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The basic objective of accounting statements is the provision of information which aids users in making economic decisions. Accordingly, the focus of this paper will be on the purposes which can be served by exit-value accounting statements and the relationship of these purposes to user decision needs.

Exit-value accounting statements present to the user information which can be used for three basic purposes:

1. To determine the liquidity of the firm. This is generally believed to be the sole purpose for which exit-value information is relevant.
2. To appraise the effectiveness of managerial decisions involving assets. This largely unrecognized purpose may be the most powerful use of any accounting statements whose preparations are currently feasible.[1]
3. To estimate past economic income or predict future economic income.

The following sections of this paper will lay the foundations for these purposes and relate them to perceived user decision needs. It should be recognized that decisions require comparison of two or more measurements (usually expressed as numbers). For most decisions no more than one of these numbers can be determined from any single accounting system. The feasibility of the use of exit-value information for some of the functions which will be described is dependent upon the availability of certain other information. An explicit identification of these limitations will be presented at the end

[1] Accounting statements whose preparation is considered currently feasible include historical cost, historical cost adjusted for changes in price level (general or specific), replacement cost and exit value. Although replacement cost and exit-value statements have not been proven feasible in general, the available empirical research (including that presented elsewhere in this volume: Lawrence Revsine, "A Test of the Feasibility of Preparing Replacement Cost Accounting Statements," and James C. McKeown, "A Test of the Feasibility of Preparing Exit-Value Accounting Statements") has disclosed no problems which would support a conclusion of general impracticality.

of the paper, with particular attention given to those functions which require future cash flow projections since the availability and accuracy of those projections have not been demonstrated to date.

Liquidity

The most commonly discussed purpose which can be served by exit-value statements is determination of the liquidity of the firm. The liquidity or "adaptive ability" of the firm can be determined directly from the exit-value statements which measure assets at the net amount which could be realized from their disposal within a short period of time after the balance sheet date.

This purpose is the primary basis for Chambers' elaborate justification of the use of "current cash equivalents."[2] He says: "What men wish to know, for the purpose of adaptation, is the numerosity of the money tokens which could be substituted for particular objects and for collections of objects if money is required beyond the amount one already holds."[3] Stated another way the alternatives available to a firm or person depend upon two quantities:

(a) the resources available to invest in a contemplated project and
(b) the investment required to engage in that project.[4]

It is important to remember, in any discussion of the use of exit-value information to determine the resources which could be generated by the disposal of assets, that measurement on this basis does not assume that the assets will be sold. Exit-value measurement only indicates the expected results *if* one particular alternative (selling particular assets) available to management is selected. This information could help statement users who are interested in determining risk related to investment in the firm, a floor on the firm's worth, or the amount the firm stands to lose if particular operations are discontinued.

The risk of investment in a firm has been stated[5] to be related to the size of the difference between the expected discounted cash flows of the firm and its exit value (the specific advantage).[6] The potential loss if expectations are not realized is limited to this specific advantage.[7] Thus a firm with a small

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[2] Raymond J. Chambers, *Accounting, Evaluation and Economic Behavior* (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1966).

[3] *Ibid.*, p. 92.

[4] Robert R. Sterling, "Conflict of Income Measurement," *Working Paper No. 43* (Lawrence, Kansas: School of Business, University of Kansas, 1971), p. 24.

[5] Joshua Ronen and George H. Sorter, "Relevant Accounting," *Journal of Business* (April 1972), pp. 258-282.

[6] Although the expected discounted cash flows might have to be determined by use of information not contained in the exit-value statements, exit-value information can be particularly useful in these projections. (See the section "Estimation of Economic Variables.")

[7] A decline in exit values would occur only if the demand for the output of all like firms decreases *and* the demand for all other services which can be performed by these assets also decreases (Ronen and Sorter). Thus it is possible, but unlikely, for a decrease in expectations to be accompanied by a similar decrease in exit value.

specific advantage would generally be considered less risky than one with a large specific advantage. Chambers makes a similar point when arguing that presentation of a highly specific asset at an exit value of zero informs the investor that the usefulness of that asset is entirely related to its income producing prospects. If these prospects disappear, the asset has no utility.[8] The principal statement users who would be interested in the estimation of risk would be the present and potential investors and creditors of the firm.

Exit value indicates a floor on the worth of the firm in two ways:

1. Exit value indicates a known value of the firm, that value which could be obtained currently by sale of the assets and settlement of the liabilities (orderly liquidation). This value could, in extreme cases, be obtained by stockholder action to force liquidation. (Although unlikely, the decision to force liquidation can only be made with knowledge of the firm's exit value.)

2. The fact that management holds assets indicates, by implication, that management believes that the value which can be obtained from these assets through use is at least as great as their exit value.

Again present and potential investors and creditors would appear to be most interested in this use of exit value.

In conjunction with an estimate of management's expectations regarding certain assets, knowledge of the exit value of a firm's assets gives parties negotiating with the firm an estimate of the amount the firm stands to lose upon (and consequently the amount it would pay to avoid) discontinuation of all or part of its operations. This knowledge would be useful to any statement reader who was in a position to force cessation of operations. This group would include for example, labor unions, other monopsonistic suppliers, and government regulatory agencies. Included among other financial statement users who might wish to know the excess of the present value of management's expectations over the exit value of the assets involved as an indication of the probability of continued operations would be (present or prospective) long-term suppliers, customers or employees. Each of these users may be required to make decisions (regarding commitment of scarce resources) which will be influenced by the probability of the firm's continued operations in a particular area at a particular level.

Appraisal of the Effectiveness of Management's Decisions

The need of external financial statement users for information that will facilitate an evaluation of management performance has been noted by several authors. These authors range from accounting committees ("The prediction of such [management] effectiveness would appear to be highly important to virtually all groups of external users of accounting information . . ."[9]) to individual accountants ("Security analysts, searching for key criteria for

[8] Raymond J. Chambers, "Second Thoughts on Continuously Contemporary Accounting," *Abacus* (September 1970), pp. 47-48.

[9] Committee to Prepare a Statement of Basic Accounting Theory, *A Statement of Basic Accounting Theory* (American Accounting Association, 1966), p. 25.

use in predicting business success, are interested, of course, in measured profit and statements of financial condition. Yet they usually give even greater recognition to management capability and human technical know-how."[10]) to statement users ("the [financial and other] information ought to enable a competent person to judge the abilities of the corporation management."[11]).

No uniform list of information requirements emerges from these writings, but all indicate an interest in (accounting) information which will aid the external user in his attempt to judge the effectiveness and efficiency of management. Although the objectives of financial statement users have not been determined, the assumption will be made that the statement user (particularly a stockholder) desires management to take actions which will maximize the present value of the future cash flows to the company.[12] Therefore, to evaluate the effectiveness of management, the reader will wish, possibly among other uses, to utilize financial statements to determine whether management has made any decisions which result in a lower present value of future returns than the present value which would have resulted from a known alternative course of action. In order to identify incorrect asset acquisition or disposition decisions, an external financial statement user would need information which would enable him to answer the following questions:

1. Did the management acquire assets which it should not have acquired?
2. Did the management pass up profitable opportunities to acquire assets?
3. Did the firm dispose of assets which should have been held?
4. Did the firm hold assets which should have been disposed of?

It is suggested in this paper that the use of accounting valuations based on exit-value measurements, with "income" determined by deducting a type of imputed interest (defined below) as an expense, would provide information useful in developing answers to some of these questions. To support this

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[10] R. Lee Brummet, "Accounting for Human Resources," *Journal of Accountancy* (December 1970), pp. 62-63.

[11] Corliss Anderson, "The Financial Analyst's Needs," *Berkeley Symposium on the Foundations of Financial Accounting* (Berkeley: School of Business Administration, University of California, 1967), p. 100.

[12] Alternatively, it can be assumed that although a particular reader may not desire management to take actions which will maximize the present value of future returns to the company, he will assume that management's goal is to maximize present value of future returns and evaluate management's effectiveness in achieving their perceived goal. Another view leading to the same conclusion indicates that although investors may have non-economic goals, these motivations cannot "form any basis for a structure of ideas about how to account. If a firm has liabilities stemming from its social responsibilities, those liabilities are relevant to investment decisions aimed at maximization of returns, but the political and social view of the management are not within the realm of accounting except as they affect the firm's finances." W. J. Kenley and G. J. Staubus, *Objectives and Concepts of Financial Statements,* Accounting Research Study No. 3, (Melbourne: Accounting Research Foundation, 1972), p. 43.

suggestion, information believed to be appropriate in developing answers to each of these questions will be identified, defined and analyzed. This information will then be compared with that provided by the exit-value reporting system.

"Exit value" is defined here as the maximum net amount which can be realized from the disposal of an asset within a short period of time (not a forced sale situation, but not long enough to allow disposal of fixed assets through ordinary use of services). "Net amount" is defined as the selling price less disposition costs including tax effects, all discounted to the point of measurement. The imputed interest expense to be deducted in determining "income" is computed by the application of an interest rate (set by the user) to the beginning owner's equity—exit value of assets minus exit value of liabilities.

It is assumed throughout most of this section that the returns attributable to a particular asset can be determined for all past periods during which the company has held the asset. This assumption is not as restrictive as it may seem since all that is required is the determination of the incremental contribution of the asset. That is, the measurement required is the amount of the reduction of a past cash flow which would have occurred had the firm not held a particular asset. This amount should, in general, be determinable. Although in some cases practical problems might occur in attempting to determine it, this measurement appears likely to be feasible in most cases, and it is certainly conceptually valid in that it does *not* require an arbitrary allocation of the total cash flow of the firm among all of its assets with the condition that the sum of the cash flows assigned to the individual assets is equal to the total cash flow of the firm.

1. *Did the management acquire assets which it should not have acquired?* Evaluation of past decisions to acquire fixed assets requires, for each asset acquired, comparison of two values: the acquisition cost of the asset and the sum of net cash receipts attributable to the asset discounted to the time of purchase. If the cost was greater than the discounted value of the receipts, the acquisition decision must be judged incorrect. The argument may be made that the decision might have appeared correct based upon the estimates of future returns which were available at the time of purchase. This argument ignores the fact that these estimates are one of two distinct areas of managerial performance involved in a decision of this type:

(a) the preparation of accurate estimates of the increase in future returns which would result from the purchase of the asset and

(b) the determination of the correct acquisition based upon the estimates prepared in (a).

Unless management is prepared to publish the long-range estimates which were used in their asset decisions, the accountant will not be able to provide information to permit evaluation of the two areas separately. The appraisal of management will have to be based upon the evaluation of the decision made. The cause of an incorrect decision may lie with either the

estimates or the decision based upon the estimates or both. The fact remains, however, that the wrong decision was made.[13]

In attempting to supply the information necessary to evaluate past management decisions to acquire assets, the accountant may encounter four situations requiring measurement of different attributes:

1A. If the asset is still held at the time of measurement, computation of the sum of net returns attributable to this asset discounted to the time of purchase will require knowledge of receipts subsequent to the end of the period. In general, this projection of future receipts will be a difficult one to make. If the accountant could make this projection for all assets, he could measure directly the change in discounted value of future receipts of the firm and would simply present that information to the user.

1B. In certain cases where the asset is still held at the time of measurement, projection of future returns would not be necessary. The purchase of a fixed asset can be evaluated simply by knowledge of the relationship between the acquisition cost of the asset and the sum of the discounted returns attributable to the asset. The acquisition decision can be established as correct if the information presented enables the user to determine that the sum of the discounted returns will be greater than the acquisition cost even if the information presented does not allow the user to compute the amount of the discounted returns. This will be the situation if the sum of the past receipts plus the current exit value, all discounted to the time of purchase, is greater than the cost. Since the asset could be sold immediately to gain a total discounted return greater than the cost, the acquisition decision can be judged correct without projection of future returns. The proposed accounting system would help the user reach this conclusion by reporting the current exit value.

It may appear that the analysis in the previous paragraph ignored the possibility that the firm may hold the asset for some period subsequent to the reporting date and receive returns that result in a sum of returns discounted to the time of purchase which are less than the asset's cost. This possibility exists, but could only occur if the sum of the receipts subsequent to the current reporting date, discounted to the current reporting date, were to be less than the current exit value. (See Appendix, pages 176-177.)

1C. If the asset has been sold, the receipts (including net receipts from the sale) are known and the sum of those receipts discounted to the point of purchase can be computed. If this amount is greater than the acquisition cost, the acquisition decision was correct although the statement user may wish to investigate intervening decisions to hold (as discussed in section 4, pages 168-173) or sell the asset. Most accounting systems would enable the user to evaluate this situation if sufficiently disaggregated information is provided.

[13] Although this evaluation criterion may seem rather harsh, no management is expected to be clairvoyant. Thus, a good management performance would be demonstrated by a low percentage of incorrect decisions rather than a complete avoidance of incorrect decisions.

1D. If the asset has been sold and the sum of receipts discounted to the point of purchase is less than the cost, management has made at least one incorrect fixed asset decision. The original decision to acquire the asset was probably incorrect, but it is also possible that the present value, at the time of sale, of receipts which could have been gained had the asset been held, might have been greater than the net amount realized from the sale. In this case, the decision to dispose of the asset was incorrect, and the purchase decision *might* have been correct. The possibility of an incorrect decision to hold the asset at some point before the sale has been discussed above in section 1B. Although the exit-value system would facilitate identification of previous incorrect hold decisions, most accounting systems would provide information which would enable the statement user to determine that at least one incorrect asset decision had been made.

The analysis above indicates that the exit-value system would allow identification of one class of correct asset decisions, those cases where the cost of each asset was less than the discounted sum of past receipts plus current exit value. Only a system which discloses exit values will permit identification of this class of decisions. The validity of acquisition decisions in which the assets have been sold can be judged by using sufficiently disaggregated information which would be generated by almost any accounting system, although classification of the incorrect decision may be facilitated by the fact that the exit-value system provides information which allows increased statement user evaluation of decisions to hold fixed assets. The exit-value system does not help to determine the validity of acquisition decisions where the assets are still held and the cost of each asset is greater than the discounted sum of past receipts plus current exit value. The validity of these decisions can only be determined by use of projections of future returns. Therefore, the exit-value system does as well as any other in providing information which permits judging of acquisition decisions related to assets which have been sold and provides better information than systems not providing exit-value measurements for some of the other acquisition decisions.

2. *Did the management pass up profitable opportunities to acquire assets?* Evaluation of past decisions to refuse to purchase assets requires, for each asset not purchased, the comparison of two amounts: the cost which would have been incurred had the asset been purchased and the sum of net cash receipts which could have been gained, discounted to the time at which the asset could have been purchased. The first problem the accountant has in presenting this information to the external user is the determination of the assets about which information is desired. The assets of interest need not be limited to those which management considered purchasing, since failure to even consider a profitable opportunity is as much a mistake as a conscious decision to pass up the same opportunity. Since this unlimited approach would require information related to numerous diverse assets, the practical user would probably be content to evaluate only those refusals to purchase assets similar to those used in the firm or some other proper subset of total asset purchase opportunities.

Even if the subset of assets of interest to all external users could be determined, the information required by the users could generally not be provided by any accounting system. Although the amount of the hypothetical cost might be approximated by use of the cost of a similar asset purchased at the same time, this situation will generally not be true. The determination of the overlooked benefits would require the same type of information as is needed to measure the benefits of assets which *were* purchased (Question 1), with the additional difficulty that the receipts foregone in the past would be hypothetical. Measurement of the hypothetical past receipts would require a knowledge of the receipts generated by a similar asset in a similar company. The similar firm could, of course, be our firm although this would require verification that the asset not purchased could have been used in the same manner as the similar asset which was held.

In summary, the information required to determine whether profitable opportunities to purchase assets have been neglected is not likely to be provided by any accounting system, due to the difficulties of selecting assets of interest to report upon and measuring their hypothetical returns. The exit-value system does not provide the information necessary to evaluate management actions in this area.

3. *Did the firm dispose of assets which should have been held?* The information required to evaluate each decision to dispose of an asset is the relationship between the net amount realized from the disposal and the sum of the receipts, which could have been secured had the asset been held, discounted to the point of sale. If the net proceeds from the sale are less than the discounted net returns foregone, the disposal was incorrect. While most accounting systems would report the proceeds of the sale, the presentation of the receipts foregone would require solution of the problems outlined above (Question 2) concerning measurement of hypothetical receipts foregone by refusing to purchase an asset. That is, the past receipts relinquished could only be approximated by measurement of the receipts generated, subsequent to the time of sale, by a similar asset in a similar company, while future receipts foregone must be estimated. The exit-value system and other accounting systems do not provide sufficient information to evaluate management decisions in this area. (The exit-value system has one related advantage. Although the method of disposal is not the focus here, the exit-value system would allow some evaluation of this. If the disposal occurred at or near the beginning of a period, knowledge of the exit value at the end of the preceding period would give some indication about the effectiveness of the disposal method.)

4. *Did the firm hold assets which should have been disposed of?* Evaluation of decisions to hold assets requires, for each such decision, knowledge of the relationship between the net amount which could have been realized at the time the decision was made (exit value) and the maximum sum of later receipts which can be generated from the asset, discounted to the time of the decision (economic value). If the exit value of the asset at the time of the decision was greater than the economic value of that asset

at the same time, the asset should have been sold. While the proposed system will obviously report the exit value at each balance sheet date, the system will not present the economic value.

Fortunately, as discussed previously, it is not always necessary to know the value of two numbers to determine their relationship. It is possible, using the exit-value accounting system, to obtain some information concerning the accuracy of management's decision, made at the end of a period, to hold an asset. (The probably superior function of more frequent evaluation of hold decisions could only be accomplished by increasing the frequency of financial reports. That is not the focus here.)

To demonstrate this, assume that the user wishes to evaluate a decision to hold an asset at the end of a previous period and let

r = interest rate
NRV_i = exit value of asset at the end of period i
IPV_i = present value (at the end of period i) of receipts generated subsequent to period i through the internal use with the maximum present value of future receipts. (Internal use is defined as any use which does not involve disposal at the end of period i)
TPV_i = maximum present value at the end of period i
= the greater of IPV_i or NRV_i
CF_i = net cash flow into the firm during period i attributable to the asset (either occurring at the end of the period or translated to the end—it is only necessary to know when the cash was received)
Y_i = income for period i measured according to the proposed
= $CF_i + NRV_i - NRV_{i-1}(1+r)$

Assume that the current time is the end of period T. Since the asset could be sold immediately,

$$TPV_T \geq NRV_T \tag{1}$$

This does not assume that management will make the correct decision at the end of period T. It simply means that the maximum discounted present value of receipts available to management is no less than NRV_T.

$$\text{Since } IPV_{T-1} = \frac{TPV_T + CF_T}{(1+r)} \text{ (1) implies that}$$

$$IPV_{T-1} \geq \frac{NRV_T + CF_T}{(1+r)}, \tag{2}$$

the income reported under the proposed system for period T would be

$$Y_T = CF_T + NRV_T - NRV_{T-1}(1+r)$$

or

$$\frac{Y_T}{(1+r)} = \frac{CF_T + NRV_T}{(1+r)} - NRV_{T-1}. \tag{3}$$

From (2) and (3)

$$\frac{Y_T}{(1+r)} \leq IPV_{T-1} - NRV_{T-1}. \qquad (4)$$

If $Y_T \geq 0$ then $IPV_{T-1} - NRV_{T-1} \geq 0$, or the discounted present value of the asset at the beginning of the period was greater than the exit value at that point. Thus if the income reported for the period was positive, the decision to hold the asset at the beginning of the period is known to have been correct. Reported income of zero would mean that the rate of return on equity was at least r. If r is a satisfactory rate of return, the hold decision at T-1 is still known to have been correct. Even though the inverse is not true (negative reported income does not mean that an incorrect decision was made), the user is still able to determine that those assets for which the income figure is positive should have been held. This conclusion is possible, without knowledge of the future, simply by reference to current markets. The user is able to divide the hold decisions at time T into those which he knows were correct and those which might have been correct. If it is possible to make estimates of discounted present value at some expense and the user wishes to evaluate all hold decisions at time T-1, he need only incur the expenditure necessary to estimate economic values of the assets whose reported incomes were negative.

Before leaving the hold decision, the conditions under which the correct decision was made to hold the asset at time T-1, but for which the reported income was negative, will be examined. For the hold decision at time T-1 to have been correct,[14]

$$IPV_{T-1} \geq NRV_{T-1} \text{ and } TPV_T > NRV_T \text{ or } TPV_T = IPV_T. \qquad (5)$$

Since $IPV_{T-1} = \frac{IPV_T + CF_T}{(1+r)}$,

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[14] If $TPV_T = NRV_T$

then $IPV_{T-1} = \frac{CF_T + NRV_T}{(1+r)}$ (a)

Since $Y_T < 0$

$$CF_T + NRV_T - NRV_{T-1}(1+r) < 0$$

$$CF_T + NRV_I < NRV_{T-1}(1+r)$$

$$\frac{CF_T + NRV_I}{(1+r)} < NRV_{T-1}. \qquad (b)$$

From (a) and (b), $IPV_{T-1} < NRV_{T-1}$

Therefore, the hold decision cannot have been correct if the income under the proposed method is negative and there exists at the end of period T no internal use with greater present value of receipts than the NRV_T.

$$IPV_{T-1}(1+r) = IPV_T + CF_T$$

or $$IPV_{T-1} - IPV_T = CF_T - r\ IPV_{T-1}. \quad (6)$$

From (3), negative reported income implies

$$\frac{CF_T + NRV_T}{(1+r)} < NRV_{T-1}$$

or $$NRV_{T-1}(1+r) > CF_T + NRV_T$$

or $$NRV_{T-1} - NRV_T > CF_T - r\ NRV_{T-1}. \quad (7)$$

(7) − (6) gives

$$(NRV_{T-1} - NRV_T) - (IPV_{T-1} - IPV_T) > (CF_T - rNRV_{T-1}) - (CF_T - rIPV_{T-1})$$

or

$$(NRV_{T-1} - NRV_T) - (IPV_{T-1} - IPV_T) > r(IPV_{T-1} - NRV_{T-1}). \quad (8)$$

This means that the decrease in exit value during period T must exceed the decrease in economic value in internal use to the firm by more than the discount rate times the difference between the economic value at time T-1 and the exit value at time T-1. The right side of inequality (8) is non-negative since r is positive and $(IPV_{T-1} - NRV_{T-1}) \geqq 0$ by inequality (5). The frequency with which this situation will occur can only be determined empirically, but a priori reasoning would indicate a fairly low frequency. Further, a negative reported income would not arise each time inequality (8) was satisfied, since that inequality represents a necessary but not sufficient condition for a negative reported income resulting from a correct hold decision. The difference at time T between the economic value to the firm and the net realizable value is likely to be greater than (1+r) times that difference at time T-1 for two reasons.[15]

1. The market structure has changed to cause the difference between discounted present value and exit value to increase either due to an increase in proportionate frictions or an increase by more than a factor of (1+r) in the value of the asset. Frictions include such costs as commissions on purchase and sale, costs of preparation for sale, effect on seller's tax liability and purchaser's cost of preparation for use. Many frictions decrease as the asset value decreases. Therefore, an increase in asset value might cause a larger difference between economic value and exit value. In either case the entire market for similar assets should be affected in the same way and the effect should be apparent from statements of other firms in the same industry. The increase in value of the asset would probably not result in negative reported income anyway since that could only result from negative cash flow if the exit value increased by a factor greater than 1+r.

[15] Inequality (8) can be rearranged to

$$(IPV_T - NRV_T) > (1+r)(IPV_{T-1} - NRV_{T-1}).$$

2. The management's estimate of the returns which the firm can realize from future use of the asset is higher than the estimate of other actors in the market. Given that the friction structure remains the same and asset value does not increase, if the other actors in the market hold an estimate of the economic value of the asset equal to management's estimate, then exit value should be driven up to that estimate minus the total friction of purchase and sale. The difference between economic value and exit value would then be held to an amount no higher than the corresponding difference at time T-1. It is entirely possible for management to correctly hold an estimate of economic value higher than that held by other actors in the market, but the negative reported income would only appear in a period during which the difference between management's estimate and other estimates increases. The users of the financial statement may wish to examine these situations closely in their appraisal of management.

The exit-value accounting system therefore enables the user to divide the management's decisions to hold assets at the beginning of the period into two sets. The first set contains those decisions affecting assets for which a non-negative income figure was reported. These decisions are known to have been correct. The second set contains decisions concerning assets for which a negative income figure was reported. There are three possible causes of these negative income figures.

(a) The friction structure in the market was altered (or much less likely, the value of the asset increased by a factor of more than $1+r$). This effect should be apparent on the financial statements of other firms in the same industry.

(b) Management's estimate of the economic value of the asset at the end of the period is higher than the estimates held by other actors in the market. The user will probably wish to follow these situations closely to determine the accuracy of management's estimates.

(c) The decision to hold the asset at the beginning of the period was incorrect.

Thus the user can investigate the second set of decisions to determine which of the three causes was responsible for the negative reported income figure. The relative frequency of decisions which fall into the first set and the various subsets of the second set can only be determined empirically, but the number of decisions in the first set should be large enough to significantly reduce the expense of evaluating management's hold decisions. It is possible that the frequency of negative reported income figures would provide a good practical surrogate to the answer to Question 4. The information necessary to evaluate refusal to purchase is unlikely to be provided by any accounting system while the proposed system, by presenting the exit value of assets as of the end of the period, will provide the information necessary to evaluate purchase and sale decisions if it is possible to evaluate them (cases where the sum of past receipts plus current exit value discounted to the time of purchase or sale respectively is greater than the consideration

given or received). The claim can be made that the exit-value system would provide users with information more suitable for appraising the individual asset decisions of management more accurately than the information provided by current accounting practice.

None of the discussion above concerning evaluation of hold decisions depends on the asset being an individual asset rather than a group of assets which are used jointly to produce revenues. One problem concerning the use of the proposed system to evaluate buy, sell, and refusal-to-buy decisions for groups of assets is that purchases and sales are made at different points in time for different assets in the group. For evaluation of purchase decisions, at least, this problem might be solved by simply considering replacement expenditures as negative cash flows of the period concerned. Therefore, the exit-value system could be used to help evaluate hold decisions even when the past returns attributable to each individual asset could not be determined. In this way, statements prepared as suggested for the entire firm could provide a basis for an evaluation of management. In addition, information concerning separate "profit centers" could be analyzed and either presented in detail or summarized. In this context a "profit center" is a group of assets whose returns stream can be segregated from the returns attributable to other assets or groups of assets held by the firm. Even for those firms whose total reported income was positive, the disclosure of individual profit center analysis could provide users with information for the appraisal of management in greater detail.

In response to the legitimate objection that publication of financial statements containing the disaggregated information necessary to evaluate hold decisions for individual assets or small groups of assets is impractical, the financial statement reader can be given almost as much information by including in the report a table indicating frequency of observation of the various exit-value rates of return of individual assets or small groups computed by—

$$\frac{\text{exit value (end of period)} + \text{cash flow (during period)} - \text{exit value (beginning of period)}}{\text{exit value (beginning of period)}}.$$

This rate can be calculated without knowing the user's discount rate. The user can then consult the table and determine the number of assets (or groups) for which the income figure suggested above was non-negative by computing the number of assets (or groups) which had an exit-value rate of return greater than or equal to the user's discount rate.

It is clear that income reported with assets measured at exit value would give investors considerable information useful in evaluating management's decisions to hold assets. The maximum benefit from this measurement method could probably be obtained by leaving the computation of imputed interest to the individual user since he is best able to determine the rate appropriate to him. The accountant could, of course, clearly present income before imputed interest on equity and then deduct his best estimate of the

proper interest. The exit-value system also gives more information for evaluation of management decisions to acquire and dispose of fixed assets than any system currently in use for reporting to external users.

The present or prospective investor or creditor could use the evaluation of managerial performance described above in conjunction with other information to form his projection of the firm's future prospects.

Estimation of Economic Variables

It is assumed here that the user (investor or creditor primarily) is interested in estimating the present value of the future cash flows which would accrue to him if he invested (lent) or maintained his investment (loan) in the company.

To do this, he could attempt to predict the future cash flows of the firm and estimate the discount rate which should be used to derive the present values. Variables which the user might attempt to estimate/predict are risk, present and future investment opportunities and their rates of return, likelihood of investing in those projects, and possible effects of changes in the competitive environment of the firm and the economy.

1. *Ceiling rate of return on projects available to the firm.* If it is possible to identify those assets or groups of assets for which management's estimates (for the past year) were correct, the lowest exit-value rate of return of these projects can be used as an estimation of the highest rate of return obtainable on investment proposals which were available at the beginning of the period, but not accepted at the time.[16] Exit-value rate of return is computed as:

$$\frac{\text{exit value (end of period)} + \text{cash flow (during period)} - \text{exit value (beginning of period)}}{\text{exit value (beginning of period)}}.$$

The inference here is that management would have sold the assets whose expected rates of return were lowest if an investment proposal (of suitable size) with a higher rate of return was available.

2. *Resources available to invest in available projects.* Although the set of projects available to the firm will not be disclosed by exit-value accounting statements, the exit-value statements will give directly the resources available (through internal financing) to invest in these projects. Knowledge of the resource constraint should give the user a better basis for prediction of the set of investment proposals which will be accepted.

3. *Risk.* As indicated in the first section of this paper the specific advantage (difference between the present value and the exit value of the firm) should give an indication of the uncertainty involved in the estimate of the present value of the firm. This indication could be used to aid the investor in his determination of the appropriate risk adjustments.

[16] This inference procedure assumes that for the low yield asset the difference between economic value and exit value did not increase during the year.

4. *Rates of return from projects.* One cash flow which must be predicted to compute the rate of return from a project is the salvage value of the assets involved at the conclusion of the project. This value is simply the future exit value of these assets. Prediction of future exit values should be facilitated by knowledge of the pattern of current and past exit values of similar assets. The current and past exit values of similar assets would be available on exit-value accounting statements if the project involved an area in which the firm was already active or an area of operations for other firms for which exit-value statements were available.

Summary

This paper has briefly discussed the ways in which exit-value accounting statements could be used by external financial statement readers. The relevance of exit-value statements is based upon their usefulness in three areas:

(1) Determination of the liquidity of the firm;
(2) Determination of the effectiveness of managerial decisions;
(3) Estimation and prediction of economic income.

As a guide to the feasibility of the use of exit-value information for some of the functions described in the paper, the following list identifies the information other than exit value necessary for each purpose. Those purposes requiring future cash flow projections are listed separately since the availability and accuracy of those projections have not been demonstrated to date.

Uses not requiring future cash flow projections.

1. Resources available for investment, etc.—no other information.[17]
2. Known value of the firm—no other information.
3. Implication of management's estimate of value—assumption that management is acting to maximize future cash flows or has some equivalent objective for decisions.
4. Appraisal of the effectiveness of management's decisions involving asset acquisition and disposal—past incremental cash flow. (This use is marginal because it can be accomplished more completely by use of future cash flow projections. The intent in listing it here is to indicate that this purpose can be accomplished to a substantial extent without projections.)
5. *Ceiling rate of return on projects available to firm*—identification of areas where past managerial estimates were correct and related past cash flows.

Uses requiring future cash flow projections.

1. Risk of investment—indication using no other information.[18]
2. Amount the firm would pay to avoid discontinuation of all or part of its operations—no other information.

[17] None other than exit value.

[18] None other than exit value and future cash flow forecasts.

Probability of continuation of operations in present areas at particular levels—indication as described above using no other information.

3. Evaluation of asset hold decisions for which exit-value rate of return was less than user discount rate—past incremental cash flows.

4. Rates of return from projects—no other information.

The potential ability of exit-value information to aid external statement users in their decision-making strongly suggests that accounting statements should present exit-value information.

Appendix

To demonstrate that if the sum of past returns plus current exit value all discounted to the time of purchase is greater than the acquisition cost, the sum of all returns (including proceeds from eventual sale) of the asset can be less than the acquisition cost only if the sum of receipts subsequent to the current reporting date discounted to the current reporting date were to be less than the current exit value, let

r = rate of return
NRV_i = exit value of asset at the end of period i
AC = acquisition cost of asset (at end of period O)
CF_i = net cash flow into the firm during period i attributable to the asset (either occurring at the end of the period or translated to the end)
n = period whose end is the current reporting date
N = end of period in which the asset is sold.

At the current reporting date, the discounted sum of past returns plus current exit value is greater than the cost.

$$\sum_{i=1}^{n} \frac{CF_i}{(1+r)^i} + \frac{NRV_n}{(1+r)^n} > AC$$

$$\frac{NRV_n}{(1+r)^n} > AC - \sum_{i=1}^{n} \frac{CF_i}{(1+r)^i}. \qquad \text{(i)}$$

When the asset is finally sold at the end of period N, the discounted sum of past returns is less than the cost.

$$\sum_{i=1}^{N} \frac{CF_i}{(1+r)^i} < AC \quad (CF_N \text{ includes proceeds from the sale, } NRV_N)$$

$$\sum_{i=1}^{n} \frac{CF_i}{(1+r)^i} + \sum_{i=n+1}^{N} \frac{CF_i}{(1+r)^i} < AC$$

$$\sum_{i=n+1}^{N} \frac{CF_i}{(1+r)^i} < AC - \sum_{i=1}^{n} \frac{CF_i}{(1+r)^i}. \qquad \text{(ii)}$$

(i) and (ii) produce the transitive inequality

$$\frac{NRV_n}{(1+r)^n} > AC - \sum_{i=1}^{n} \frac{CF_i}{(1+r)^i} > \sum_{i=n+1}^{N} \frac{CF_i}{(1+r)^i}$$

or

$$\frac{NRV_n}{(1+r)^n} > \sum_{i=n+1}^{N} \frac{CF_i}{(1+r)^i}.$$

Multiplying both sides by $(1+r)^n$ assuming $r > -1$ gives

$$NRV_n > \sum_{i=n+1}^{N} \frac{CF_i}{(1+r)^{i-n}}$$

which clearly shows that an incorrect decision to *hold* the asset was made at or subsequent to the reporting date. (The evaluation of decisions to hold assets is discussed in more detail above.) Therefore, even if this situation occurs, the original conclusion that the purchase decision was correct is still valid.