONAL CAPITAL MAINTENANCE

Society is a natural state of being, whereas, the firm is an artificial device--a device created by society in its never ending attempts to cope with changing conditions, primarily population growth and the means of satisfying the needs of that ever growing population. In earlier times, there were only two groups, laborers and consumers. All resources were owned by society; however, it became economically sound to allocate portion of society's resources among its citizens to enhance efficient use of the resources.

National Capital Maintenance: The Original Accountability

The fundamental theorem in economics is that there are only two functions: production and consumption [Copeland 1937,4]. In a steady state, production equals

consumption. In order to offset increases in population and raise the standard of living, *it is necessary that consumption be less than production.* The emphasis in this national setting is on physical capital maintenance.

When consumption is less than production, it gives rise to savings. This condition constitutes the process of capital formation--additions to the original capital stock. The process of capital formation changed with the end of the feudal system, and the allocation of resources was no longer made by political dicta but by economic motives. The change in the capital formation process was accompanied by the introduction of new, but important, institutional changes in society: money (an allocative device) and the firm (a surrogate market).

Organizational Capital Maintenance: The New Accountability

Essentially, despite the change from a subsistence to a surplus economy, nothing has changed from the initial proposition: production and consumption. However, a new orderly arrangement has been superimposed on the old structure, and new functions (groups) have emerged: financing (financier) and organizing (entrepreneur). Thus, new terms have been added--financing and investment. Actually, financing is merely a restructuring, in a much more efficient manner, of the barter system; it is now a money system. Investment permits economies of scale through specialization of the functions.

In summation, money and the firm are mere adaptations by society to facilitate production and consumption [Copeland 1937,24]. If the firms are conduits, then they are to be treated as such; they are merely systems of flow and not stock in themselves.[4] The stocks, that exist, are the resources of society. Thus, accounting for the firm is entirely different from accounting for national wealth.[5] The emphasis in this organizational setting is financial capital maintenance.

THE SOURCE OF CONFUSION

Shifts from the overriding national to an organizational (business) accounting approach is reflected in the works of Leon Walras [1926], Alfred Marshall [1927], and Vilfredo Pareto [1927]. The confusion in the financial accounting literature seems to have its origin in Hicks' [1939] definition of income. When Hicks [1939] defined income, the

focus (it seems) was on Mill's [1830] definition, which is a *social* accounting definition and not an *organizational* accounting definition. However, Hicks [1942] made clear that the definition of income he had suggested was for social income determination.

Given the new institutional (resource allocation) arrangements in a surplus money economy, due cognizance must be given to two factors: (1) a financial capital market exists, and that which is to be maximized is money [Robinson 1962,8] or else a contradiction emerges; and (2) the accountant's measure of asset consumption (e.g., depreciation and cost-of-goods sold) is a measure of the amount of committed finance or the amount of sunk cost that has been productively *employed* (consumed), but not necessarily *recovered,* in the period.

The areas in which confusion abounds are in the relationship or lack of relationship between (a) savings and depreciation; and (b) profits and investment. The remainder of this paper addresses these two sets of relationships under two distinct areas in economics: "Economic Growth" and "Business Cycles."

ECONOMIC GROWTH

Meade [1962, chap.2] identified three factors determining (the rate of) economic growth: (1) Savings; (2) Growth of the Labor Force (Population - Exogenous); and (3) Technology (Exogenous). The primary concern in this paper is with savings since it is allegedly impinged on by accounting information.

Savings and Depreciation

Meade [1962,173,174] maintains that: "It is necessary for the owner of . . . [a] machine to accumulate from annual depreciation allowances over T years of the machine's life a sum which by the Tth year will equal. . . the cost of buying a new machine." The depreciation method prescribed by Meade is the "fixed annuity" method. In Meade's model, the accumulated depreciation is considered as a savings fund, akin to a sinking fund for asset replacement.[6]

Given the "fund" view of depreciation, the firm is seen as the source of financing capital formation. Nevertheless, some firms do go into bankruptcy despite their depreciation charges, since their revenues were invariably insufficient to cover their costs.

Also, the question arises: how are new businesses formed? New ideas and new products are financed by savings tapped from the capital market.

Depreciation: Consumption vs Future Replacement. Unmistakably, depreciation can be viewed either as a *measure of past service benefits* or as a *cost of future service benefits.* The former is a measure of asset consumption, while the latter (future asset replacement) is a matter of policy prescription as the following definition of depreciation reveals:

> [A] measure of the consumption which must be foregone in order to replace those parts of the stock of commodity capital which are evaporating and which must be replaced if the stock is to continue its equilibrium growth. [Rymes 1971,1121]

In general, the concern in economics is not the cost of wear, tear, or obsolescence of an asset for the purpose of measuring past performance (past service benefits) but *for the amount which has* to *be set aside* for defraying the cost of replacement (future service benefits) of a capital good.

Economic Prescription. The focus in economics is on future service benefits as a measure for determining social income. Since replacement is a national economic imperative, the accountant concurs with the future-service-benefits view and considers it as being necessary for a proper determination of social income. The accountant, however, for purposes of measuring business profits uses the past-service-benefits view of depreciation. With the firm as the nominal money maximizing unit, the social income view fails to give due cognizance to the difference between a *sunk cost* and a *source of funds.*[8]

Depreciation in economics can be viewed as a *process of accumulation;* whereas, in financial accounting, depreciation is a *process of decumulation.* The concept of depreciation in economics idealizes the accumulation of an agent (money in a fund) for the replacement of a capital good (fixed asset) which will be worn out at some point in the future. Consequently, a *sinking fund,* the means for providing for future financing of replacements, is being used interchangeably with the term *depreciation.* Although Malthus [1819] does not make such a representation, it is possible that the sinking fund provision shown as a charge [Malthus 1819,269] has been assumed by other scholars to be

depreciation; thus, depreciation and sinking fund are assumed to be the same thing.[9]

It is this view of depreciation *as* a *financial provision for asset replacement,* it seems, that Keynes [1936,98-100] espoused. Keynes' concern was the economic instability that depreciation charges (if depreciation is in fact savings) would cause, when such savings are idle, neither being used for consumption nor investment.[10]

Understandably for the purpose of economic planning, physical replacement is critical to insure future equilibrium growth. The issue of equilibrium growth is vital to society, *but not* to *the firm* which is an institutional arrangement [Marshall 1927,350]. This distinction is quite significant, for as Von Mises [1949,218, 252] and Goldsmith [1950,24-25] have emphasized, an individual (firm) can *convert* all of his/her (its) property into money, a nation (society) cannot.

Within the context of social income, the term capital consumption implies an amount necessary to replace that which has been consumed. So when the term depreciation (a micro concept) is considered as synonymous with capital consumption (a macro concept) [Samuelson 1961,33], it is easy to understand how confusion can arise from the subtle difference between the two concepts. For instance, though Mill [1844,221-223] did not use the term depreciation, he did refer to annual wear and tear of durable machinery employed in business as partial consumption (one may say of capital). However, the *quasi-rent nature* of depreciation can be inferred from Mill's [1844,223] proposition: that it is necessary for the entrepreneur (capitalist) to be remunerated (not for the physical replacement of machinery, but) for *the wear and tear* of the entrepreneur's machinery.

Clearly depreciation does not imply replacement of a physical item as a consequence. Many projects (e.g., World Fairs) are a one shot proposition, all depreciable assets acquired to undertake the project (as known in advance) will not be replaced. However, over the life of the project, these assets will be depreciated. Depreciation arises despite no ensuing replacement. Like any rent charge, depreciation is incurred as a result of the acquisition of a depreciable asset (capital good). A capital good is acquired primarily to aid in the revenue (service benefit) generating process.

Domar [1957,95] explicitly recognizes that physical capacity replacement and physical capacity depreciation are two distinct phenomena, unrelated and separated by time.

On one hand, depreciation inevitably will occur; replacement on the other hand may never occur. Therefore, the contention (that in financial accounting, depreciation should be a measure of the funds that the firm must set aside to provide for the replacement of a capital good when it is no longer economically useful) constitutes the derivation of replacement cost accounting which is essentially future cost accounting.[11]

Replacement Cost Accounting: 'Future Cost' Accounting

Replacement cost, drawing on the reasoning of Haavelmo [1960,174-176], is the future time series of services to be stored in the future, and as such it is part of *budgeting* (the budgetary process) which takes into consideration all *future costs* in light of anticipated (future) commodity and capital markets' conditions. Depreciation stems from a current condition: the existence (emergence) of durable agents (e.g., machines and buildings). Durable agents represent stored services. *The value of the service stored has already been established* at *the moment of storing.*[12] Hence, depreciation represents a decumulation process of *prior* stored services and not an accumulation process of *future* services to be stored.[13] .

Depreciation is essentially a current *user cost* based upon a given datum. It is best described as a reduction in the productive capability or flow of a given amount of stored service *as measured in money terms* at *the time of storing for specific use;* the reduction of capability or flow of stored service is reflected in the wear and tear or simply becoming obsolete [Frisch 1965,333].

Accounting Description. In financial accounting, depreciation (as a measure of past service benefits) is a *quasi-rent.* A depreciable asset represents a predetermined total monetary charge for several benefit periods, with an estimate being made for the amount consumed in each benefit period. Revisions of the estimate of the amounts chargeable to each period may become necessary with the passage of time as more information is available. Since replacement of worn out depreciable assets is contingent upon commodity and capital markets' conditions, then it is not the accountant's measure of depreciation, but the inelasticity of supply when there are considerable lumpy investments that affects the pattern of economic growth [Lowe 1965]. The latter statement sets the stage for the next area to be discussed: Business Cycles.

BUSINESS CYCLES

Growth at the macro-level implies an increase in national output over that of the preceding period. However, economic growth has been found to be discontinuous. This condition accounts for Harrod's [1973,41] proposition, "[t]he phenomenon of the business cycle is one aspect of the growth process." Harrod [1973,33,41] maintains that *instability* is inherent in decentralized decision-making. Harrod's "instability principle" is characterized by: (1) decision-making (estimating) under conditions of uncertainty; and (2) the influence or impact of the existing psychology at the time of the impending decisions. The alternative psychological attitude from business optimism to pessimism concerning profit expectations, not about past measure of profits (financial accounting measurement), is the prime factor producing the business cycles.

It is the volatility of profit expectations which is the primary cause of the business cycle. Underlying the volatility of profit expectations is uncertainty, lags, and miscalculations [Kaldor 1960,231; Lowe 1965,74-75; Robinson 1962,63-69; Shackle 1968, 120-121,143-144]. In line with the foregoing, Lucas [1981,237] attributes the business cycles to producers observations of price movements. The producers engage in "signal processing"--a single variable (price) is observed changing through time. The transitory and permanent components of price cannot be observed directly. It is the imperfect inferences, the movements of the two components (based upon the relative importance of each component) which form the basis of the producers' decisions, that contribute to the fluctuations. Kaldor [1960,184] maintains that there exists a dynamic disequilibrium due to the combined operation of the savings and investment functions. Those two functions (due to incomplete information) inevitably generate a cyclical movement that does not tend to come to rest. *Incomplete information contributes to the business cycles*.

Incomplete Information

In the business environment not only is uncertainty present but so is incomplete information. Shackle [1968,27] describes it as: "the impossibility of producers' knowing each other's intention." According to Kaldor [1960,230] expectations are highly volatile, but it is the underlying bias, that exists toward optimism, which projects high and growing profits into the future.

For the sake of brevity, the following discussion will limit its focus on the financial accounting measurement of profit and the replacement only of plant capacity.

Investment* and *Profit. As stated by Lacey [1944], a larger profit in a period of rising prices than the actual profit is produced by accounting numbers. This inflated profit is what generates the wave of optimism. The reverse is true.[14] However, as Shackle [1968, 120] has put it, the investment decision is not based upon past profits but upon prospective profits. Since it is prospective profits as captured by the budget that determines investment, it is difficult to pin the responsibility for over-investment or underinvestment on past profits. Yet the accountant is told that unless his/her measure of profit includes the cost of replacing worn-out facilities,[15] it is a false measure and gives rise to illusory profit.

As explained earlier and by implication, the act of replacement is not the process of depreciation, for should there be a loss arising from the use of an asset, "the investor may be unwilling to replace the asset after it has depreciated" [Domar 1957,95]. Replacement of worn-out equipment is not automatic but is conditioned by alternative prospective profits. It may be that: (1) the cost of searching for alternative investment opportunities tends to produce a bias toward replacement of worn-out physical facilities; and (2) the control exercised by management on enterprise earnings tends to produce a bias on self-sufficiency of internal financing of investments. Since Domar [1957,165,167] indicated that replacement of an asset, to maintain the social process, is not necessarily a replacement within the same firm, then the cry of insufficiency of depreciation charges (as established in financial accounting) in periods of rising prices to finance replacement is a non-sequitur.

SUMMARY

Self-perpetuation is an objective of society, thus the maintenance of physical capacity necessary for the perpetuation of society is an imperative. The firm is one of several possible organizational forms which society can use for conducting its affairs; its continuation as an institutional arrangement is contingent upon society's assessment of that organizational form in terms of its effectiveness vis-a-vis other organizational forms. Therefore, the continuity of the firm is not an imperative. However, the firm has the responsibility for nominal money capital maintenance: to replace the nominal money which

has been entrusted to it. Given the responsibility of the firm, the concept of depreciation in business accounting reflects a contractual approach to cost minimization. Depreciation is a *decumulation process:* the decumulating of stored services by contract. A depreciable asset (capital good) is a prepayment (a contract) representing at the time of acquisition the present cash *value of services which can be stored.* The decision to store services is a part of the planning function of administration.

Planning implies control over some variables. The variable which is controllable by an enterprise is its input costs. Its output value is non-controllable. *Control over the input cost is established through prepayments.* Thus, one is dealing with a current cost, since the purpose of storing is to preclude changes in input cost by contracting in advance for a multiperiod package of services as opposed to a multitude of single period contracting for services. The decumulation represents the consumption of the stored services over several successive benefit periods. *The consumption is the current cost to the* firm in *accordance with its cost minimization plan.* (Both efficiency and profitability necessitate control over cost.) Depreciation expense in financial accounting emerges as a cost control approach; the alternative being annual rent expense, which may be subject to annual renegotiation introducing uncertainty in annual cost. The annual depreciation allowance is an accountability for use and not money set aside in a fund.

At the micro (firm) level, replacement of worn-out physical facilities (capital formation) is a function of the expectation of profits. Self-sufficiency of financing a nation's growth through domestic savings (a valid macro-economic consideration) is deemed an appropriate condition which must be satisfied by the individual firm. However, financial self-sufficiency of the firm, though *a desirable managerial policy*, is not a valid micro-economic consideration. A confusion between macro- and micro-economic considerations for capital maintenance accounts for the accountant's dilemma.

CONCLUSION

The financing of physical capital formation in a money economy is a function of: (1) an organized financial capital market, which should determine which firm is to continue; and (2) an organized commodity market which should determine which physical asset is to be replaced.

If depreciation were a fund for the *replacement* of worn out plant and equipment, then the amount of the depreciation for a given period would be based upon the replacement cost of the plant and equipment to be replaced. However, depreciation in financial accounting is an accountability for the *consumption* of an asset owing to wear, tear and obsolescence. In this setting, financial accounting measurement cannot contribute to the retardation of economic growth. Any insufficiency of funds for the replacement of plant and equipment is not a function of consumption but of a deficiency of savings.

If the investment decision is based upon the *calculation of past profits,* then financial accounting measurement would contribute to over-optimism or over-pessimism. However, it is the *projection of future profits,* which is based upon future conditions and not past conditions, which underlies the investment decision. Investments in plant and equipment are lumpy, and they are not replaced in a smooth and regular fashion. While demand is elastic for many products, the supply, because of the lumpy nature of investments, is inelastic. It is this condition, and not financial accounting measurement, which accounts for the business cycles.

ENDNOTES

1. Evidently, reasoning along this line of thought, Samuelson [1961,215] maintained that it is doubtful, despite the importance of the index number, that Pigou (whose contribution was under consideration) seriously would "suggest that the thing to be maximized is the money value of output deflated by an ideal index of prices." According to Tobin [1978,246]: "It is not in fact possible to invest in the GNP Deflator or to hoard the basket of goods, services, and taxes valued by the Consumer Price Index."

2. A quote attributed to Bergson, See Robinson [1962, title page].

3. For a very extensive discussion on the nature and role of the firm, see Stauss [1944,112-127].

4. The conduit implication for financial enterprises: banks, etc., in terms of their treatment in national income accounting, is much more apparent than for other institutions [Copeland 1950].

5. Prest [1950,293-300] takes a similar view of the situation.

6. This view of depreciation as a contribution to a fund is shared by Scott [1984, p.69].

7. Similar views on depreciation are shared by Bach [1958,43], Dewey [1975,258] and Von Mises [1949,546].

8. According to Wolk [1970,545]: "Many individuals in finance and economics construe depreciation as a source of funds, though perhaps not in a tight cause-effect type of relationship, but rather from a policy standpoint."

9. For instance, see Harrod [1973,61].

10. Another view along similar lines is concerned with the 'shortage of capital' for replacement as a consequence of inadequate depreciation provisions [Evans 1969,332; Baxter 1955,218].

11. Essentially, depreciation in the discipline of economics is a *future cost.* According to Domar's [1957,94] definition: "Depreciation... [is] the cost of replacing a worn-out asset by another one of equal production capacity." However, *to* any *given enterprise, according to Machlup* [1935,618-619] *the replacement of* an asset *is* an *avoidable cost in the future.*

12. The *cost* of the services stored is already established by contract in nominal money terms [Van Horne 1977,267].

13. This position is accepted in principle by Hicks [1973,165-166], while Eiriksson [1954,79-81,124] is very emphatic about this point.

14. Ironically, if the accusation holds [Lacey 1944,142] that the accountant's measure overstates profits in periods of rising prices and understates profits in periods of falling prices, then the economic effect would be a positive one according to Domar [1957,164]. Under those two situations, the accountant's measure would produce a stabilizing effect on the economy, rather than contribute to business cycles. This stabilizing effect would obtain since: (1) if profits are overstated in inflationary periods, then taxes would be greater than they should be, thus sapping up investment funds; and (2) if profits are understated in recessions (deflationary periods), then taxes would be less than they should be, thus releasing funds (which otherwise would have been collected as taxes) for investment [Domar 1957,164].

15. A similar argument is made for the replacement of inventories by Lacey [1944 and 1952] and Baxter [1955].

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