

1975

# Accounting for depreciable assets; Accounting research monograph 1

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ACCOUNTING  
RESEARCH  
MONOGRAPH

# Accounting for Depreciable Assets

by Charles W. Lamden, CPA, Ph.D.  
Dale L. Gerboth, CPA  
Thomas W. McRae, CPA

**AICPA**  
American Institute of  
Certified Public  
Accountants

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Individuals and groups are invited to express their views with supporting reasons on the matters in this monograph. Comments, which should be sent to the Institute's Technical Research Division, will be treated as public information unless a writer requests that his comments be confidential.

# **Accounting for Depreciable Assets**

# Accounting for Depreciable Assets

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# Contents

**Foreword** ix

**Preface** xi

<b>1 Depreciation Accounting in Perspective</b>	<b>1</b>
Overview	2
Objective of the Study	3
Scope of the Study	3
Major Problem Areas	4
The Depreciable Base	5
The Allocation Process	5
Other Questions	6
<b>2 Surveys of Preparers and Users</b>	<b>7</b>
Survey of Practices	7
Survey of Users	12
Results of Surveys: General Observations	12
The Depreciable Base	13
Acquisition Cost	14
Adjustments to Cost	16
The Allocation Process	17
The Allocation Method	17
<i>Reason given for choices of allocation methods</i>	21
<i>Changes in allocation methods</i>	23
<i>Allocation methods and circumstances</i>	25
Estimated Useful Life	25
Other Concerns	28
Reporting for Special Purposes	28
<i>Accounting for depreciable assets</i>	
<i>for federal income tax purposes</i>	28
<i>Accounting for depreciable assets</i>	
<i>in internal management reports</i>	29
Information Disclosures	30
Objectives of Accounting for Depreciable Assets	30
Concepts of Distribution	30

	Suggestions for Improvement	35
	Summary	36
<b>3</b>	<b>Use of Criteria in Depreciation Accounting</b>	<b>39</b>
	Constraining Criteria	41
	Tailoring Criteria	43
	Implementing Criteria	44
	Summary	46
<b>4</b>	<b>Problems in Determining the Depreciable Base</b>	<b>47</b>
	Applicability of Criteria	47
	Property Units	48
	Acquisition Cost	50
	Acquisitions for Cash	50
	Acquisitions in a "Basket Purchase"	51
	Acquisitions for Noncash Consideration	51
	Acquisitions in a Business Combination	53
	Acquisition-Related Costs	53
	Self-Constructed Assets	55
	Salvage Value and Removal Costs	57
	Postacquisition Costs	58
	Reducing the Depreciable Base	59
	Summary of Conclusions and Recommendations	61
<b>5</b>	<b>Estimating Useful Life</b>	<b>63</b>
	The Problem in Perspective	63
	The Concept of "Useful Life"	64
	Attitude of the Accounting Profession	65
	Suitability of a Solution by Convention	65
	Applying the Framework of Criteria	67
	Beginning and End of Useful Life	68
	Beginning of Useful Life	69
	<i>Problems of interpretation</i>	70
	End of Useful Life	71
	Estimating Life Span	71
	Techniques Used in Practice	71
	Nature of Estimates	73
	Improving Objectivity and Comparability	74
	Recommended Criteria	76
<b>6</b>	<b>Allocation Methods</b>	<b>79</b>
	Applying the Framework of Criteria	80



Deriving Criteria From Accounting Conventions	81
Accounting Concepts of Income and Wealth	81
The Matching Concept	82
Deriving Criteria From Needs of Users	83
Deriving Criteria From Methods Used in Practice	85
Nature of Methods in Use	85
Derived Tailoring Criteria	89
<i>Net-revenue contributions</i>	90
<i>Other-services concept</i>	91
<i>Valuation of service potential</i>	93
<i>Other asset-related charges</i>	95
<i>Conservatism and uncertainty</i>	96
<i>Distortive effects of inflation</i>	96
<i>Rate of return on investment</i>	97
<i>Simplicity of method</i>	97
Derived Implementing Criteria	98
<i>The straight-line method</i>	99
<i>Units-of-production and units-of-service methods</i>	100
<i>Decreasing-charge methods</i>	100
<i>Increasing-charge methods</i>	101
Summary and Conclusions	102
Constraining Criteria	102
Tailoring Criteria	103
Implementing Criteria	105
<b>7 Other Matters Relating to Depreciation Accounting</b>	<b>107</b>
Disclosures in Financial Statements	107
Disclosure Requirements	108
Disclosure Practices	109
Evaluation of Users' Needs	110
Recommended Disclosures	111
CASB Standards	112
Income Tax vs. Financial Accounting	113
Applicability of Recommendations to Specialized Enterprises	115
<b>8 Summary of Findings and Conclusions</b>	<b>119</b>
Survey of Preparers and Users	119
Criteria in Accounting	122
Depreciable Base	122
Useful Life	124

Allocation Methods	125
Constraining Criteria	126
Tailoring and Implementing Criteria	126
Conclusions	127
Other Issues	128

<b>Appendix 1</b>	133
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<b>Appendix 2</b>	157
-------------------	-----

<b>Selected Bibliography</b>	181
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# Foreword

This is the first of a new series of accounting research monographs that the Institute will publish in connection with its continuing accounting research program.

During the period 1961 through 1973, the Institute sponsored and published fifteen monographs comprising the series of *Accounting Research Studies*. These studies focused on areas of difference in the preparation and presentation of financial information. They furnished background material, analyses of the problems, and the authors' recommendations with supporting reasons for possible solutions. Since most of the studies pertained to topics under consideration by the Accounting Principles Board, they provided a means for accountants and others to study specific problems and to express their views on them before authoritative pronouncements were issued.

Formation of the Financial Accounting Standards Board and discontinuance of the Accounting Principles Board caused a change in the role of the Institute's accounting research program. The purpose now is primarily to stimulate study and discussion of significant accounting problems. Accordingly, research is not necessarily directed to matters on the agendas of the Financial Accounting Standards Board or other rule-making bodies.

A seemingly limitless number of new accounting problems confronts the profession. These problems arise from changes in economic conditions, new forms of business, increasingly complex financial arrangements, expansion of international trade, court decisions, and new laws that increase governmental involvement in business and changes in public attitudes and expectations. At the same time, the

search continues for solutions to long-standing controversial problems.

Therefore, the intent of the Institute's technical research division is to study selected accounting problems and to publish the results of the studies as accounting research monographs to direct attention to those problems and stimulate discussion of possible solutions.

WILLIAM C. BRUSCHI

*New York, N. Y., May 1975*

# Preface

The term “depreciation,” as used in different disciplines as well as in accounting, has so many different meanings with varying connotations that a study of depreciation must first clearly identify the underlying concept to be considered. The term is used in this study as it is defined by generally accepted accounting principles: the systematic and rational allocation of the historical cost of depreciable assets (tangible assets, other than inventory, with limited lives of more than one year) over their useful lives. Depreciable assets and depreciation expense—the cost allocated to an accounting period to match costs with related revenue in measuring income—are of major significance in financial reporting. As a consequence, “depreciation” has received a great deal of critical attention in the literature of accounting, finance, management, and engineering. Despite the attention and study it has received, however, differences of opinion regarding depreciation accounting continue to exist.

In this study, we analyze and report the results of two surveys—a survey of the practices used in financial statements and a survey of two groups of users of financial statements—and develop criteria to evaluate depreciation accounting. Although we present several conclusions and recommendations for eliminating unnecessary differences and inconsistencies in present practice and increasing uniformity and consistency, we believe that the development and analysis of criteria will prove to be more important than the specific conclusions and recommendations.

Since the scope of the study was limited to considering depreciation accounting in the context of the present generally accepted ac-

counting model, we considered only questions that relate to depreciation as a process of cost allocation. Thus, we did not consider, for example, questions that relate to depreciation as a process of (1) valuation (on the basis of measuring service potential, market value, or discounted cash flows), (2) measuring the current cost of services consumed, or (3) capital maintenance. We recognize, however, that as the objectives of financial statements are modified and the state of the art of measurement in accounting is improved, a theory of depreciation that will better meet the needs of the economic and business community may be developed and become generally accepted. However, we believe that this study provides a basis for significant improvements in accounting for depreciable assets within the framework of present generally accepted accounting and that these improvements are both feasible and desirable.

We acknowledge the contributions of several individuals who have been associated with the study. We especially appreciate the contribution of William C. Bruschi, AICPA vice president—research and review, who reviewed the final manuscript and authorized its publication.

The study is the result of a research project which was authorized and initiated to prepare an accounting research study. Reed K. Storey, then AICPA director of accounting research, was responsible for the AICPA accounting research program. When the activities of the AICPA's accounting research division were discontinued and its research projects transferred to the Institute's newly formed technical research division, Douglas R. Carmichael, then director of that division, continued the study as an accounting research monograph. We appreciate the valuable contributions of both Mr. Storey and Mr. Carmichael to the progress of the study.

Also, in the early stages of the study under the established procedures for accounting research studies, a project advisory committee gave valuable counsel and assistance. The members of the committee were Michael N. Chetkovich, chairman, Norton M. Bedford, Gordon R. Corey, Wright C. Cotton, William D. Hall, Robert E. Pfenning, Jay H. Price, Jr., and George Terborgh. We appreciate the participation and contributions of the members of the project advisory committee. The committee, however, did not participate in the completion of the study as an accounting research monograph, and their association with the study in its early stages should not be construed to mean that they reviewed or approved its contents, conclusions, or recommendations.

Others who participated in various aspects of the study include Jerry W. Claiborne, Gerald R. Fenerty, Robert E. Lamden, James H. MacNeill, and Paul Rosenfield. We gratefully acknowledge and appreciate their contributions to the study.

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*New York, N. Y., May 1975*

*The research for and writing of this study were largely completed while Mr. Gerboth was associated with Peat, Marwick, Mitchell & Co. and the American Institute of Certified Public Accountants. (The Financial Accounting Standards Board, as a matter of policy, disclaims responsibility for any publication by any of its individual members or staff. Accordingly, the views expressed here are those of the authors and do not necessarily reflect the views of the Standards Board.)*

# Depreciation Accounting in Perspective

The Question of Depreciation is one upon which so many articles have been written and so many opinions expressed that there would not appear to be much more which could profitably be said on the subject.

*The Accountant*, August 8, 1903

Volumes have been written on "the Question of Depreciation" since *The Accountant* dismissed it three-quarters of a century ago. Yet, despite years of consideration, depreciation accounting continues to be "probably the most discussed and most disputatious topic in accounting"<sup>1</sup> and, in the view of at least one critic, is "a disgrace to the accounting profession."<sup>2</sup> Even among those who do not feel so strongly, dissatisfaction with depreciation accounting is widespread.<sup>3</sup>

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<sup>1</sup> Sidney Davidson, "Depreciation, Income Taxes, and Growth," *Accounting Research* (Eng.), July 1957, p. 191.

<sup>2</sup> George J. Staubus, "The Association of Financial Accounting Variables with Common Stock Values," *The Accounting Review*, January 1965, p. 134.

<sup>3</sup> Some of the material in this chapter was adapted from Charles W. Lamden, "Depreciation: A Reliability Gap," *World* (New York: Peat, Marwick, Mitchell & Co.), Autumn 1971, pp. 28-35.



## Overview

The term "depreciable assets" as used in this study refers to tangible assets, other than inventory, with limited lives longer than one accounting period. The life of a depreciable asset is characterized by three distinct phases that are significant in accounting.

1. At some point in time, the asset is acquired, usually for a determinable money price.
2. Over some period of time, characteristically not known at the acquisition date, the asset is used.
3. At the end of that period, the asset becomes no longer economically usable.<sup>4</sup>

The accounting requirements for those phases under present generally accepted accounting principles (GAAP) can be stated simply: (1) record the cost of the asset when it is acquired and (2) reduce, eventually to zero, the recorded cost through allocations to expense or other accounts. But these simple requirements conceal disagreements and dissatisfactions that have troubled accountants as have few other matters.

Much of the discontent focuses on the variety of cost allocation methods admissible under GAAP. The "systematic and rational"<sup>5</sup> requirement imposed on allocation methods by GAAP admits a wide variety of methods. Fortunately, only a relatively few methods have been used in practice, but choice among even those few methods can have a significant effect on reported income. And since GAAP provide no authoritative guidelines for choosing among the alternatives, companies have considerable freedom of choice and often choose different methods under apparently similar circumstances. It is also not uncommon for companies to change methods, thereby affecting reported net income and comparisons between periods. Moreover, critics assert that too often neither the original choice of

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<sup>4</sup> Adapted from Louis Goldberg, *Concepts of Depreciation* (Melbourne: The Law Book Co. of Australasia Pty Ltd., 1960), p. 8.

<sup>5</sup> American Institute of Certified Public Accountants (AICPA), Accounting Principles Board (APB) Statement No. 4, "Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises," 1970, par. 159.

allocation method nor subsequent changes are motivated by any real concern for underlying economic circumstances.

Proponents of unrestricted choice acknowledge that the freedom is sometimes abused but deny that abuse is typical. They contend instead that management most often makes a sincere effort to choose methods that best report economic reality. The controversy over the freedom of choice in selecting alternative methods has not been resolved.

Dissatisfaction also focuses on matters such as determining the amount originally assigned as the cost of an asset, selecting the property unit, estimating useful life, and accounting for salvage value and removal costs. In addition, many critics object to the general use of historical cost in financial accounting.

### **Objective of the Study**

The objective of this study is to develop recommendations for changes that would narrow the alternatives in accounting for depreciable assets and improve the usefulness and comparability of general purpose financial statements from the standpoint of users.

Many accountants argue that narrowing the alternatives may not improve the usefulness and comparability of financial statements. They believe that a diversity of practices is needed if depreciation accounting is to reflect the existing diversity of economic circumstances. But even if a variety of practices is desirable, it does not necessarily follow that the choice among alternative methods must be unrestricted. Rather, means should be found, if possible, to ensure that the choices among alternatives are based on valid differences in circumstances.

### **Scope of the Study**

This study is restricted to accounting for depreciable assets under the present framework of GAAP, including, particularly, the principle that assets are accounted for on the basis of their historical cost. Of course, complete solutions to many of the problems in accounting for depreciable assets would require evaluating and, if necessary, modifying, that and other basic tenets of GAAP. It would require the resolution of the fundamental issues relating to the valuation of assets and the measurement of income, including consideration of alternatives to the historical cost basis. However, the

present study was undertaken in the belief that, pending resolution of those issues, significant improvement in accounting for depreciable assets under present GAAP is both feasible and desirable.

Primary consideration is given in the study to general purpose financial statements of the type usually given to stockholders and creditors. That removes the complication of trying to accommodate the special requirements of taxing authorities, other public agencies, and other users who prescribe the form and content of reports submitted to them.

Depreciation accounting under present GAAP is

a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage value (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation. *Depreciation for the year* is the portion of the total charge under such a system that is allocated to the year. Although the allocation may properly take into account occurrences during the year, it is not intended to be a measurement of the effect of all such occurrences.<sup>6</sup>

The essential concepts of that definition answer in advance three fundamental questions:

1. Should depreciation be recognized in financial accounting?
2. Should the recognition be systematic or discretionary?
3. Should the amount recognized be limited to historical costs?

The answer to all three questions, of course, is that under GAAP, depreciation should be recognized in financial accounting as a systematic allocation of historical cost.

## Major Problem Areas

A study of accounting for depreciable assets within the historical cost basis must consider two major questions: (1) What should be included in the depreciable base? and (2) How should the depreciable base be allocated? Since a decision on the depreciable base does not necessarily affect decisions about the allocation process, the two questions can be considered independently.

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<sup>6</sup> AICPA, Committee on Terminology, Accounting Terminology Bulletin No. 1, "Review and Résumé," August 1953, par. 56.

**The Depreciable Base.** Problems in accounting for depreciable assets begin with identifying the amount to be allocated—the depreciable base. Under present GAAP the depreciable base is normally cost less salvage value. The following questions must be answered in interpreting that general rule.

1. What outlays and offsetting credits should be included in the depreciable base at the time of acquisition or construction?
  - a. How should sales taxes, transportation costs, installation costs, start-up costs, temporary storage costs, and other related expenditures be treated?
  - b. What should be recorded if an asset is acquired in exchange for noncash assets or by investment of the owners or by gift?
  - c. How should costs be determined for individual items in a purchase of assets in a group (commonly referred to as a “basket purchase”)?
2. What means should be used during the period of ownership to distinguish between asset additions and improvements on the one hand and maintenance and repair expenses on the other?
3. What should be the treatment of idle plant, replacements, retirements, and fully depreciated assets?
4. Should depreciable assets be revalued like inventory when their future benefit is not expected to recover their book value?
5. What should be included in computing salvage value (for example, should removal costs be included?), and how should it be estimated?
6. How should the property unit be defined?

**The Allocation Process.** Allocation of the depreciable base to accounting periods involves two factors: (1) the estimated life of the asset and (2) the allocation method. Estimating useful life is essentially a matter of judgment and is difficult at best. Consideration must be given to factors such as physical deterioration, obsolescence of the asset and its product, casualties, and fluctuations in the economy.

As noted earlier, although the requirement that an allocation method be systematic and rational allows a wide variety of methods, in practice only five basic methods have been used.

1. Straight-line apportionment over time, which assigns a uniform amount of the depreciable base to each period of the asset's estimated life.
2. Apportionment over units of production, under which each estimated unit of production (for example, miles driven, hours operated, units produced) is assigned an equal amount of the depreciable base.
3. Decreasing charge methods, commonly called accelerated methods (including declining balance and sum-of-the-digits methods), which allocate progressively decreasing amounts of the depreciable base to each successive period of the asset's estimated useful life.
4. Increasing charge methods (including compound interest methods), which allocate progressively increasing amounts of the depreciable base to each successive period of the asset's estimated useful life.
5. Net-revenue-contribution methods, which allocate the depreciable base to each period in proportion to its estimated or actual contribution to the net revenue of the enterprise.

**Other Questions.** Determining the depreciable base and choosing the allocation procedure are the major problems discussed in this study, but other matters are also considered. These include (1) the nature and amount of information about depreciable assets and the allocation process that should be disclosed in financial statements, (2) the relationship between accounting for depreciable assets for financial statement purposes on the one hand and for tax and regulatory purposes on the other, and (3) the applicability of depreciable asset accounting to specialized enterprises, for example not-for-profit enterprises, government agencies, and certain regulated industries.

# 2

## Surveys of Preparers and Users

The results of two questionnaire surveys that were conducted for this study are presented and evaluated in this chapter.<sup>1</sup> One questionnaire surveyed financial executives to collect information on practices in accounting for depreciable assets. A separate survey was conducted of financial analysts and executives of financial companies—banks and insurance companies—to collect information on users' conceptions of, and expectations from, depreciation accounting.

### Survey of Practices

The survey of practices, which was initiated in 1970 and completed in 1971, was designed to determine

- The extent to which the various alternative methods of accounting for depreciable assets are used.

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<sup>1</sup> Charles W. Lamden and Dale L. Gerboth adapted some of the material in this chapter for use in "Depreciation—The Incantation and the Reality," *World* (New York: Peat, Marwick, Mitchell & Co.), Autumn 1972, pp. 6-13.

- The circumstances in which each alternative tends to be used.
- The apparent motives for selecting alternatives.

A questionnaire (Appendix 1) developed with the assistance of the AICPA Accounting Research Division and Roper Research Associates, Inc., was used in the survey. After the questionnaire was evaluated in a field test, it was sent to the chief financial officers of 420 companies, chosen as follows:

- A selected group of 208 companies from among those listed on the New York or American Stock Exchanges (every fifteenth entry, beginning with a randomly chosen entry in the first fifteen, in the *ISL Daily Stock Price Index* for July-September 1969, published by Standard Statistics Co., Inc.)
- A group of 106 companies selected from those listed in *Poor's Register of Corporations, Directors and Executives* for 1969, published by Standard and Poor's Corporation (companies selected randomly).
- A group of 106 companies selected from those in the agricultural, mining, construction, aircraft, airline, shipbuilding, shipping, railroad, real estate, and hotel industries and from companies known to have recently changed a depreciation accounting factor (companies selected arbitrarily). These companies were chosen to increase the representation of industries in which depreciable assets are particularly important and companies that had recently changed depreciation methods or other depreciation factors.

Of 228 replies received, 187 were usable. Tables 1, 2, and 3 show the industry classification, total revenue, net income or net loss, and some internal financial relationships of the companies that returned usable replies.

Responses to the questionnaire were supplemented by a limited number of personal interviews with company officers (primarily in the New York area) who had returned completed questionnaires. The interviews were conducted to explore further some of the matters covered by the questionnaire and to elicit reactions to the survey results.

Table 1

## Usable Replies Classified by Industry

<u>Industry*</u>	<u>Number of usable replies</u>
Mining (excluding petroleum extraction)	5
Contract construction	1
Railroad	3
Steamship	4
Airline	11
Other transportation and related services	1
Electric, gas, water, and telephone utilities	22
Wholesale and retail trade	15
Finance, banking, brokerage, and insurance	5
Real estate	6
Hotel and motel	3
Personal services	2
Motion picture, amusement, and recreation	1
Food and tobacco processing	13
Wood products, furniture, paper, and packaging	8
Printing and publishing	3
Chemicals, petroleum (including extraction), and rubber	16
Primary metals	10
Textiles and apparel (excluding footwear)	8
Glass, stone, clay, and leather (including footwear)	6
Agriculture, forestry, and fishery	1
Machinery, equipment, instruments, other metal products, and manufacturing not otherwise classified	36
Other	7
Total usable replies	<u>187</u>

\*Companies that operated in more than one industry were asked to furnish information only on their principal business activity. In most instances, the industry classification was suggested to them in the letter transmitting the questionnaire.



**Table 2**

**Revenue and Income/Loss Data for  
Companies Returning Usable Replies**

<u>Amount—latest year*</u>		<u>Number of companies in each category</u>		
<u>At least</u>	<u>But under</u>	<u>Total revenue</u>	<u>Net income</u>	or <u>Net loss</u>
\$ —	\$ 1 million	1	30	3
1 million	10 million	24	63	5
10 million	100 million	60	75	3
100 million	500 million	60	4	1
500 million	1 billion	15	—	—
1 billion	—	25	—	—
No answer		2	3	—
Total usable replies		<u>187</u>	<u>175</u>	<u>12</u>

\*Companies were asked to furnish the information for the latest year unless that year was not typical, in which case they were asked to furnish the information for the most recent representative year.

Table 3

Financial Relationships for  
Companies Returning Usable Replies

Percentage— latest year*	Net depreciable assets as a percentage of total assets		Depreciation charges as a percentage of net income or loss		Maintenance expense as a percentage of net income or loss		Rental expense for depreciable assets as a percentage of net income or loss**
	At least	But under	(Number of companies in each percentage category)				
—	5	8	5	16	71		
5	10	4	3	14	12		
10	25	44	21	26	33		
25	50	57	36	40	21		
50	75	40	42	20	8		
75	100	33	77	62	29		
No answer		1	3	9	13		
Total usable replies		187	187	187	187		

\*Companies were asked to furnish the information for the latest year unless that year was not typical, in which case they were asked to furnish the information for the most recent representative year.

\*\*Companies were asked to indicate the amount of expenditures for the rental of depreciable assets under noncapitalizable leases.

## Survey of Users

The survey of users, which was initiated in 1971 and completed in 1972, was made among security analysts and creditors, representing users of general purpose financial statements, to determine the importance and uses of information about depreciable assets and to elicit suggestions for improving that information. A questionnaire (Appendix 2) developed with the assistance of the AICPA Accounting Research Division was used in the survey. After the questionnaire was evaluated in a field test, it was sent to 1,500 security analysts and, as representative of creditors, the chief executive officers of 25 life insurance companies and 475 commercial banks. The selection was made as follows:

- *Financial analysts*—every ninth entry, beginning with a randomly selected entry in the first nine, from the 1971 membership roster of the Financial Analysts Federation.
- *Life insurance companies*—every tenth entry, beginning with a randomly selected entry in the first ten, from *The National Underwriter's* list of the 250 largest life insurance companies (as ranked by insurance in force), May 16, 1970.
- *Banks*—each of the 300 largest commercial banks (as ranked by deposits) and every fourteenth commercial bank, beginning with a randomly selected entry in the first fourteen, from *Moody's Bank and Financial Manual* for April 1970.

All of the 324 replies received were usable. They included 137 replies from security analysts and 187 from creditors. As in the survey of practices, the survey of users included a limited number of personal interviews with respondents in the New York area.

## Results of Surveys: General Observations

The results of the surveys, presented in Tables 4 through 20, are evaluated in this chapter. Some general observations are presented in this section. The discussion in the following sections is organized by problem area; the results of both surveys that bear on each problem area are discussed together.

Responses to some of the questions in the survey of practices were compiled in terms of "asset group count," which represents a

count of the number of times a characteristic—such as a particular allocation method—was reported for an asset group recognized by a respondent, regardless of the size of the group. For example, if a company reported using the straight-line method of allocation for five groups of assets and accelerated methods for two groups, its “asset group count” was compiled as five for the straight-line method and two for accelerated methods, regardless of the relative size of the groups or of how the sizes of the groups compared with the sizes of similar asset groups recognized by another respondent. In compiling the responses, an asset group that contained one asset was treated the same as an asset group that included many assets. Thus, for example, the finding (Table 8) that the straight-line method was used for 80 percent of the “asset group count” for buildings does not necessarily mean that respondents reported using that method for 80 percent of all buildings.

Inferences that appear to be adequately supported by the results are set forth in this chapter. The inferences were drawn cautiously, in recognition of the limited extent to which reliance can be placed on the results of surveys in general and these surveys in particular. Thus it was recognized, for example, that the surveys could not be expected to systematically elicit information relative to accounting for depreciable assets that was peculiar to individual respondents and that some risk of misunderstanding was present in the necessarily complicated questionnaires. Indeed, obvious misunderstandings caused the responses to questions 7, 8, and 14 of the practice questionnaire, dealing with overhead on self-constructed assets and with property units, to be largely useless. Nevertheless, the overall results of the surveys are thought to provide sufficient evidence for the conclusions developed.

## **The Depreciable Base**

Several questions in both surveys dealt with the depreciable base—the amount to be allocated over the life of a depreciable asset.

Although users of financial statements have often been characterized as preoccupied with earnings, Table 4 suggests that they have maintained a strong interest in the balance sheet, at least in the matter of presentation of depreciable assets. Creditors seem more interested in depreciable assets in the balance sheet than do security analysts, and the interest of both groups appears to wane as the

topics move from the more prominent issue of acquisition cost to the more obscure question of salvage value. Nevertheless, the reported interest at all levels is substantial.

The questions on depreciable base directed to company management divided naturally into two subtopics: (1) the amount capitalized as the cost of an asset and (2) the adjustments to cost made to arrive at the depreciable base.

**Table 4**

**Users' Assessment of the Significance of Depreciable Assets  
in the Balance Sheet  
(Expressed in Percentages)**

<u>Assessment of significance</u>	<u>Acquisition cost</u>		<u>Net book value</u>		<u>Salvage value policies</u>	
	<u>Ana- lysts</u>	<u>Cred- itors</u>	<u>Ana- lysts</u>	<u>Cred- itors</u>	<u>Ana- lysts</u>	<u>Cred- itors</u>
Very significant	36	49	22	47	13	12
Fairly significant	50	43	41	44	43	38
Barely significant	12	7	28	9	34	37
Insignificant	2	1	9	—	10	13
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

**Acquisition Cost.** By a margin of nine to one, companies responding to the survey of practices stated that they record depreciable assets at acquisition cost. Virtually all the exceptions to that general practice come from public utilities that use the concept of "original cost"—that is, the cost to the entity first devoting an asset to public service. As Table 5 shows, there was a reasonably close agreement among the responding companies as to what specific expenditures are included in acquisition cost. Of thirteen items that might be included, nine were either accepted or rejected by at least two-thirds of the respondents. And an industry analysis disclosed few significant variations by industries from the overall percentages. Table 5 also shows reasonably close agreement between capitalization practices of the responding companies and preferences of user groups. Also, 78 percent of the security analysts and 71 percent of the creditors expressed the belief that the treatment of the items listed in Table 5 should be the same for all companies.

Table 5

Specific Expenditures Included  
in Acquisition Cost

<u>Item</u>	<u>Percentage of companies that consider item</u>	<u>Percentage of users that favor taking item into consideration</u>
Incoming transportation costs	93	Not asked
Installation costs	97	Not asked
Temporary storage and handling	41	36
Cost of removing old assets (other than razing buildings to clear land)	21	26
Costs of setting up or breaking in	35	62
Import duties	87	Not asked
Sales or excise taxes	73	71
Purchase discounts when taken	67	78
Purchase discounts when not taken	1	
Interest on credit purchases when specifically identified in the credit agreement	13	14
Interest on credit purchases when not specifically identified in the credit agreement	15	
Gain on assets traded in	39	
Loss on assets trade in	38	24

Despite agreement on capitalization concepts, practical problems sometimes make it difficult to identify the costs of specific assets. Table 6 shows how the companies responding to the survey of practices deal with three of those problems: assets acquired in exchange for a company's stock (not a business combination), assets acquired in exchange for noncash assets, and assets acquired in a "basket purchase."

Perhaps the most significant fact revealed by Table 6 is that the great majority of responding companies reported no significant experience with these three problems. Of those that reported signifi-

cant experience, many merely record the assets at the book value of the previous owner. Since that practice is contrary to present generally accepted accounting principles (GAAP), the prevalence of the practice suggests that the transactions probably were not material. In most other instances, the responding companies record transactions in conformity with GAAP.

Table 6

Problems in Determining Acquisition Cost  
in Certain Types of Transactions

	<i>Depreciable assets acquired</i>		
	<i>On issuance of own stock</i>	<i>For noncash assets</i>	<i>In a "basket purchase"</i>
No significant experience	165	181	149
Significant experience—method of determining value:			
Estimated cash purchase price	3	2	25
Estimated selling price of assets given as consideration	3	—	*
Either of above, whichever is more readily determined	2	1	*
Book value of previous owner	14	4	14
Nominal amount	—	—	*
Book value of assets given as consideration	*	—	*
Other	1	—	2
Total usable replies**	<u>188</u>	<u>188</u>	<u>190</u>

\*Not included among suggested responses.

\*\*Total usable replies exceed 187 because some companies selected more than one response.

**Adjustments to Cost.** Table 7 shows that only a few of the companies that responded to the survey of practices adjust the acquisition cost of depreciable assets for anything but salvage value to arrive at depreciable base. An industry analysis shows that only about one-quarter of the responding companies other than airline, public utility, and steamship companies reported adjusting even for salvage value. (In those three industries, 90 percent of the companies reported adjusting for salvage value, bringing the overall average up to 41 percent.) Here, too, it seems reasonably safe to at-

tribute the common practice of ignoring salvage value, which is required to be recognized by GAAP, to the immateriality of the amounts.

Table 7

Adjustments of Acquisition Cost to  
Arrive at Depreciable Base

<u>Adjustment</u>	<u>Overall percentage of companies making the adjustment</u>
Estimated salvage value	41
Estimated future costs of disposing of asset acquired	13
Costs of removing asset replaced, when applicable	14
Other	—

### The Allocation Process

The process of allocating the cost of depreciable assets involves two factors: (1) the choice of allocation methods and (2) the estimate of the useful lives.

**The Allocation Method.** Some accountants contend that disparate circumstances, particularly differences in the nature of assets and in the type of industry, require a variety of allocation methods. As one respondent wrote,

Business enterprises, particularly in different industries, should not be forced to use the same depreciation method. One of the methods acceptable at present is likely to be more appropriate for a particular enterprise than any other method.

Accordingly, responses to the survey of practices were analyzed to determine whether allocation methods appear to vary according to the nature of the asset or the type of industry. The analysis determined that for the companies responding to the survey, the allocation method did not differ significantly by either asset or industry. As shown in Table 8, responding companies use straight-line, accelerated, and other allocation methods for relatively stable percentages of "asset group count." More diversity is shown among the various industries analyzed (Table 9), but it seems to be more related to circumstances other than the type of industry. These other cir-



cumstances include the book value of a company's depreciable assets and the amount of its depreciation charges relative to its total assets and net income, respectively. As Tables 10 and 11 show, the greater the relative amount of depreciable assets and depreciation charges, the greater the use of the straight-line method. Those circumstances correlate with the prevalence of the straight-line method in airlines and utilities; in those two industries both depreciable assets and depreciation charges are relatively large. Conversely, accelerated methods were more common among the finance-related companies, in which depreciable assets are relatively insignificant.

Another circumstance that seemed to relate to the choice of allocation method was the market in which a company's shares are traded. As shown in Table 12, companies whose shares are traded on the New York or American Stock Exchange or in the over-the-counter market use the straight-line method of allocation more than other companies. That finding is consistent with the evidence in Table 9, which shows that accelerated methods are used relatively more often among companies included in the industry groups desig-

**Table 8**

**Allocation Method by Asset Type**

<i>Asset type*</i>	<i>Percentage of "asset group count" by method</i>		
	<i>Straight-line</i>	<i>Accelerated</i>	<i>Other</i>
Buildings	80	15	5
Improvements to land, buildings, and leaseholds	82	14	4
Machinery and equipment	77	16	7
Furniture and fixtures	76	19	5
Autos and trucks	74	18	8
Aircraft	89	7	4
Other transportation equipment	79	18	3
Tools, dies, and patterns	79	19	2
Other	82	5	13
Overall	79	16	5

\*Major subcategories of asset types were also analyzed, and no important differences were found.

Table 9

## Allocation Method by Industry

<u>Industry*</u>	<u>Percentage of "asset group count" by method</u>		
	<u>Straight-</u> <u>line</u>	<u>Acceler-</u> <u>ated</u>	<u>Other</u>
Mining (excluding petroleum extraction)	88	—	12
Airline	100	—	—
Electric, gas, water, and telephone utilities	94	—	6
Wholesale and retail trade	84	16	—
Finance, banking, brokerage, and insurance	53	40	7
Real estate	64	19	17
Food and tobacco processing	99	—	1
Wood products, furniture, paper, and packaging	91	7	2
Chemicals, petroleum (including extraction), and rubber	90	4	6
Primary metal	68	23	9
Textiles and apparel (excluding footwear)	91	9	—
Glass, stone, clay, and leather (including footwear)	100	—	—
Machinery, equipment, instruments, other metal products, and manufacturing not otherwise classified	64	32	4
Other	74	20	6
Overall	79	16	5

\*Separate analyses were made only of those industries having at least five usable responses.

nated "finance, banking, brokerage, and insurance" (40 percent) and "machinery, equipment, instruments, other metal products, and manufacturing not otherwise classified" (32 percent); the shares of relatively few of the responding companies in those two industry groups are actively traded.

Responding companies in the real estate industry group also diverged from the general pattern of allocation methods. That divergence is apparently attributable to the nature of the investment

Table 10

Allocation Method by Significance  
of Depreciable Assets

<i>Depreciable assets as a percentage of total assets</i>	<i>Percentage of "asset group count" by method</i>		
	<i>Straight-line</i>	<i>Accelerated</i>	<i>Other</i>
Under 10	45	40	15
10 to 25	76	23	1
25 to 50	81	17	2
Over 50	90	3	7
Overall	79	16	5

Table 11

Allocation Method by Significance  
of Depreciation Charges

<i>Depreciation charges as a percentage of net income</i>	<i>Percentage of "asset group count" by method</i>		
	<i>Straight-line</i>	<i>Accelerated</i>	<i>Other</i>
Under 10	63	37	—
10 to 75	79	16	5
Over 75	87	9	4
Overall	79	16	5

Table 12

Allocation Method by Trading Market

<i>Type of trading market</i>	<i>Percentage of "asset group count" by method</i>		
	<i>Straight- line</i>	<i>Acceler- ated</i>	<i>Other</i>
New York or American Stock Exchange or OTC	84	12	4
Other	50	38	12
Overall	79	16	5

appeal of those companies; much of the appeal arises from tax considerations other than reported earnings.

Overall, the diversity of allocation methods shown in Tables 10, 11, and 12 suggests some of the considerations that influence management's choice of method. Specifically, managements of companies with significantly large depreciation charges and widely traded shares show a distinct preference for the straight-line allocation method; managements of other companies are much more likely to use accelerated allocation methods. Those tendencies are clarified when the financial accounting and tax methods of the reporting companies are compared later in this chapter. At this point the survey results suggest that allocation methods are chosen for reasons other than the nature of the asset or the type of industry.

*Reasons given for choices of allocation methods.* Additional insight into the choice of allocation method may be obtained from reviewing the reasons that respondents gave for choosing a method. Both the survey of practices and the survey of users contained identical lists of nineteen reasons and a space to write in other reasons. The respondents were asked to indicate which reasons influenced or, in the case of users, which reasons should influence the choice of allocation method. Table 13 sets forth a ranking of the principal reasons indicated.

Some of the responses appear to challenge certain widely held notions about allocation methods. One notion, for example, is that the straight-line method is little more than an arbitrary compromise that does not necessarily follow the patterns of physical deterioration or functional obsolescence and is not necessarily expected to produce a good matching of costs with revenue. Yet the respondents ranked "matching," "physical deterioration," and "obsolescence" high among the principal reasons for selecting the straight-line method. On the other hand, "matching" ranked only seventh as a reason for choosing accelerated methods, even though a major argument for those methods has been that they achieve a better matching than does straight-line.

"Recovering funds to provide for replacement of the asset" was one of the principal reasons for choosing an allocation method mentioned by both management and users. That will be disappointing news to those who decry perpetuation of the myth that bookkeeping entries provide funds.

Table 13

Rank Order of Principal Reasons for, or Important Factors in, the Choice of an Allocation Method

<i>Reason or factor</i>	<i>Practice survey</i>			<i>Users' survey</i>		
	<i>S-L</i>	<i>Rank based on frequency of reasons given for choosing a method*</i>		<i>Analyst</i>	<i>Rank based on factors considered important in making a choice</i>	
		<i>Accel.</i>	<i>Overall</i>		<i>Creditor</i>	<i>Combined</i>
Periodic matching of costs revenue	1	7	1	4	7	4
Conformity with income tax regulations	4	1	2	8	3	6
Pattern of expected physical deterioration	2	4	3	2	2	2
Comparability with other firms in the industry	3	11	4	3	4	3
Pattern of expected functional obsolescence	5	5	5	1	1	1
Reflecting a more conservative income measurement	9	3	6	11	10	9
Conformity with government regulations other than tax	6	8	7	7	6	7
Recovering funds to provide for replacement of the asset	8	2	8	5	5	5
Complexities of the method, clerical time, and cost	7	6	9	14	14	14

\*Only straight-line and accelerated methods are considered. Other methods are used infrequently and therefore are not dealt with throughout the remainder of this chapter.

Other rankings may be more readily understood. Tax considerations, for example, have long influenced the use of accelerated methods. Respondents to the practice questionnaire not only ranked "conformity with income tax regulations" first as a reason for choosing accelerated methods, but also cited that reason more than twice as often as any other.

The nature of assets owned appeared to have little relationship to the reasons given for selecting a particular allocation method. Also, there was no apparent relationship between the type of industry and the reasons for selection.

Additional insight is provided by the comparison of the rankings given by company management and by users. Users generally ranked "matching," "tax conformity," "conservatism," and "complexity" lower than did management. On the other hand, users were more concerned about "obsolescence" and "asset replacement." Overall, however, both users and company management generally included the same items among their most important considerations.

An analysis of the factors ranked lowest by the respondents to both surveys also provides some interesting information. As shown in Table 14, among the lowest ranked considerations are some that are important to many who propose changing present allocation concepts. Changes frequently are advocated to smooth the total of depreciation, maintenance, and other asset-related expenses, to achieve a constant rate of return on undepreciated cost, to reflect declines in the secondhand value of assets, to reflect declines in discounted future receipts, or to offset general price-level changes. None of those objectives received a high ranking from either management or users.

*Changes in allocation methods.* A better understanding of the choice of allocation method can be obtained from information about companies that changed methods for financial statement purposes. In addition to the surveys, a separate analysis was made of all the reports that came to the attention of the researchers during the study up to mid-1972. That analysis identified 225 companies that changed allocation methods between 1965 and mid-1972. Although the analysis may not have been statistically sound and the reports not necessarily representative, the analysis disclosed that of the 225 companies identified, all but 10 changed to the straight-line method from another method. Only 6 changed to an accelerated method and 4 to the units-of-production method.

Table 14

Lowest Ranked Reasons for  
Choosing Allocation Method

<u>Reason</u>	<u>Overall company management rank</u>	<u>Combined users' rank</u>
Reflecting a level annual total expense in conjunction with maintenance and other asset-related expenses	10	15
Avoiding burdensome charges to income	11	16
Reflecting a constant rate of return on depreciated cost	12*	17
Comparability with other divisions of the firm	13*	10
Decline in the value of the asset in the used asset market	14*	8
Effect on the payment of dividends	15*	19
Conformity with debt retirement schedules	16*	12
The pattern of decline in the present (discounted) value of estimated future gross revenue or net income derived from the asset	17*	11
Avoiding the recording of deferred income taxes	18*	18
Offsetting the effects of changes in the general price level	19*	13

\*Received a lower ranking than the total of "write-in" reasons.

Approximately one-third of the 225 companies offered a reason for the change in their financial statements or annual reports. Of those that did, approximately three-quarters cited "conformity to industry practice" or "the trend in financial reporting." No other reason was cited an appreciable number of times. Significantly, 189 (84 percent) of the 225 changes resulted in a significant increase in earnings for the year of change. Only three changes—all among companies changing to an accelerated method—resulted in reduced

earnings; the remainder had no significant effect on earnings, at least in the year of change. At least one commentator expressed the opinion that the tendency of the changes to increase earnings was not coincidental.

The trend toward straight-line depreciation in stockholder reports appears to be feeding on itself. Each corporation competes with all others . . . for investors' esteem and capital. When any appreciable number adopt a profit-augmenting accounting change, others are more or less forced to fall in line.<sup>2</sup>

As mentioned earlier in this chapter, the sample of companies selected to receive the questionnaire on accounting practices was intentionally weighted to include a number of companies that had been identified as having changed depreciation methods or other depreciation factors. The question on changes in depreciation method included in the survey of practices produced results similar to those obtained from the separate analysis; of the 187 companies responding to the survey, 46 had changed allocation methods in the preceding five years, and almost all the changes were to the straight-line method. The two reasons most often given for the changes were "comparability with other firms in the industry" and "avoiding burdensome charges to income."

*Allocation methods and circumstances.* One reason commonly given for the need for alternative allocation methods is to permit companies to tailor methods to circumstances so as to provide users of financial statements with the best available information. But the present availability of alternatives and the freedom to use them apparently have not resulted in that kind of tailoring. This could mean either that alternatives are not needed or that criteria for the most informative tailoring of alternatives to circumstances are not available and should be developed. A framework of criteria for selecting accounting methods is discussed in the next chapter.

**Estimated Useful Life.** Although the choice of allocation method receives more attention, variations in other factors, particularly differences in estimates of useful lives, can cause at least as much variation in the amount of annual depreciation as can differences in

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<sup>2</sup> "Backtracking on Depreciation," *Financial World*, October 16, 1968, p. 6.



**Table 15**

**Factors to Consider in Estimating Useful Life**

<u>Factor</u>	<u>Overall company management rank</u>	<u>Combined users' rank</u>
Physical deterioration	1	2
Conformity with income tax regulations	2	7
Functional obsolescence of the asset	3	1
Matching costs with period benefited	4	5
Term of lease	5	9
Reflecting a conservative income measurement	6	11
Recovery of funds to provide for replacement of the asset	7	6
Obsolescence of the product or service derived from the asset	8	3
Conformity with government or public agency (FPC, ICC, etc.) regulations other than tax	9	8
Deferral of income tax payments	10*	13
Avoidance of burdensome charges to income	11*	15
Term of job or contract	12*	10
Conformity with debt retirement schedules	13*	12
Offsetting effects of price-level changes	14*	14
Comparability with other firms in industry	Not listed	4

\*Received a lower ranking than the total of "write-in" responses.

methods.<sup>3</sup> The importance of estimates of useful lives is evident from analysis of the companies making changes in their depreciation procedures. In addition to the 225 companies identified as having

<sup>3</sup> Robert R. Sterling, "A Test of the Uniformity Hypothesis," *Abacus*, September 1969, pp. 37-47.

changed methods of allocation, 65 companies were identified as having changed estimates of useful lives. Of those 65 changes, 53 (82 percent) increased earnings in the year of change.

Both questionnaires included lists of factors that might bear on the estimate of asset life. In the survey of practices, respondents were asked to indicate which factors are considered in estimating useful lives, and in the survey of users, respondents were asked to indicate which factors should be considered in estimating useful lives. Table 15 ranks the responses.

Probably the most significant feature of Table 15 is that it generally reinforces the impression given by Table 13, which ranks the principal reasons indicated for choice of allocation method. Overall, management and users were in reasonably close agreement about the important considerations in estimating life. Physical deterioration, conformity with income tax regulations, and functional obsolescence ranked highest, with company management ranking tax considerations higher than did users and users ranking obsolescence higher than did company management. Company management also ranked conservatism higher than did users. As in choice of allocation method, variations in the nature of assets and in the type of industry made little difference in the factors considered important in estimating useful life.

But estimating the life of a depreciable asset involves more than considering the factors that affect the asset's life; because asset life is an estimate of the future, which is unknown, guidelines in the form of known information usually are used. For that reason, the survey of accounting practices asked about the guides used by company management in estimating the useful lives of depreciable assets. Table 16 presents management's ranking of the guides suggested in the questionnaire.

**Table 16**

Management's Rankings of  
Guides to Estimating Useful Life

<u>Guide</u>	<u>Rank</u>
Experience of the firm	1
U.S. Treasury Department "guideline lives"	2
Experience in the industry	3
Engineering estimates	4
Government prescription, other than tax regulations	5

## Other Concerns

Although determining the depreciable base and choosing the allocation procedure are the major subjects of this study, the surveys also considered special purpose reports, disclosure practices, and general concepts of the nature and objectives of accounting for depreciable assets.

**Reporting for Special Purposes.** Although the primary focus of this study is on general purpose financial statements, assistance in gaining perspective on that matter can be obtained from considering the relationship between accounting for general purpose financial statements and for certain special purpose reports. For that reason, the survey of practices included questions about accounting for depreciable assets both for federal income tax purposes and for reports prepared primarily for use by company management.

*Accounting for depreciable assets for federal income tax purposes.* Companies receiving the questionnaire on accounting practices were asked to compare their depreciable asset accounting practices for financial statement and tax purposes in the following areas:

- Capitalization policies.
- Adjustments to capitalized cost to arrive at depreciable base.
- Property units.
- Allocation methods.
- Useful lives.

The great majority of the companies reported no difference between financial statement and tax computation of the depreciable base. Only 17 percent reported differences in capitalization policies and 8 percent reported differences in the adjustments to capitalized cost to arrive at the depreciable base. But as indicators of general practice, even those percentages are too high; if airlines and utilities are omitted, the percentages drop to 10 percent and 5 percent, respectively. And of the individual items listed in Tables 5 and 7, none is treated differently for financial statement and tax purposes by as many as 10 percent of the responding companies. As might be expected, the reported differences almost always had the effect of reporting income earlier in the financial statements than for taxes.

A larger percentage (25 percent) of the responding companies indicated that for all or part of their depreciable assets they use different property units for financial statement and tax reporting. For the most part, those companies were the larger ones and the ones having relatively large investments in depreciable assets. The effect of the differences on reported income could not be determined.

But the effect on reported income of differences in the allocation methods could be determined. Virtually all of those differences had the effect of reporting income earlier in the financial statements. And 68 percent of the responding companies reported a difference in allocation method for all or part of their assets. Those that reported no difference were generally the smaller companies, those with relatively small investments in depreciable assets and correspondingly low depreciation charges, and companies whose stock was not actively traded. In other words, they fit the characteristic profile, previously described, of companies that tend to use accelerated methods in financial statements. And, in fact, those companies do use accelerated methods for 37 percent of their "asset group count," well in excess of the 16 percent figure for all responding companies.

That finding tends to reinforce the earlier impression that tax considerations heavily influence the use of accelerated allocation methods. Additional reinforcement is provided by the fact that when accelerated methods are used for financial statement reporting, another method is used on the tax return for only 5 percent of the "asset group count." That compares with 44 percent for the straight-line method.

Generally, the characteristics of companies that reported the use of the same allocation method for financial statements and taxes are the same as those of companies that reported the use of the same useful lives for both purposes. However, the latter companies are more numerous; while only 32 percent of the companies use the same allocation method, 60 percent use the same lives. As with the other differences between financial statement and tax accounting for depreciable assets, most of the differences in lives (82 percent of the "asset group count") had the effect of reporting income earlier in the financial statements.

*Accounting for depreciable assets in internal management reports.* While depreciation for tax accounting was quite often different from that for general purpose financial statements, depreciation for internal and external reporting was generally the same among the

companies responding to the practice questionnaire. As Table 17 shows, differences existed in no more than 20 percent of the reports. That substantial agreement may reflect satisfaction with external reporting procedures or merely the desire of management to evaluate itself on the same terms that outsiders do.

**Information Disclosures.** The survey of financial statement users included a question designed to determine the relative value to users of various items of information about depreciable assets. Twenty-two items of information were listed, and users were asked to assign each item a score from 0 (for not important) to 3 (for most important). Table 18 sets forth the overall results. Analysts generally were more interested than creditors in details of information by operating division or product line, and creditors were more interested in the insured value of depreciable assets and in depreciable assets pledged to secure debt. But for the most part, the two user categories were in fairly close agreement about the relative importance of each item on the list.

**Objectives of Accounting for Depreciable Assets.** The survey of practices also sought to obtain company managements' ranking of the relative importance of various objectives of accounting for depreciable assets. Accordingly, the survey listed twenty possible objectives, plus an opportunity to write in others, and asked that each be ranked on a scale from 0 (not important) to 3 (most important). The overall results are shown in Table 19.

**Concepts of Depreciation.** Users were also asked to choose from a list of ten suggested concepts, or to write in their own concept, of (1) what depreciation is under present GAAP and (2) what depreciation ideally should be. The results are shown in Table 20.

Nearly all respondents recognized the present generally accepted definition of depreciation, and most of the rest chose the response, "the maximum amount allowable for federal income tax purposes," a pragmatic though somewhat cynical response. Perhaps more surprising was the relatively large number of respondents who selected the present concept as the ideal. Although it was not the choice of the majority of either analysts or creditors, it was the choice most often named by both groups. As far as the results of this question are concerned, therefore, the survey of users indicated some inter-

Table 17

<i>Type of report</i>	<i>Internal report is prepared</i>				<i>No answer</i>
	<i>Calculated same as for external reports</i>	<i>Calculated differently from external reports*</i>	<i>Depreciation is not considered</i>	<i>Internal report is not prepared</i>	
Analysis of profitability of divisions, product lines, etc.	147	5	5	27	3
Analysis of return on investment	131	15	5	33	3
Analysis of pricing decisions	105	14	8	51	9
Analysis for capital expenditure decisions	132	25	9	21	—
General purpose financial statements prepared for management	180	3	1	3	—

\* A variety of differences were mentioned, but only two were mentioned a significant number of times:  
 1. An accelerated method is used for internal reports; the straight-line method for external reports.  
 2. Depreciation is based on replacement cost for internal reports and on historical cost for external reports.

**Table 18**

Relative Value to Users of Information  
About Depreciable Assets

<u>Information disclosure</u>	<u>Total score*</u>
Total depreciation expense for the year	920
Allocation method(s) used for financial statement purposes (e.g., straight-line, declining balance, units of production)	879
Basis of valuation of depreciable assets (e.g., acquisition cost, cost to replace, appraisal value)	866
Total investment in depreciable assets	856
Planned additions to depreciable assets for the coming year(s)	828
Allocation method(s) used for income tax purposes	797
Nature and amount of depreciable assets pledged to secure debt	789
Total accumulated depreciation taken to date	782
Details of investment in depreciable assets by major categories (e.g., buildings, equipment fixtures, automotive equipment, machinery)	773
Total additions to, and retirements of, depreciable assets for the year	768
Allocation method(s) used for each major category of depreciable assets	684
Details of accumulated depreciation taken to date by major categories of assets	662
Total maintenance expense for the year	628
Details of additions to and retirements of depreciable assets by major categories for the year	617
Range of useful lives (e.g., 5 years to 25 years) for allocation purposes	605
Useful life used for each major category of depreciable assets	591
Details of depreciation expense for the year by major categories of assets	575
Details of investment in depreciable assets by operating division or product line	573
Average useful life used for allocation purposes	559
Insured value of depreciable assets by major category	542
Details of depreciation expense for the year by operating division or product line	540
Details of maintenance expense for the year for major categories of assets	454

\*A perfect score—every respondent giving an item a rating of 3 (most important)—would be 972.

Table 19

Ranking of Objectives of Accounting  
for Depreciable Assets

<u>Objective</u>	<u>Score*</u>
Providing adequate accounting controls over the firm's physical property	427
Periodic matching of costs with revenue	418
Determining the amount of cash flow from depreciation	375
Providing meaningful components of return on investment calculations	371
Determining the amount of funds expended for depreciable assets that are expected to be recovered out of future operations	345
Providing a basis for information required for maintaining adequate property insurance coverage	318
Reporting as a custodian the amount of funds the firm has expended for depreciable assets	315
Providing information for revenue forecasting	314
Providing information for measuring the effectiveness of plant investment decisions	311
Providing information for measuring division performance	307
Providing information for pricing decisions	282
Determining the real value of the firm's investment in depreciable assets	276
Providing funds for replacement of depreciable assets	256
Avoiding the effects of annual income peaks and valleys	209
Providing information for determining asset replacement needs	201
Providing a base for statutory rate-setting	170
Measuring unexpired asset service potential	162
Determining the average age of plant and equipment	158
Preventing the payment of dividends out of capital	154
Mitigating the effects of changes in the general price level	84

\*A perfect score—every respondent giving an objective a rating of 3 (most important)—would be 561.



Table 20

## Depreciation Concepts

	Analysts		Creditors	
	Depre- ciation under GAAP is	Depre- ciation should be	Depre- ciation under GAAP is	Depre- ciation should be
<u>Depreciation concept</u>				
An amount that allocates the assets' historical cost (less salvage) over its life in a systematic and rational manner	119	42	148	84
Same as above but adjusted for changes in the general price level	1	37	3	21
The difference (from beginning to end of period) in asset value measured in terms of current replacement cost	3	14	2	20
The difference (from beginning to end of period) in asset value measured in terms of currently realizable market value	0	12	2	20
The difference (from beginning to end of period) in asset value measured in terms of the future net cash flow generated by the asset, discounted to present value	0	12	0	14
The maximum amount allowable for federal income tax purposes	3	4	24	4
Other	1	3	0	8
No answer	10	13	8	16
Total number of respondents	137	137	187	187

est in, but not an overwhelming desire for, change in the fundamental concepts that currently underlie accounting for depreciable assets.

## Suggestions for Improvement

The two questionnaires contained, in addition to specific questions about how accounting for depreciable assets might be improved, general requests for suggestions. The following are the two suggestions most commonly made in both surveys:

1. The choice of alternatives in depreciable asset accounting should be narrowed or eliminated. This suggestion was surprisingly popular with company management as well as—more understandably—with users. Among the users, however, it should be noted that 80 percent of the security analysts and 87 percent of the creditors favored allowing more than one method of allocation. But many would require that only one method be used within a given industry or for a particular type of asset.
2. Some form of current value accounting should be adopted. However, respondents demonstrated confusion about the various concepts of current value accounting.

Among users, a common suggestion was that financial statements should contain more information to explain the accounting for depreciable assets. Particularly interesting was that a substantial number of users requested disclosures of information (for example, major asset classes and allocation methods in use) that are already required by the pronouncements of the Accounting Principles Board.

Overall, it was evident that users have difficulty in determining and articulating their information needs. That observation is supported by other research and analysis.<sup>4</sup>

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<sup>4</sup> See, for example, George H. Sorter, "An 'Events' Approach to Basic Accounting Theory," *The Accounting Review*, January 1969, p. 13; and William J. Vatter, "Obstacles to Specification of Accounting Principles," in *Research in Accounting Measurement*, ed. Robert K. Jaedicke, Yuji Ijiri, and Oswald Nielsen (Evanston, Ill.: American Accounting Association, 1966), p. 78.

## Summary

The objectives of the two surveys were as follows:

1. To determine the extent to which the various acceptable alternatives are used in accounting for depreciable assets.
2. To identify the circumstances in which each alternative tends to be used.
3. To ascertain the apparent motives for selecting alternatives.
4. To determine the importance and uses of information about depreciable assets.
5. To elicit suggestions for improving the procedures that are now used in accounting for depreciable assets.

The following information was obtained from the surveys.

1. In accounting for material amounts, the companies that responded to the survey of practices agreed substantially with one another and with users on the costs of depreciable assets to be capitalized and the adjustments necessary to determine the depreciable base.
2. The straight-line method is more widely used for financial statement purposes among the responding companies than all other allocation methods combined.
3. There is no evident relationship between the allocation methods presently used and the nature of the asset or the type of industry.
4. The straight-line method is most frequently used for financial statement purposes in those companies having the following characteristics:
  - a. Relatively large investments in depreciable assets.
  - b. Relatively high depreciation charges.
  - c. Stock traded on the major stock exchanges or in the over-the-counter market.
  - d. Managements with a high level of concern for (1) matching costs with revenues and (2) maintaining comparability with other firms in the industry.
  - e. Managements with a low level of concern for conforming depreciation for financial statement and tax purposes.

5. Accelerated depreciation is most frequently used for financial statement purposes in those companies whose investment appeal is influenced by tax considerations rather than accounting earnings and in smaller companies where conformity with tax regulations influences accounting.
6. While there were slight differences in the order in which their reasons were ranked, both company management and users generally agreed on the important factors in selecting an allocation method.
7. The misconception that depreciation accounting provides funds is found among both preparers (management) and users.
8. In general, neither company management nor users give high rankings to the following considerations in choosing an allocation method:
  - a. Equalizing the total annual charges for depreciation, maintenance, and other asset-related expenses.
  - b. Attaining a constant rate of return on depreciated cost.
  - c. Using depreciation to offset changes in the general price level.
  - d. Using depreciation to reflect declines in the present (discounted) value of estimated future gross revenue or net income derived from assets.
9. The great majority of changes in allocation methods during the period covered by the survey of practices were from an accelerated method to the straight-line method.
10. The most common reasons given for changing allocation method were "conformity to industry practice" and "the trend in financial reporting."
11. Most of the changes in allocation method resulted in increased earnings in the year of change. (Some companies specifically included "avoiding burdensome charges to income" among their stated reasons for making the change.)
12. Both company management and users generally selected the same factors as important in estimating the useful life of a depreciable asset and in choosing the allocation method.
13. A large majority (68 percent) of the companies use differ-

ent allocation methods for financial statement and federal income tax purposes for all or part of their depreciable assets; smaller but still substantial percentages (40 percent and 25 percent) use different lives and property units; and relatively few (17 percent and 8 percent) use different capitalization policies and make different adjustments to arrive at the depreciable base.

14. The companies reporting differences between depreciable asset accounting for financial statement purposes and for tax purposes tended to be the larger companies and those having relatively large investments in depreciable assets.
15. Where the effect of differences between financial statement and tax accounting could be determined, the great majority resulted in an earlier reporting of income in the financial statements.
16. Depreciation for internal and external reporting was generally the same.
17. Virtually all the users responding to the survey recognize the concept of depreciation under generally accepted accounting principles, and more users prefer that concept to any other single method suggested in the questionnaire.
18. Users have difficulty in determining and articulating their needs for information about depreciable assets.

## Use of Criteria in Depreciation Accounting<sup>1</sup>

Pleas for the use of criteria to help select appropriate accounting methods from acceptable alternatives abound in accounting literature; there is, for example, the plea

... that specific criteria ... be carefully developed and then utilized in making choices among alternative accounting methods.<sup>2</sup>

In depreciation accounting, too, calls are heard for the use of criteria in selecting alternatives; for example,

... there is no one right method for distributing the difference between the first cost of a fixed asset and its salvage value among the years of its life. The best that can be done is to develop criteria for judging the merits of alternative methods, and then note which methods correspond best to those criteria.<sup>3</sup>

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<sup>1</sup> Some of the material in this chapter was adapted from Paul Rosenfield and Dale L. Gerboth, "Use of Criteria to Select Accounting Methods," *Journal of Accountancy*, October 1973, pp. 78-82.

<sup>2</sup> W. J. Kenley and G. J. Staubus, *Objectives and Concepts of Financial Statements* (Melbourne, Australia: Accountancy Research Foundation, 1972), p. 106.

<sup>3</sup> Eugene L. Grant and Paul T. Norton, Jr., *Depreciation*, revised printing (New York: The Ronald Press Co., 1955), p. 184.

But despite their evident interest in criteria, accountants have devoted surprisingly little attention to the use of criteria in selecting among accounting alternatives. That issue is explored in this chapter, which outlines a conceptual analysis of the various rules, guidelines, conditions, objectives, and requirements that serve as accounting criteria. The chapter also develops a decision framework for determining how the various types of criteria identified may be used to select among alternative accounting procedures. Chapters 4, 5, and 6 then use that framework to help resolve the major issues in depreciation accounting. Throughout, the emphasis is on the process of reasoning through to conclusions—a process that entails many decisions based on considerations that may be evaluated differently by different individuals. At each decision point, a choice that differs from the one made in the study could possibly lead to different results. Thus, the primary purpose of this study is to outline a reasoning process, identify the decisions that it entails, and set forth the factors that should be considered in making each decision. The ultimate conclusions of this study are less important than the reasoning process by which they were derived.

The term “criteria” is commonly defined as “standards of judgment or criticism; established rules or principles for testing anything.”<sup>4</sup> Although the term is generally used in that sense in accounting literature, many other terms are also used to mean essentially the same thing. For that reason, the term “criteria” is used in this study in a broad sense to encompass definitions, rules, standards, principles, guidelines, requirements, and objectives that are intended to be used, either directly or indirectly, to limit, exclude, select, classify, test, or rank concepts, procedures, or financial information. In that sense, generally accepted accounting principles (GAAP) constitute a set of criteria that both determine and test financial reporting policies and procedures and financial information.

Criteria are used in accounting in a variety of ways and for a variety of purposes. In this analysis of the criteria found in accounting literature, three types are distinguished on the basis of what they test:

1. “Constraining criteria” that test accounting methods.

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<sup>4</sup> *The Random House Dictionary of the English Language*, unabridged edition (New York: Random House, 1966).

2. "Tailoring criteria" that test information produced by applying accounting methods to accounting events.
3. "Implementing criteria" that test accounting events and circumstances.<sup>5</sup>

This classification does not exhaust the possibilities for classifying the criteria found in accounting literature, but in this analysis it provides the basis for a general decision framework for selection of accounting methods.

### Constraining Criteria

Constraining criteria test—directly and preemptively—the acceptability of accounting methods. An example is the set of "minimum requirements for theoretical justification of an allocation method" specified by Arthur L. Thomas.<sup>6</sup> According to those criteria, for an allocation method to be theoretically justified,

1. It should be possible to specify, unambiguously and in advance, the method to be used and to defend that choice against all competing alternatives.
2. The method should divide up what is available to be allocated, no more and no less, and the results should be additive.

In the more specific matter of accounting for depreciable assets, the definition of depreciation accounting in Accounting Terminology Bulletin No. 1 (paragraph 56) also contains constraining criteria; acceptable allocation methods are restricted to those that

1. Allocate a depreciable base defined in terms of historical cost.
2. Are systematic rather than discretionary.

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<sup>5</sup> The introduction of new terms and the use of familiar ones in new ways may initially lead to some confusion. However, new terminology is essential for exposition and for clarification of some existing concepts.

<sup>6</sup> Arthur L. Thomas, *The Allocation Problem in Financial Accounting Theory* (Evanston, Ill.: American Accounting Association, 1969).



3. Are rational—that is, are based on internally consistent reasoning.
4. Provide for periodic charges to expense rather than lump-sum write-offs.
5. Allocate the depreciable base of an asset over its estimated useful life.

Although those criteria represent an explicit collective decision by the accounting profession to restrict acceptable allocation methods in certain ways, they still admit many more methods than the half-dozen or so that are used in practice. That the number of acceptable methods is further restricted in practice suggests that the accounting profession has implicitly adopted additional constraining criteria that limit acceptable methods to those that have attained some degree of consensus in practice.

Two significant characteristics of constraining criteria in accounting are apparent from the examples. First and most important, as noted above, constraining criteria, unlike the other two types of criteria considered in this study, apply directly to accounting methods. Second, the tests of accounting methods imposed by constraining criteria are preemptive; that is, they determine the acceptability of accounting methods regardless of circumstances and regardless of how those methods score according to other criteria. Other criteria can further limit the number of acceptable methods, but they cannot make acceptable a method that is *unacceptable* according to whatever constraining criteria are adopted.

Although constraining criteria determine the set from which a particular method may be selected, they do not determine which of the acceptable methods should be selected in specific circumstances. For example, the straight-line method of cost allocation is in the set of acceptable allocation methods because it is usually considered a rational and systematic method of allocating the historical cost of an asset over its useful life and has gained wide acceptance in practice. However, a number of other methods also meet those criteria and, therefore, are also in the set of acceptable methods. Additional criteria are needed to narrow the choice of method to the one that is most appropriate in a particular situation.

Of course, constraining criteria could be so restrictive that only one accounting method could satisfy them. However, for many accounting events, constraining criteria that are so restrictive would

not satisfy those who advocate different accounting methods for different circumstances. That view presupposes a variety of methods, each prescribed for use in particular circumstances to obtain results that are comparable in terms of agreed-on objectives. The rationale is that those objectives can be achieved only by allowing choices among several methods in different circumstances. Thus, the choice of methods in particular circumstances requires two additional sets of criteria: “tailoring criteria” to specify the objectives and “implementing criteria” to test the circumstances in which each of the alternative methods achieves the objectives.

### Tailoring Criteria

Tailoring criteria specify objectives and thereby assist in the selection of a suitable accounting method by prescribing the quality of the information that the method should produce. An example of a set of tailoring criteria drawn from an accounting context broader than depreciation accounting is the seven qualitative objectives in Accounting Principles Board Statement No. 4 (paragraphs 85-109): *relevance, understandability, verifiability, neutrality, timeliness, comparability, and completeness*. The qualitative objectives test the quality of financial information. Financial accounting information that meets, to some degree, each of the qualitative objectives achieves, to that extent, the overall objective of financial accounting—to supply information that meets the needs of the users of financial statements for information that is useful in making economic decisions. Accounting methods do not need to conform to GAAP to produce results that are compatible with the qualitative objectives, but within GAAP or within whatever other constraints are adopted, those objectives help to guide the choice to the accounting method that best achieves the overall objectives of financial accounting in particular circumstances.

In contrast with constraining criteria, which test methods directly, tailoring criteria test accounting information to facilitate decisions about accounting methods. The focus on information as an indirect test of method distinguishes tailoring from constraining criteria.

Tailoring criteria have some of the same effects as constraining criteria in that they generally restrict further the number and identity of acceptable methods. However, constraining criteria still are necessary to make basic choices, such as that between depreciation as a process of cost allocation and as a process of successive valuation.

Like constraining criteria, tailoring criteria may recognize a number of methods as acceptable. In depreciation accounting, for example, accountants could decide that the objective should be to allocate the cost of a depreciable asset according to the incidence of events contributing to the exhaustion of the usefulness of an asset. If they then made the reasonable assumption that the pattern of those events differs for different assets, a variety of depreciation methods would be required. But the tailoring criterion would preclude unrestricted choice among the various methods by guiding the choice to the one method that produces the desired result in the particular circumstances.

Because the objectives set by tailoring criteria may be abstract and general, still a third type of criteria may be required to make tailoring criteria operational. To determine whether the assumed objective is attained in the depreciation example just mentioned, the pattern of incidence contributing to the exhaustion of the usefulness of an asset must be either known or approximated. So, to ensure that tailoring criteria will be applied with reasonable uniformity, empirical investigation to determine general asset characteristics will be required, and that knowledge must be converted into instructions that would enable an accountant to select the depreciation method most likely to allocate asset cost according to the incidence of events contributing to the exhaustion of the asset's usefulness. Those instructions represent "implementing criteria," which follow.

## **Implementing Criteria**

Implementing criteria test events and circumstances to determine whether in those circumstances a method produces results that are consistent with the specified objectives. An example of a set of implementing criteria from a context other than depreciation accounting is found in the twelve conditions in Accounting Principles Board Opinion No. 16 (paragraphs 45-48) for using the pooling-of-interests method to account for a business combination. The conditions were necessary because the tailoring criterion accepted in the Opinion as the objective of accounting for a business combination is to account for the transaction in conformity with its "economic substance." Since "economic substance" is an abstract concept, individual accountants acting without more specific guidance would probably have interpreted the concept differently. So the Accounting Principles Board established specific conditions to ensure reasonably

uniform application of the tailoring criterion. For example, one criterion requires that “each of the combining companies is independent of the other combining companies.” That criterion expressed the Board’s conclusion that when a combination involved previously independent companies (and the other eleven conditions are met), the pooling-of-interests method reflects the “economic substance” of the combination.

As this example from Opinion No. 16 illustrates, implementing criteria are used to test the circumstances of the event accounted for. The requirement of previous independence of the combining companies specifies one of the circumstances that must be present before the event of a business combination can be accounted for by the pooling-of-interests method. Although the purpose of the test is to choose among alternative accounting methods, the test of methods is indirect.

Ideally, implementing criteria should be developed by empirical investigation to identify the circumstances in which a particular accounting method would achieve the objectives specified by tailoring criteria. For that reason, a tailoring criterion for depreciation accounting should specify an objective in the form of an empirically identifiable result. Then, for each different set of circumstances recognized, accounting methods could be tested empirically to determine in which circumstances they achieved the objectives stipulated by the tailoring criteria.

Suppose, for example, that accountants adopted the tailoring criterion mentioned in the previous example—to allocate cost according to the incidence of events contributing to asset exhaustion. Assume further that empirical investigation disclosed the following general characteristics of depreciable assets:

1. The events contributing to the exhaustion of assets subject to high risk of technological obsolescence have a greater incidence in the earlier years of asset life.
2. All other assets become exhausted according to the intensity of their use.

Then, to implement the specified tailoring criterion, implementing criteria something like the following would be required:

1. Assets subject to a high risk of technological obsolescence should be depreciated by an accelerated method.

2. All other assets should be depreciated by the units-of-production method or, if no significant variations in intensity of use are expected, by the straight-line method.

Thus, it would be the implementing criteria or, more precisely, the empirical research on which they are based, that would finally fix the number and identity of the accounting methods allowed and the circumstances in which each would be appropriate.

## Summary

Although pleas for criteria to help select among accounting alternatives are commonly heard, accountants have done little to find out what criteria in accounting might be and how they might be used to select among alternatives. Those questions have been explored in this chapter, and the broad outline of a process for basing the choice of accounting methods on criteria has been sketched. In the process, three distinct sets of criteria have been identified, and the role of each type has been outlined. For determining allocation methods in depreciation accounting, for example, constraining criteria identify a set of acceptable allocation methods by prescribing the features that each member of the set must possess; tailoring criteria should identify the objectives of allocation and thereby help to tailor the acceptable alternative methods to circumstances; implementing criteria, ideally based on empirical investigation, should describe the circumstances in which each acceptable method is to be used to accomplish the objectives established by the tailoring criteria. The development of those criteria and their application to improve the structure and consistency of depreciation accounting under GAAP are explored in chapters 4, 5, and 6.

# 4

## Problems in Determining the Depreciable Base

Problems in determining the depreciable base of assets are explored in this chapter. The objective is to analyze the present generally accepted accounting principles (GAAP) for determining the depreciable base—the amount to be allocated to accounting periods over the useful life of an asset—in terms of the decision framework developed in chapter 3. Since the overall objective of this study is to recommend changes that would eliminate unnecessary differences in practice and increase consistency and comparability in accounting for depreciable assets, the approach adopted is to accept as satisfactory those areas of practice in which there is a reasonable consensus and to recommend changes to increase consistency and comparability in those areas in which there is no consensus.

### **Applicability of Criteria**

The definition of depreciation accounting in Accounting Terminology Bulletin No. 1 contains a constraining criterion that defines unambiguously the depreciable base of an asset in terms of “his-

torical cost.” Thus, tailoring criteria are irrelevant to the accounting issues that relate to the determination of the depreciable base. However, the determination of the historical cost of depreciable assets in particular circumstances may require implementing criteria for purposes of determining

- Property units.
- The composition of acquisition cost.
- The disposition of salvage value and removal costs.
- The capitalize/expense decision with respect to postacquisition costs.
- The desirability of reducing the depreciable base to “recoverable cost” subsequent to acquisition.

Fortunately, in contrast to the problem of selecting allocation methods, reasonably clear implementing criteria for most of these problems in determining depreciable base have evolved more or less satisfactorily from a consensus of practice.

## **Property Units**

The property unit with which costs are associated is a critical variable in determining depreciable base. The resolution of many cost accumulation problems in accounting for depreciable assets depends to some extent on prior identification of the property unit. In practice, property units are selected in a variety of ways. Property units range from components of major separable assets to composite groupings of several separable assets. For example, components of an aircraft—engines, radio equipment, airframe, and so forth—may be considered separate property units, or the completely equipped aircraft may be considered a separate unit; each item of transportation equipment may be considered a property unit, or all transportation equipment may be considered a single property unit.

The selection of a property unit has a significant effect on capitalization policies. If, for example, a completely equipped aircraft is considered a property unit, the cost of a replacement engine would probably be charged to expense; whereas, if aircraft engines are considered property units, a replacement engine would be a new asset and its cost would be capitalized. The process of estimating useful

life also differs depending on the composition of items in the property unit. Estimating the life of a fully equipped production assembly line differs significantly from estimating the lives of each of the separable items of equipment that the line comprises.

Moreover, the same depreciation method applied to the same group of assets with property units determined on different bases will produce different allocation patterns. The differences may be so significant that an allocation method using individual assets as property units, rather than using the group of assets as a single property unit,

should not be considered merely as two minor variations of a single depreciation accounting method but . . . as two quite different methods having different objectives and to be used under different circumstances.<sup>1</sup>

Ideally, criteria should be adopted to guide companies in selecting property units and to narrow differences in practice. But developing those criteria is difficult for several reasons.

1. The choice of a property unit in particular circumstances is seldom obvious.
2. The variety of alternative property units is so great that considering the characteristics and the advantages and disadvantages of each alternative is impossible.
3. Criteria based solely on general principles would almost certainly create intolerable practical problems because property is so diverse and complex.
4. A set of generalized criteria would necessarily include undefinable terms such as "unit," "component," "functioning part," "average life," "identifiable," and "property characteristic."

For these and other reasons, general guides are not feasible. However, individual companies should be encouraged to establish (in writing if feasible) policies that facilitate making the capitalize/expense decision and estimating useful lives and then to follow those policies consistently. Admittedly, that is not a very satisfactory solu-

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<sup>1</sup> Eugene L. Grant and Paul J. Norton, Jr., *Depreciation*, revised printing (New York: The Ronald Press Co., 1955), p. 133.



tion for a complex problem. But companies are now free to choose property units on any reasonable basis, and no serious abuses are apparent in practice. None of the respondents in the survey of practices (chapter 2) reported changing their policies with respect to property units, whereas the responding companies reported 225 changes in depreciation methods and 65 changes in estimates of useful life.

## Acquisition Cost

The historical-cost principle is fundamental to financial accounting under present GAAP and is accepted as a “given” in this study. But determining the acquisition cost of a depreciable asset is not always a straightforward process; assets are acquired in various ways, and complex problems often arise in identifying, measuring, and allocating the costs associated with an acquisition. However, a reasonable consensus exists as to the criteria for applying the cost principle:

- a. An asset acquired by exchanging cash or other assets is recorded . . . at the amount of cash disbursed or the fair value of the other assets distributed.
- b. An asset acquired by incurring liabilities is recorded . . . at the present value of the amounts to be paid.
- c. An asset acquired by issuing shares of stock of the acquiring corporation is recorded at the fair value of the asset . . . received for the stock.<sup>2</sup>

**Acquisitions for Cash.** Few questions arise about the cost of an asset acquired for an immediate outlay of cash. A cash price in a transaction between independent parties acting in their own self-interest is the most objectively determined amount at which an asset can be recorded and is usually accepted without question. However, the objectivity, and hence the acceptability, of a cash price depends on the independence and self-interest of the negotiating parties.<sup>3</sup> If an asset is acquired in an arm’s-length exchange transaction solely for cash and no other right or privilege is exchanged, the cash paid

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<sup>2</sup> American Institute of Certified Public Accountants (AICPA), Accounting Principles Board (APB) Opinion No. 16, “Business Combinations,” par. 67.

<sup>3</sup> W. A. Paton and A. C. Littleton, *An Introduction to Corporate Accounting Standards* (Chicago: American Accounting Association, 1940), pp. 26-27.

measures the cost of the asset.<sup>4</sup> The cost of the asset is the cash price net of purchase discounts available; current operations should absorb purchase discounts not taken.<sup>5</sup>

An acquisition for cash that is not an arm's-length transaction may involve elements of consideration other than the property acquired. In those circumstances, the two elements of the transaction should be accounted for separately, and the "fair value" principle must be used to determine the cost of the property acquired.<sup>6</sup> Stated simply, "fair value" is an approximation of the exchange price that would have been negotiated in an arm's-length transaction. If a comparison of the cash price in the transaction with quoted market prices—prices currently paid for similar assets—or other reliable evidence of the fair value of the asset reveals that the cash price differs from the fair value, the asset should be recorded at its fair value, and the difference between that value and the nominal price should be charged or credited to current operations or to some other account that reflects the nature of the transaction.

**Acquisitions in a "Basket Purchase."** A "basket purchase" is an acquisition of a group of assets in a single transaction for a single, lump-sum price with no indication of the amount attributable to each asset. The principles followed to determine the total cost of the group of assets acquired are the same as those discussed for the acquisition of a single asset, but a different kind of problem arises in allocating the total cost to the individual assets in the group. The problem is solved by allocating the total price to the individual assets based on their relative fair values.<sup>7</sup>

**Acquisitions for Noncash Consideration.** Acquisitions of depreciable assets for noncash consideration and debt instruments give rise to some of the most difficult practical problems of identifying the cost of depreciable assets. The fair value principle is the implementing criterion for solving most of those problems.

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<sup>4</sup> For the definition of an exchange transaction, see: American Institute of Certified Public Accountants (AICPA), Accounting Principles Board (APB) Statement No. 4, "Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises," 1970, par. 181.

<sup>5</sup> William A. Paton and William A. Paton, Jr., *Asset Accounting: An Intermediate Course* (New York: The Macmillan Co., 1952), p. 188.

<sup>6</sup> APB Statement No. 4, par. 181 (M-1A).

<sup>7</sup> APB Statement No. 4, par. 181 (M-1A(2)). Also see APB Opinion No. 16, par. 68.

Determining the cost of property acquired in exchange for a note or another form of debt differs from an acquisition for cash only if there is a problem in determining the appropriate interest rate on the note. Generally, when property is acquired in exchange for a note in an arm's-length transaction, the presumption is that the rate of interest stipulated by the parties represents fair and adequate compensation for the extension of credit and that the cost of the asset is the present value of the note based on the stated interest rate.<sup>8</sup> That presumption does not apply if an interest rate is not stated or is unreasonable or if the face amount of the note is materially different from the current cash price of the property.<sup>9</sup> Under those circumstances, the asset should be recorded at its fair value or "an amount that reasonably approximates the market value of the note, whichever is more clearly determinable."<sup>10</sup> If neither the fair value of the property nor the market value of the debt instrument is determinable, the asset is then recorded at the present value of the debt instrument based on an appropriate interest rate.<sup>11</sup>

The cost of an asset acquired in exchange for a nonmonetary asset is generally determined in accordance with the fair value principle, if the fair value of either the asset acquired or the asset surrendered is determinable.

Thus, the cost of a nonmonetary asset acquired in exchange for another nonmonetary asset is the fair value of the asset surrendered to obtain it, and a gain or loss should be recognized on the exchange. The fair value of the asset received should be used to measure the cost if it is more clearly evident than the fair value of the asset surrendered.<sup>12</sup>

The fair value principle should not be used to determine the cost of nonmonetary assets acquired unless the fair values of the nonmonetary assets exchanged are determinable within reasonable limits.<sup>13</sup> The acquisition of productive assets in exchanges that are not essentially the culmination of an earning process "should be based on

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<sup>8</sup> APB Opinion No. 21, "Interest on Receivables and Payables," August 1971, par. 12.

<sup>9</sup> *Ibid.*, par. 12.

<sup>10</sup> *Ibid.*, par. 12.

<sup>11</sup> *Ibid.*, par. 13.

<sup>12</sup> APB Opinion No. 29, "Accounting for Nonmonetary Transactions," May 1973, par. 18.

<sup>13</sup> *Ibid.*, pars. 20, 25-26.

the recorded amount (after reduction, if appropriate) for an indicated impairment of value of the nonmonetary asset relinquished.”<sup>14</sup>

The fair value principle applies, with a slightly different emphasis, to depreciable assets acquired in nonreciprocal transfers.<sup>15</sup> A depreciable asset acquired in a nonreciprocal transfer may be recorded at its fair value. But an asset acquired in exchange for stock may often be measured by the fair value of shares of stock issued in exchange for the asset.

A depreciable asset donated to an entity is acquired in a nonreciprocal transfer and is recorded at its fair value on the date received.<sup>16</sup>

**Acquisitions in a Business Combination.** The method of determining the cost of depreciable assets acquired in a business combination depends on whether the combination is accounted for on the purchase method or the pooling-of-interests method.<sup>17</sup> The costs of depreciable assets acquired in a business combination that is accounted for by the purchase method are determined in accordance with the fair value principle in the same manner as assets acquired in a “basket purchase.” The costs of depreciable assets acquired in a business combination that is accounted for by the pooling-of-interests method are the costs recognized in the accounts of the combining company that previously owned the assets.

**Acquisition-Related Costs.** The implementing criterion to account for acquisition-related costs is reasonably clear. The cost of a depreciable asset includes, in addition to the invoice price, “all incidental payments necessary to put the asset in condition and location for use.”<sup>18</sup> A purchased asset is “in condition for use” when it is capable of producing an acceptable product or service at a reasonable rate, which may still be significantly below its optimum or projected rate. The following is one comprehensive, though not necessarily all-inclusive, list of acquisition-related expenditures that may be incurred to place an asset in that status and that should be capitalized.

<sup>14</sup> APB Opinion No. 29, pars. 3, 7, and 21.

<sup>15</sup> APB Statement No. 4, pars. 62, 177, and 182.

<sup>16</sup> *Ibid.*, par. 182 (M-3).

<sup>17</sup> APB Opinion No. 16.

<sup>18</sup> Paul Grady, *Accounting Research Study No. 7*, “Inventory of Generally Accepted Accounting Principles for Business Enterprises,” (New York: AICPA, 1965), p. 254.

1. Buildings:
  - a. Original contract price or cost of construction.
  - b. Expenses incurred in remodeling, reconditioning, or altering a purchased building to make it available for the purpose for which it was acquired.
  - c. Cost of excavation or grading or filling of land for the specific building.
  - d. Expenses incurred for the preparation of plans, specifications, blueprints, and so on.
  - e. Cost of building permits.
  - f. Payment of noncurrent taxes accrued on the building at date of purchase if payable by purchaser.
  - g. Architects' and engineers' fees for design and supervision.
  - h. Other costs, such as temporary buildings used during the construction period.
2. Machinery, equipment, and furniture and fixtures:
  - a. Original contract or invoice cost.
  - b. Freight and drayage in, cartage, import duties, handling and storage costs.
  - c. Specific in-transit insurance charges.
  - d. Sales, use, and other taxes imposed on the purchase.
  - e. Costs of preparation of foundations and other costs in connection with making a proper *situs* for the asset.
  - f. Installation charges.
  - g. Charges for testing and preparation for use.
  - h. Costs for reconditioning used equipment when purchased.<sup>19</sup>

The following is a list of acquisition-related expenditures that should not be capitalized.

1. Expenditures for facilities and the renovation of buildings required in connection with specific contracts, which would not have been incurred except for such contracts and which are therefore specifically included in contract costs.

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<sup>19</sup> Adopted with minor changes from the National Association of Accountants, Committee on Management Accounting Practices, "Fixed Asset Accounting: The Capitalization of Costs," *Management Accounting*, January 1973, p. 54.

2. Repair of existing equipment, including replacement of component parts, reconstruction, or alteration except as outlined above.
3. Expenditures incurred in demolishing or dismantling equipment, including those related to the replacement of units or systems and the removal of parts in connection with a rebuilding or replacement project.
4. Expenditures incurred in connection with the rearrangement, transfer, or moving of equipment within a plant or from one location to another.
5. Special test equipment, fixtures, cutting tools, shaping tools, and boring tools having a comparatively short term of effective life.
6. Extraordinary costs incidental to the erection of a building, such as those due to strike, flood, fire, or other casualty (although unanticipated expenditures, such as rock blasting, piling, or relocation of the channel of an underground stream, *should* be capitalized).
7. Cost of abandoned construction.
8. Cost incurred for bonus payments to contractors, temporary construction because of shortages of material for permanent construction, and so on, for the purpose of hastening completion. Extra payments, such as premium time to take advantage of management operating decisions, should be expensed.<sup>20</sup>

The survey of practices described in chapter 2 of this study confirms the existence of a fairly broad consensus in practice as to the types of expenditures that are “necessary to put the asset in condition and location for use”; most accountants would agree with the classification of the items in the foregoing lists.

**Self-Constructed Assets.** The direct cost of self-constructed assets—expenditures for materials, labor, and other items that can be directly identified with assets constructed by a company for its own use—generally present no problems in accounting. Those costs are

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<sup>20</sup> National Association of Accountants, Committee on Management Accounting Practices, “Fixed Asset Accounting,” pp. 54-55.

capitalized under the cost principle. Accounting for overhead costs, especially interest during construction, creates some particularly difficult problems because no consensus solution can be found in practice. A solution that would narrow the differences found in practice and that is consistent with practices that are now supported by consensus is desirable; the differences that are now found in practice cannot be justified. Companies that frequently construct depreciable assets for their own use typically capitalize indirect overhead costs; those that only occasionally construct depreciable assets for their own use generally do not capitalize indirect overhead costs.<sup>21</sup> Capitalization of interest other than on funds specifically borrowed for construction is even less common, being largely confined to public utilities.<sup>22</sup>

Those distinctions are not defensible on the basis of accounting theory; the relative frequency of construction and the peculiarities of public utilities do not justify differences in the application of accounting principles. Nevertheless, those differences have persisted for a long time, and the apparent lack of theoretical justification is not necessarily a sufficient reason for change. But if the differences persist, accountants should, at least, recognize that the differences are not based on accounting principles or theory.

Like the problem of allocating the cost of depreciable assets over accounting periods, the problem of allocating overhead costs to cost objectives is a joint cost problem. Expenditures for overhead benefit several company activities, just as expenditures for depreciable assets benefit several accounting periods. Indirect overhead is accounted for by a process of "systematic and rational allocation"—the same phrase used to describe the process of accounting for depreciation.<sup>23</sup> And no pattern of "systematic and rational allocation" that may be selected to allocate joint costs is demonstrably superior to any alternative pattern.<sup>24</sup>

But the central problem with respect to overhead costs of self-constructed assets is to decide whether to allocate those costs to begin with, not to select a method of allocation. The problem is

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<sup>21</sup> Paul Grady, *Accounting Research Study No. 7*, p. 255.

<sup>22</sup> *Ibid.*, p. 255.

<sup>23</sup> APB Statement No. 4, par. 184.

<sup>24</sup> Arthur L. Thomas, *The Allocation Problem in Financial Accounting Theory* (Evanston, Ill.: American Accounting Association, 1969).

analogous to the choice between the expense recognition principles of systematic and rational allocation and immediate recognition. And that analogy provides guidance in the present case. Immediate recognition of costs as expenses is appropriate if

1. Costs incurred provide no "discernible future benefit."
2. Allocating costs serves no "useful purpose."<sup>25</sup>

The circumstances in which allocation serves no useful purpose is not defined, and "usefulness" is not precise enough to provide a criterion that can be used to select accounting principles. Thus only the first circumstance has analytical possibilities for resolving the question at issue.

The question of whether overhead costs have "discernible future benefits" cannot be answered in the abstract, but an implementing criterion can be used in answering that question in particular circumstances. The criterion is that, in the absence of compelling evidence to the contrary, overhead costs considered to have "discernible future benefits" for the purpose of determining the cost of inventory should be presumed to have "discernible future benefits" for the purpose of determining the cost of a self-constructed depreciable asset. That is the criterion recommended in this study for determining the circumstances in which overhead costs, including interest, should be included in the cost of self-constructed depreciable assets.

### **Salvage Value and Removal Costs**

In theory, estimated salvage value should be deducted from the cost of an asset to determine the amount to be allocated over its estimated useful life. However, in practice, salvage value is commonly ignored (chapter 2, Table 7), perhaps more on the basis of immateriality than on the basis of principle.

The only problem in accounting for salvage value for which no reasonable consensus exists concerns accounting for estimated removal costs. Should salvage value be adjusted for those costs before it is deducted from the cost of an asset to determine the depreciable base? The survey conducted for this study indicates that,

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<sup>25</sup> APB Statement No. 4, par. 160.



in practice, few companies adjust salvage value for removal costs (chapter 2, Table 7). However, that may also be primarily because those costs are generally considered to be immaterial.

The conceptual basis for accounting for removal costs becomes clearer when those costs are considered in the light of their relationship to depreciable assets. The costs of removing an asset at the end of its useful life are as inseparable from the ownership of a depreciable asset as installation costs and salvage value. Charging removal costs to operations in the year in which they are incurred is no more reasonable than would be the recognition of installation costs as an expense or salvage value as revenue in the period in which they were incurred or realized. The only questionable issue is whether removal costs are better associated with the old asset that is being removed or the new replacement asset. The choice is arbitrary; associating removal costs with the asset being removed appears to have at least as much theoretical justification as the alternative. Estimated removal costs that are material in amount should be recognized in determining the depreciable base of an asset to the extent that the estimated costs do not exceed estimated salvage value. To the extent that the actual removal costs for an asset being replaced exceed its salvage value, the excess removal costs should be recognized in determining the depreciable base of the replacement asset. This is a practical solution that recognizes both the desirability of associating removal costs with depreciable assets in determining the depreciable base and the probable inaccuracy of estimates of removal costs when an entity acquires an asset.

## **Postacquisition Costs**

Postacquisition costs comprise all expenditures on a depreciable asset during the period of ownership. Those costs include expenditures for maintenance and repairs, improvements and additions, renovations, alterations, rehabilitations, and relocations. The accounting problem with respect to postacquisition costs is to determine those costs that should be capitalized and those that should be charged to expense as incurred. The decision should be guided by the following statement.

... the criteria for determining whether or not to capitalize the expenditure during the period of ownership should not be different from those established for costs incurred at acquisition.

... if the cost increases efficiency, extends the assets' original planned depreciable life, or adds a new base [property] unit, it should be capitalized as a fixed asset. Otherwise it should be expensed.<sup>26</sup>

The distinguishing feature is the effect of an expenditure on future benefits: if an expenditure enhances the expected future benefits of an existing asset, it should be capitalized; if it does not, it should be charged to expense.<sup>27</sup>

## Reducing the Depreciable Base

Some accountants advocate that the carrying value of a depreciable asset be written down when the performance of the asset becomes inferior to alternative means of production.<sup>28</sup> Also, the APB states the following measurement rule as a generally accepted accounting principle.

Obsolescence of productive facilities is usually measured by adjusting rates of depreciation . . . for the remaining life (if any) of the assets. If productive facilities become worthless, unamortized cost is recognized as a current loss.

. . . In unusual circumstances persuasive evidence may exist of impairment of the utility of productive facilities indicative of an inability to recover cost although the facilities have not become worthless. The amount at which those facilities are carried is sometimes reduced to recoverable cost and a loss recorded prior to disposition or expiration of the useful life of the facilities.<sup>29</sup>

Those who advocate adjusting downward the carrying value of depreciable assets justify the reduction on the grounds that losses from unpredictable events, such as extraordinary obsolescence, are recognized in the year in which the losses become apparent rather

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<sup>26</sup> National Association of Accountants, Committee on Management Accounting Practices, "Fixed Asset Accounting," p. 52.

<sup>27</sup> As in all accounting decisions, immaterial amounts may be treated in any manner convenient. In capitalization decisions particularly, many companies follow the acceptable policy of charging to expense all expenditures below a certain amount.

<sup>28</sup> See, for example, Sidney Davidson, "The Day of Reckoning—Managerial Analysis and Accounting Theory," *The Journal of Accounting Research*, Autumn 1963, pp. 117-26, and David Green, Jr., and George H. Sorter, "Accounting for Obsolescence—A Proposal," *The Accounting Review*, July 1959, pp. 433-41.

<sup>29</sup> APB Statement No. 4, par. 183 (M-5C).

than being spread over the remaining lives of the assets.<sup>30</sup> They reason that if an asset became worthless, it would be written down to zero; so why should a partial loss of value arising from the same kind of event go unrecognized?

The argument for writing down depreciable assets to recoverable cost also appeals to the analogy with the lower-of-cost-or-market rule in accounting for inventories. According to that analogy, the unexpired cost of the asset should not exceed its service value.

The arguments against the practice are both practical and conceptual. The practical arguments stress the difficulties of determining the present value of productive assets, which is necessary if a depreciable asset is to be written down. Those difficulties include the inaccuracies inherent in forecasting revenue, the arbitrariness of ascribing revenue to particular productive assets, and the subjectivity of applying a discount rate to estimated future revenue. The conceptual argument against the practice is that it is contrary to the basic tenet that accounting for depreciable assets is a process of allocating historical cost and not a process of valuation.

Some concern has also been expressed that the practice of writing down depreciable assets has been abused as part of the "big bath accounting," in which companies make unreasonable writeoffs in one year—characteristically a year for which current management is not responsible—in order to reduce charges to operations of future years.<sup>31</sup>

The conceptual objection highlights a fundamental inconsistency in the theory of depreciation accounting: a depreciable asset is recognized because it has value to the enterprise, and it is written off when it no longer has value; yet as a general rule, at no time during its life is its book value necessarily a measure of its value to the enterprise.<sup>32</sup> The alternative of writing down the cost of depreciable assets before they become worthless thus gives accountants a choice of inconsistencies. In light of the ambiguity in theory, the profession should adopt the implementing criterion that the practice of

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<sup>30</sup> See, particularly, Sidney Davidson, "The Day of Reckoning," p. 121.

<sup>31</sup> See "NCR's New Math," *Forbes*, July 15, 1973, pp. 49-50. It should be noted that the author concluded that NCR's writeoffs were appropriate and not an example of "big bath accounting."

<sup>32</sup> Robert R. Sterling, "On Theory Construction and Verification," *The Accounting Review*, July 1970, p. 452.

writing down depreciable assets to recognize an impairment in value should be followed only in unusual circumstances to prevent gross misrepresentation.

## Summary of Conclusions and Recommendations

The problems considered in this chapter with respect to determining the depreciable base include property units, the composition of acquisition costs for purchased and self-constructed assets, the disposition of acquisition-related costs and postacquisition costs, the recognition of salvage value and removal costs, and the reduction of the carrying values of depreciable assets to recognize an impairment in value. Solutions to most of those problems can be found in authoritative pronouncements and in a consensus of practice.

The following conclusions and recommendations were developed for those problems for which no consensus of practice exists:

1. A general solution to the complex problem of determining property units is not feasible, but individual companies should establish policies that facilitate making the capitalize/expense decision and estimating the useful lives of depreciable assets and follow those policies consistently.
2. To eliminate the diversity in practice in determining the cost of self-constructed assets, all companies should be required to allocate to self-constructed assets overhead costs of the type considered to have "discernible future benefits" for the purpose of determining the cost of inventory.
3. Only those postacquisition expenditures on depreciable assets that enhance the future benefits expected from the assets should be capitalized; other expenditures should be charged to expense as they are incurred.
4. Material amounts of estimated removal costs should be recognized in determining the depreciable base of an asset only to the extent of the estimated salvage value; actual removal costs in excess of salvage value should be recognized in the depreciable base of the replacement asset.

5. The carrying value of a depreciable asset should be reduced to recoverable cost to recognize an impairment in value only in unusual circumstances to prevent gross misrepresentation.

# 5

## Estimating Useful Life

The objective of this chapter is to consider the process of estimating useful life to determine whether criteria can be developed that would better structure the largely judgmental process and improve consistency and comparability in financial reporting. Throughout, the analysis focuses on the impact of useful life on the pattern of allocation and the desirability of adopting conventional implementing criteria in order to narrow differences in practice.

### The Problem in Perspective

The constraining criteria contained in the accepted definition of depreciation accounting specify unambiguously the “useful life” of a depreciable asset as the period over which its cost should be allocated. Thus, the useful life of an asset must be estimated when the asset is acquired, a process that involves predicting the effects of a host of complex physical and economic factors.

“Useful life” is a critical variable in determining the pattern of cost allocation, perhaps influencing the pattern more than the other variables in depreciation accounting—the depreciable base and the allocation method. One empirical study found that variations in the estimated lives of identical assets caused greater differences in the

pattern of depreciation expense and in the carrying values of the assets than did variations in methods of allocation.<sup>1</sup> And the criticism a few years ago of the estimated lives that computer leasing companies used for their leased equipment is a clear indication that variations in estimates of useful lives are a potential source of abuse in financial reporting.<sup>2</sup>

**The Concept of "Useful Life."** The term "useful life" is used in accounting to describe the period between the acquisition of an asset and its anticipated retirement—the period during which a depreciable asset is expected to provide economic benefits to an enterprise. Both physical and economic factors relevant in the particular circumstances are considered in estimating the useful life of an asset. Paton described the process as follows:

The first step in preparing estimates of service life for a particular unit or group of like units is to consider the effect of ordinary operating conditions, without regard to external factors. . . . A related and even more important consideration is the anticipated standard of upkeep. . . .

The second main step consists of an adjustment of the preliminary estimate to allow for the effect of obsolescence, falling off of business, and other possible causes of reduced life which are external to physical conditions and operating standards. . . .

Even if no specific evidence of obsolescence of the particular unit in use is in sight the contingency should not be neglected in estimating service life.<sup>3</sup>

George O. May considered the term "useful" a troublesome concept.

The word "useful" is a necessary but troublesome part of the definition. In depreciation accounting, usefulness is neither an absolute nor wholly objective conception. Useful life does not continue until a property is absolutely useless, nor does it end when the unit ceases to be the most useful available. Where between these two extremes useful life ends is a question of judgment and to some extent of policy, upon which no general rule can be laid down.<sup>4</sup>

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<sup>1</sup> Robert R. Sterling, "A Test of the Uniformity Hypothesis," *Abacus*, September 1969, pp. 37-47.

<sup>2</sup> See, for example, Abraham J. Briloff, *Unaccountable Accounting* (New York: Harper & Row, 1972), p. 146.

<sup>3</sup> William A. Paton, *Essentials of Accounting* (New York: The Macmillan Co., 1949), p. 554.

<sup>4</sup> George O. May, *Financial Accounting: A Distillation of Experience* (New York: The Macmillan Co., 1961), p. 119.

Another authority considered useful life to be determined by the particular circumstances:

The useful life of depreciable assets is based on their period of usefulness to the company and not their inherent life. For example, a machine tool may be useful to an automobile manufacturer for a foreseeable period of some fifteen years. The finer tolerances required in this industry may render the machine unusable after that period. However, it may give satisfactory performance in other industries for many more years.<sup>5</sup>

**Attitude of the Accounting Profession.** Although the concept is generally recognized to be troublesome and difficult to apply in practice, estimating useful lives is a topic that has received relatively little attention in accounting literature. One writer very properly observed that

Taking the amount of literature devoted to the subject as evidence, it appears that accountants . . . do not recognize that differences in factor estimates [useful lives] exist or they think that such differences are negligible.<sup>6</sup>

One probable reason that the process of estimating useful lives has received little attention is that accountants believe that, because of the nature of the process, no constructive action can be taken to improve it. They probably reason that to estimate the useful life of an asset is to forecast the occurrence of a future event, that the resulting estimate is essentially a matter of judgment, and that the ability to make that judgment is best acquired through practical experience. Apparently, accountants believe that, although in their role as auditors they can evaluate the reasonableness of estimates of useful lives in particular factual circumstances, conceptual or empirical analysis will not yield a general solution or enhance the ability of an experienced professional to make on-the-spot judgments.

### Suitability of a Solution by Convention

A corollary to accountants' view that conceptual or empirical analysis will not yield a general solution to the problems that companies face in estimating useful lives is that a conventional solution

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<sup>5</sup> N. J. Lenhart and P. L. Defliese, *Montgomery's Auditing*, 8th ed. (New York: The Ronald Press Co., 1957), p. 271.

<sup>6</sup> Robert R. Sterling, "A Test of the Uniformity Hypothesis," p. 44.



based on general criteria should not be imposed. One may reason that such a solution may be appropriate to the problem of selecting an allocation method, a process that expresses a subjective preference, but is not appropriate to the problem of estimating useful lives, a process that forecasts real events. The reasoning is that, unlike allocations, whose accuracy can never be tested by comparisons with actual outcomes, the accuracy of estimates of useful lives can eventually be tested by comparisons with actual useful lives. If the ultimate comparisons show that the estimates were reasonably accurate, the method of determining the estimates seems to be a matter of indifference; the only reasonable test of their suitability seems to be their accuracy.

But that attitude ignores the most important factor in financial reporting: the needs of investors and other users of financial statements to obtain reliable information on a timely basis. Users of financial statements must make economic decisions based on available information and can obtain little consolation from knowing that estimates of useful lives will ultimately be tested and their degree of accuracy revealed. By the time that information becomes available, users will have made costly decisions based on the original estimates. The problem is that, at the time users must make decisions, estimates of useful lives are no more susceptible to tests for accuracy than allocation methods are susceptible to tests for suitability. Thus, the fact that estimates of depreciable lives can eventually be tested for accuracy does not necessarily lead to the conclusion that conventional rules or criteria designed to improve the consistency and comparability of estimates should not be prescribed.

Accountants thus face a dilemma. On the one hand, the natural objective of estimating useful lives of depreciable assets is to come as close as possible to actual useful lives, and no one advocates rules that would make achievement of that objective more difficult. On the other hand, the needs of users for reliable information on a timely basis may not be compatible with the absence of rules.

One approach to solving the dilemma would be to adopt present objectivity and comparability, instead of ultimate accuracy, as the standards for evaluating estimates of useful lives. An estimate may be objective and comparable to other estimates if it meets certain tests, such as conformity to industry averages, even though subsequent comparison with actual useful life shows the estimate to be relatively inaccurate. With a good mechanism for defining objectivity and comparability in estimates of useful lives, the loss of some

accuracy might be a reasonable price from the point of view of financial statement users.

The estimated useful life of an asset is essentially a forecast based primarily on the exercise of informed judgment. Present GAAP provide no criteria by which individual companies can test the application of judgment in particular circumstances. Although the process of estimating useful lives is largely judgmental, a conclusion that seems inescapable is that structuring the process to achieve greater objectivity and comparability is both feasible and desirable. The mechanism to accomplish that result must clearly involve adopting agreed-on rules, guides, or criteria that should be applied on the basis of the preponderance of empirical evidence in particular circumstances. A solution by convention that is based on the framework of criteria developed in chapter 3 would involve the adoption of implementing criteria to better structure the process of estimating useful lives and the establishment of standards or norms for estimates of useful lives for broad classes of assets by industries or by circumstances common to more than one industry.

### **Applying the Framework of Criteria**

The constraining criteria accepted in this study specify “estimated useful life” as the period over which the cost of a depreciable asset should be allocated and, thus, determine not only the method but also the objective. The concept of “useful life” is clear enough, but because GAAP provide no criteria to guide the process of estimating useful life in particular circumstances, individual companies are free to adopt any reasonable method of estimating. Therefore, some way must be found to ensure that the estimates of one company are comparable to those of other companies for assets used in similar circumstances. Tailoring criteria are unnecessary because the objective of the process is implicit in the concept of “useful life.” But implementing criteria (empirical tests) are needed to guide the application of the concept in particular circumstances.

Criteria should be established that are designed to ensure that companies select reasonably comparable lives for similar classes of assets when used in similar circumstances. The goals should be to improve comparability between firms and to increase the objectivity of the process of estimating useful lives so as to afford users of financial statements greater confidence in their ability to “predict,

compare, and evaluate the cash consequences of their economic decisions.”<sup>7</sup> Comparability, a qualitative objective of financial accounting, means

... the ability to bring together for the purpose of noting points of likeness and difference. Comparability of financial information generally depends on like events being accounted for in the same manner. Comparable financial accounting information facilitates conclusions concerning relative financial strengths and weaknesses and relative success, both between periods for a single enterprise and between two or more enterprises.<sup>8</sup>

The need is to achieve an acceptable tradeoff between the inherent subjectivity of the process of estimating useful lives and the needs of users of financial statements for consistency and comparability.

The factors involved in the process of estimating useful life are analyzed in the following sections, and criteria for each phase of the process designed to restrict and limit the exercise of judgment are recommended.

## Beginning and End of Useful Life

Estimating the useful life of a depreciable asset involves not only the techniques for estimating its economic life span but also the problems of determining the beginning and end of its useful life. Some conclusions with respect to the conditions and circumstances that identify the beginning and end of useful life are derived by applying the following rule or criterion.

The useful life of a depreciable asset should encompass that span of time beginning after it is ready for use and after it begins to benefit the company significantly *or* when its ability to benefit the company begins to expire, and ending when the asset no longer benefits the company significantly *or* when its ability to benefit the company expires.

That rule is recommended as an empirical test that can be used to identify the two terminal points of the period during which a

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<sup>7</sup> Study Group on the Objectives of Financial Statements, *Objectives of Financial Statements* (New York: AICPA, October 1973), p. 13.

<sup>8</sup> American Institute of Certified Public Accountants (AICPA), Accounting Principles Board (APB) Statement No. 4, “Basic Concepts in Accounting Principles Underlying Financial Statements of Business Enterprises, October 1970, par. 95.

depreciable asset is capable of providing economic benefits to an enterprise, the beginning and end of useful life. It requires allocation of the cost of an asset to expense *contemporaneously with* the expiration of benefits without regard to whether or not the benefits are realized.

**Beginning of Useful Life.** Ordinarily, using the criterion to determine the beginning of useful life is simple—a depreciable asset is usually ready for use when it is acquired and placed in location for use—but that is not always so, as the following comment suggests.

“Clearly,” one says, “the physical appearance of property on the scene triggers depreciation.” But the accountant’s philosophy which holds that costs are to be matched with the revenue they help to earn should persuade him to investigate the accounting influence of the differences in time between when an asset is acquired and when it qualifies as a full-fledged revenue-producing element of the business.<sup>9</sup>

Often, depreciable assets are under construction, being tested or broken in, or standing idle for long periods before they are ready for use. For example, buildings often take years to construct, and sometimes portions of a building are placed in use before the entire structure is completed; steelmaking facilities require extensive breaking-in periods, during which they do not operate at optimum capacity; and other assets may, for a variety of reasons, stand idle for long periods after they are in place and ready to use.

The acquisition and use of depreciable assets under the following hypothetical conditions and circumstances illustrate the application of the criterion.

*Asset A.* Asset A is

- Constructed by a company for its own use.
- Under construction for one year.
- Considered a single property unit for depreciation accounting.

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<sup>9</sup> National Association of Accountants, Committee on Management Accounting Practices, “Fixed Asset Accounting: The Capitalization of Costs,” *Management Accounting*, January 1973, p. 59.

- Not subject to obsolescence.
- Not subject to loss of serviceability except through use.
- Idle during the first year after completion.
- Operated at 20 percent of capacity during the next year.
- Expected to operate at optimum capacity thereafter, assuming normal maintenance.

Under the basic rule, the useful life of Asset A does not begin until it is put into use. Obviously, the asset is not ready for use during the year of construction. During the year of idleness, the asset neither provides benefits to the company nor loses its ability to provide benefits. The useful life of the asset begins in the second year after completion, when the company begins to operate it at 20 percent of capacity, even though both the benefits provided and the loss of the capacity to provide future benefits are less than if the asset had been operated at optimum capacity.

*Asset B.* The hypothetical conditions and circumstances for Asset B are the same as for Asset A, except that Asset B is expected to be retired a fixed number of years, say eleven, after construction begins. Under those assumed circumstances, the onset of construction determines with certainty the end of the economic useful life of the asset. However, since the asset is not ready for use until construction is completed, that event fixes the beginning of its useful life, and the span of useful life is ten years, encompassing both the year of idleness and the year of 20 percent utilization.

*Problems of interpretation.* To aid in understanding the basic rule, the facts in the two illustrations were stated unambiguously to highlight the underlying concepts. But that was done at the cost of a loss of realism. In many actual situations, interpreting the facts to apply the rule entails major problems. For example, it is not always clear whether an asset's ability to provide benefit is expiring during a period of idleness. Nor is the distinction always clear between an idle asset and one that is providing significant benefits to a company or between an asset under construction and one that is wholly ready for use. These and many other practical problems cannot be solved in the abstract and, therefore, continue to require on-the-spot judgment.

**End of Useful Life.** Determining the end of the useful life of a depreciable asset involves two general questions.

1. When does useful life end?
2. What events contributing to the end of useful life should be taken into consideration in estimating the life span of the asset?

Like the problem of identifying the beginning of useful life, that of recognizing its end arises because the process often is gradual. Assets gradually decline in serviceability, and before they are completely disposed of, they may be relegated to part-time use or to a use other than that originally intended.

The second problem arises because the useful life of an asset can end for a variety of reasons—gradual wearing out, catastrophic destruction, obsolescence of the asset or the product that it produces (either of which may be expected or unexpected), government edict, and so on—but not all reasons should be taken into account in estimating the life span of the asset for depreciation purposes. As a general criterion, unpredictable events (casualties other than routine and predictable hazards, sudden obsolescence resulting from revolutionary changes in technology, losses from unexpected government action, and similar events) should not be taken into account in estimating the end of useful life.

### **Estimating the Life Span**

The empirical rule for the beginning and end of the useful life of a depreciable asset specifies only the conditions and circumstances relevant to the identification of the terminal points of useful life. The length of the economic life span of an asset must be estimated in light of the conditions and circumstances pertinent to the determination of the beginning and end of the period and other factors that relate to the service potential of an asset and the anticipated pattern of use. This section considers the estimating techniques used in practice, the nature of estimates in accounting, and criteria for structuring estimates to improve their objectivity and comparability.

**Techniques Used in Practice.** Companies may use any reasonable technique in estimating the economic life span of a depreciable asset, but the techniques used in practice can be classified as (1)

actuarial methods, (2) turnover methods, and (3) judgmental methods. Actuarial and turnover methods are statistical approaches to estimating useful lives.

1. *Actuarial methods* . . . aim at determining survivor curves and frequency curves for annual retirements, as well as giving estimates of average life. These methods are generally similar to the methods developed by life insurance actuaries for the study of human mortality, although variations peculiar to physical property mortality studies have been developed. They require plant records in sufficient detail so that the age of each unit of plant is known at all times.
2. *Turnover methods* . . . aim only at an estimate of average life. These methods require less detailed plant records than those required for actuarial studies, as only annual additions and retirements are needed for turnover studies.<sup>10</sup>

Actuarial methods are based on actuarial techniques for determining the human mortality rates that life insurance companies use in setting premiums. Those techniques have been adapted for use in estimating the useful lives of physical properties.<sup>11</sup> Actuarial methods are probably the most sophisticated techniques for estimating useful lives, but they require the accumulation and maintenance of large amounts of data. Furthermore, despite adaptation, estimating techniques based on statistical procedures for predicting human mortality may not be well suited to predicting useful lives of assets, as the following comment suggests.

But no actuary would undertake to prepare life tables to be used both by a community which provided old age insurance and by one which dispatched its members as soon as they ceased to make what was deemed an adequate contribution to the tribal life. Nor would tables derived from the combined experience of the two communities be useful to either. What makes life insurance possible on a reasonably exact basis is that the conditions which cause the great majority of deaths are inherent, foreseeable, and subject only to gradual change, so that the past forms a reliable guide to the future. Only a minor

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<sup>10</sup> Eugene L. Grant and Paul T. Norton, Jr., *Depreciation*, revised printing (New York: The Ronald Press Co., 1955), p. 44.

<sup>11</sup> For comprehensive discussions of actuarial methods, see Joseph D. Coughlan and William K. Strand, *Depreciation: Accounting, Taxes and Business Decisions* (New York: The Ronald Press Co., 1969), pp. 11.16-11.28, and Eugene L. Grant and Paul T. Norton, Jr., *Depreciation*, pp. 44-75.

fraction of plant mortality is due to causes of which the same can be said, and the major fraction is attributable to such causes as obsolescence, of an external character, unpredictable and irregular in the time of their incidence. Moreover, a plant does not have the right and the will to live which are postulated in the system of life insurance.<sup>12</sup>

Turnover methods are based on calculations of the average time it takes for depreciable assets to “turn over,” that is, to be *completely* replaced in kind.<sup>13</sup> They require fewer data than actuarial methods but depend on assumptions of equal mortality dispersion and equal growth rate that in practice are rarely valid.

Estimating useful lives of depreciable assets is probably most often a process of “exercising informed judgment” or “making an informed guess.” Considering the difficulties inherent in predictions, judgmental estimates need not necessarily be disparaged. But judgments need not be made carelessly. Coughlan and Strand describe an approach to estimating depreciable lives that attempts to structure and strengthen the process of “exercising judgment.”<sup>14</sup> The success of their attempt to structure and strengthen the process of judgment is itself a matter of judgment, but it at least suggests the possibility that judgmental estimates can be made the product of a set of systematic steps.

**Nature of Estimates.** Estimates represent decisions made under conditions of uncertainty. They are a basic feature of financial accounting.

The continuity, complexity, uncertainty, and joint nature of results inherent in economic activity often preclude definitive measurements and make estimates necessary.<sup>15</sup>

Estimates of useful lives necessarily involve informed judgment.

Estimates, however, need not always be the product of the unstructured exercise of judgment. Probabilities derived from past experience can provide the most useful guide to decisionmakers in

<sup>12</sup> George O. May, *Financial Accounting*, p. 119.

<sup>13</sup> For comprehensive discussions of turnover methods, see Coughlan and Strand, *Depreciation: Accounting, Taxes and Business Decisions*, pp. 11.5-11.16, and Grant and Norton, *Depreciation*, pp. 75-81.

<sup>14</sup> Coughlan and Strand, *Depreciation: Accounting, Taxes and Business Decisions*, pp. 11.35-36.

<sup>15</sup> APB Statement No. 4, par. 123.



estimating the useful lives of depreciable assets and guide their choice to the best alternative in particular circumstances. The best alternative in this context must be defined. Preferably, it should be the one that produces results that best serve the needs of users of financial statements. Comparable estimates in similar circumstances probably best achieve that goal. Past experience in an industry, in common circumstances, and in individual companies can structure the decision-making process and help to guide the decision to the best alternative (the most objective and comparable); but, clearly, room must be allowed for the knowledge and intuition (judgment) of the decisionmaker to achieve results that are both theoretically defensible and intuitively appealing.

**Improving Objectivity and Comparability.** The basic premise adopted in this study is that the objectivity and comparability of estimates can be improved by adopting criteria to better structure the exercise of judgment. The rule previously discussed for determining the two terminal points of the economic life span of an asset is the first empirical test, or implementing criterion. That rule provides a concrete definition for the concept of useful life. Quite clearly, the economic life span of an asset bears some relationship to the circumstances in which the asset is used. Moreover, most assets can be usefully grouped or classified according to the circumstances in which they are used.

But some of the suggested criteria relate to general factors that affect the economic life span of an asset with little regard to circumstances. First, the pattern of use is a general factor that affects the economic life span of an asset. Patterns of use are always significant determinants of the economic life span of an asset and must be recognized in estimates.

Second, susceptibility to obsolescence is a general factor that affects the economic life span of an asset. The predictable effects of obsolescence depend on the nature of the asset or of the products or service produced by the asset but are always significant. Some assets are highly susceptible to obsolescence; others are not. However, only the predictable effects of obsolescence should be recognized.

Third, the susceptibility of an asset to wear and tear from use or from the passage of time is a general factor in determining its economic life span. Some assets are literally consumed in use; others are relatively unaffected by use. The exhaustion of economic useful-

ness of some assets relates more to the passage of time than to use. Therefore, estimates must reflect the pattern of wear and tear appropriate to an asset or class of assets.

Fourth, the level of maintenance that an asset receives affects its economic life span. Some assets may be kept in use almost indefinitely by a high level of maintenance; the economic life span of most assets would be considerably shortened without some maintenance. An estimate of the economic life span of an asset should recognize neither the highest nor the lowest possible level of maintenance. Instead, a normal level of maintenance appropriate to an asset or a class of assets should be recognized. That level of maintenance should be the level of maintenance that a prudent person would use for an asset or class of assets.

More specific criteria for estimating the economic life spans of assets relate to factors common to the particular circumstances of use. Broad classes of assets can be related to common circumstances of use that may be defined by industry or by some common characteristics of the assets. One steelmaking facility is quite similar to another, and the same factors should be recognized in estimating their economic life span. However, the common characteristics of some classes of assets often cut across industries; they relate to the nature of the assets, not of the industry in which they are used. Nonspecialized transportation equipment or material-handling equipment, for example, is usually subjected to similar use in most industries.

Empirical evidence in the form of data collected by industry or by other common circumstances of use can be used to establish standards or norms, based on past average lives in an industry or other category of use, for estimating the economic life spans of a significant percentage of the assets used in industry and commerce. Standards or norms can be developed by the profession, by industries, or by individual companies. Preferably, however, the profession should collect the data and prescribe the standards or norms.

Individual companies tend to accumulate statistical data on the economic lives and use patterns of their assets. For many companies, that experience can be used as empirical evidence to support estimates of useful lives, particularly if industry or interindustry data are not available to establish standards or norms on a broader basis.

Despite the recognized deficiencies of statistical techniques, they can often be used to improve the objectivity and comparability of

estimates. They can be used in computing the past average life span of assets on the basis of empirical data accumulated for an industry, a class of assets exposed to similar use in several industries, or for an individual company. Industry or other averages determined in that way can provide an objective basis for standards or norms by which particular estimates can be judged.

For new assets used in circumstances for which little precedent exists, the initial estimate of useful life can be structured by the use of engineering estimates and other data relevant to the intended use pattern of the assets. Individual companies should be able to develop systematic procedures to estimate the economic life span of new assets and to support those estimates with documented evidence.

The factors discussed in this section provide the basis for the implementing criteria recommended in this study to improve the objectivity and comparability of estimates of the economic life spans of depreciable assets.

## **Recommended Criteria**

Since estimates are largely a matter of judgment, the managements of different companies inevitably consider different factors in exercising their judgment. The unrestricted exercise of judgment by the management of individual companies will only perpetuate differences in estimates that are not justified by differences in circumstances. Therefore, substituting the judgment of the profession for the judgment of individuals is essential to obtain reasonably satisfactory results that narrow the areas of differences. Adopting implementing criteria to guide the process should be the mechanism for accomplishing that result.

Implementing criteria are relatively straightforward rules or guides to structure or restrict the exercise of judgment in particular circumstances. They relate to the problems of determining the beginning and end of useful life and estimating the life span of an asset. The recommended criteria, each of which involves an empirical test, are these:

1. The estimate of "useful life" encompasses that span of time beginning after an asset is ready for use and begins to benefit the company significantly *or* when its ability to benefit the company begins to expire, and ending when the asset

no longer benefits the company significantly *or* when its ability to benefit the company expires.

2. The estimate does not reflect unpredictable events (casualties other than routine and predictable hazards, sudden obsolescence resulting from revolutionary changes in technology, losses from unexpected government action, and similar events) as events contributing to the end of useful life.
3. The estimate recognizes in a reasonably adequate manner
  - The pattern of anticipated use.
  - The predictable effects of obsolescence.
  - The effects of wear and tear from use or from the passage of time.
  - The level of maintenance that a prudent person would consider normal for the asset or class of assets.
4. The estimate is consistent with reliable past average lives (determined on the basis of competent historical data and, if feasible, by the use of statistical techniques) for the asset or class of assets in
  - a. The industry if the use of the asset or class of assets is unique to the industry or if the circumstances of use in the industry have unique characteristics.
  - b. The circumstances of use if the circumstances of use of the asset or class of assets have characteristics that are common to more than one industry.
  - c. The individual company if the use of the asset or class of assets is unique to a company or the circumstances of use in the company have unique characteristics.
5. The estimate is supported by other competent evidence, such as engineering studies, if competent historical evidence is not available.

The profession should apply the criteria to develop guidelines for estimating useful lives for broad classes of assets by industries or by commonly identified circumstances of use. For example, the profession might reasonably establish guidelines, based on empirical studies of the airlines industry, for estimating useful lives of aircraft used in that industry. Guidelines need to be developed to cover a significant portion of depreciable assets that are now used in commerce and industry but need not be established for

classes of assets—such as office furniture, fixtures, and equipment—for which depreciation charges are not normally a significant factor in the operations of a company. For those assets for which guidelines are prescribed, individual companies should be required to follow the prescribed guidelines or to use the established criteria to justify a departure from those guidelines. Companies should follow the established criteria in estimating the useful lives of those assets for which guidelines are not prescribed.

Whether depreciable lives are based on guidelines prescribed by the accounting profession or by each industry, or are estimated by individual companies without the benefit of guidelines, they should be revised whenever it becomes apparent that the lives in use are significantly inaccurate. No guidelines can state when, in general, that may occur.

# 6

## Allocation Methods

Undoubtedly, cost allocation is the most fundamental and perplexing problem in financial accounting, and accounting for depreciable assets is one of the most important aspects of cost allocation. The problem of selecting methods of allocating the cost of depreciable assets is addressed in this chapter. The purpose of the chapter is to explore the feasibility of developing criteria, in accordance with the framework developed in chapter 3, for selecting particular methods in particular circumstances.

Depreciation has been described as “a joint cost par excellence.”

It is joint with respect to the several time periods during which a plant asset is used. It is joint with respect to the products that are turned out utilizing any piece of equipment. It is joint with respect to the individual units of production that are turned out during any given time period. Economic theory suggests to us that joint costs cannot be allocated satisfactorily. Yet in a variety of circumstances we are faced with the problem of allocating these joint costs—costs which are joint to an extent unmatched by almost any other kind of cost.<sup>1</sup>

Those words epitomize the dilemma of depreciation accounting. Accountants must find acceptable ways to allocate costs of depreci-

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<sup>1</sup> Sidney Davidson, *The Meaning of Depreciation*, Selected Papers No. 2 (Chicago: Graduate School of Business, University of Chicago, 1962), p. 2.

able assets; that problem cannot be solved satisfactorily according to economic theory. Economists and accountants who contend that joint costs cannot be allocated satisfactorily mean that the selection of one allocation pattern over another cannot be justified theoretically.<sup>2</sup> However, since generally accepted accounting principles (GAAP) foreclose alternatives to historical cost in financial accounting, the accounting dilemma of joint cost allocation must be tackled directly in this study. Moreover, the requirement of economists and accountants for theoretical justification is extreme; probably no accounting method could satisfy it. The possibility that the process of selecting allocation methods can be defended in terms of some less demanding criteria is of more practical significance.

### Applying the Framework of Criteria

If criteria are to be the basis of selecting allocation methods, then a major task is to develop the necessary criteria. As previously noted (chapter 3), GAAP impose constraining criteria, which permit a choice among allocation methods that meet each of the criteria. Those criteria are accepted as "givens" in this study. The problem then is to determine the feasibility of developing (1) tailoring criteria to specify the objectives of depreciation accounting and (2) implementing criteria to determine the circumstances in which each acceptable method is appropriate.

Four approaches to developing criteria, which Thomas suggested but rejected for his more demanding purpose, are to derive criteria from (1) accounting postulates, (2) accounting conventions, (3) needs of users, and (4) allocation methods in use.<sup>3</sup> Each of these represents a possible approach for this study. The acceptance of GAAP, however, forecloses the approach of deriving criteria from accounting postulates. The three other approaches suggested by Thomas are explored in this chapter.

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<sup>2</sup> Arthur L. Thomas in particular has argued that contention persuasively in *The Allocation Problem in Financial Accounting Theory* (Evanston, Ill.: American Accounting Association, 1969).

<sup>3</sup> Thomas's terms for these bases were "the appeal to what other accountants would agree to or believe" (combining what is referred to above as "postulates" and "conventions"), "the appeal to purpose," and "partial defenses." Arthur L. Thomas, *The Allocation Problem in Financial Accounting Theory*, pp. 8-10, 12-13.

## Deriving Criteria From Accounting Conventions

An attempt to achieve the ideal of a deductive system based on accounting postulates is not feasible because of the limited scope of this study. But, as some have suggested, a conceptual foundation for developing criteria for depreciation accounting may be found in accounting conventions, particularly the accounting concepts of income and wealth or the "matching" concept. These concepts are analyzed as possible sources of criteria for selecting allocation methods.

**Accounting Concepts of Income and Wealth.** Financial statements are described as presenting, among other things, the financial position and the results of operations of an enterprise, thus suggesting that they measure the income and wealth of an enterprise. Since income and wealth are economic concepts, accounting rules for measuring net income and financial position might be expected to flow from these economic concepts. But those rules are not, and cannot be, derived from the economic concepts of income and wealth for at least two reasons. First, as Alexander correctly pointed out a quarter-century ago, even economists do not agree on the meaning of income and wealth.

Economic science has no single universally accepted body of doctrine that need only be translated into non-technical language in order to tell the layman what "the economist" believes. Different economists believe different things and use different concepts, frequently with the same names. That is the basis of many a great controversy, and the subject of income and capital has been especially rich in controversy among economists. It would accordingly be arrogant for anyone to present "the economist's view of income."<sup>4</sup>

Second, most economists would agree that income and wealth are not determined by measuring selected transactions on the basis of historical cost, as is done in accounting. Economic theory is thus a blind alley and cannot contribute to the resolution of the problem at hand.

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<sup>4</sup> Sidney S. Alexander, "Income Measurement in a Dynamic Economy," in *The Study Group on Business Income, Five Monographs on Business Income* (New York: American Institute of [Certified Public] Accountants, July 1, 1950), p. 8.



But even accounting concepts of income and wealth provide little guidance for, as Canning observed nearly a half-century ago, "no propositions that assign a qualitative nature to [accounting] net income can be maintained. It is wholly a quantitative thing."<sup>5</sup> He also noted that "financial position as disclosed in the balance sheet is a position with respect to asset valuation" and that theories of valuation are statistical rather than conceptual.<sup>6</sup> The Accounting Principles Board underscored these views by defining financial position and results of operations in terms of the procedures followed in computing them.<sup>7</sup> Thus, the search for criteria in accounting concepts of income and wealth is futile because of the way those concepts are defined.

**The Matching Concept.** The matching concept in accounting is another possible source of conceptual guidance in developing criteria for choosing allocation methods. That concept, however, is ambiguous in the sense that it has at least three meanings in accounting.<sup>8</sup> It is often used in accounting literature to describe

1. The entire process of income determination.
2. The entire process of expense recognition.
3. The recognition of expenses by associating costs with revenue on a cause and effect basis.

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<sup>5</sup> John B. Canning, *The Economics of Accountancy* (New York: The Ronald Press Co., 1929), p. 126 (emphasis deleted).

<sup>6</sup> John B. Canning, *The Economics of Accountancy*, pp. 191, 198.

<sup>7</sup> Accounting Principles Board (APB) Statement No. 4, "Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises," pars. 132-34. As an aside, we take issue with Catlett, Ijiri, Staubus, and others who criticized the Statement for defining elements of financial statements in terms of the procedures used to compute them. (See George R. Catlett's dissent to the Statement; Yuji Ijiri, "Critique of the APB Fundamentals Statement," the *Journal of Accountancy*, November 1971, p. 48; and George J. Staubus, "An Analysis of APB Statement No. 4," the *Journal of Accountancy*, February 1972, p. 39.) In effect, they criticized the Statement for providing poor normative definitions. But that criticism overlooks the fact that the definitions were not intended to be normative; they were meant to be descriptive, and as descriptive definitions, they are good ones. Given the nature of the Statement (see pars. 3-7), normative definitions would have been out of place.

<sup>8</sup> APB Statement No. 4, par. 147, footnote 43.

The first two meanings, like the accounting concept of income, do not provide criteria for choosing among accounting alternatives because the process of determining income in accounting, including the recognition of expenses, is described in terms of the procedures followed.

The third meaning of the matching concept is a statement of the pervasive expense recognition principle of associating cause and effect. Accountants consider recognizing expenses on that basis preferable to recognizing expenses on the basis of systematic and rational allocation. They resort to systematic and rational allocation if costs cannot be directly associated with revenue on the basis of cause and effect. Systematic and rational allocation always involves “assumptions about the pattern of benefits and the relationship between costs and benefits because neither of these two factors can be conclusively demonstrated.”<sup>9</sup> Thus, direct association on a cause and effect basis is preferable to, and a model for, systematic and rational allocation. A significant corollary is that the results of systematic and rational allocation should approximate as nearly as possible the results of direct association on a cause and effect basis. Systematic and rational allocation is a surrogate for associating costs with revenue on the basis of a direct cause and effect relationship, based on *assumptions about the pattern of benefits and the relationship between costs and benefits*. Thus, the third meaning of the matching concept provides a tailoring criterion that, at least, specifies an ideal objective of depreciation accounting, although the ideal can only be approximated in practice based on assumed relationships. The implications of the third meaning for the search for criteria are explored later, in the discussion of net-revenue-contributions methods of cost allocation.

## Deriving Criteria From Needs of Users

As commonly conceived, the primary objective of financial accounting is to provide the accounting information that best satisfies the legitimate needs of users of financial statements.<sup>10</sup> Thus, a pos-

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<sup>9</sup> APB Statement, No. 4, par. 159.

<sup>10</sup> APB Statement No. 4, par. 73; Study Group on Objectives of Financial Statements, *Objectives of Financial Statements*, p. 13.

sible method of developing accounting procedures would be to base criteria on the needs of users of financial statements.<sup>11</sup>

However, major obstacles must be overcome before that approach can be used. First, general-purpose financial statements are used by many types of people with legitimate claims to accounting information but with information needs that may not coincide. Second, as frequently observed, users of financial statements are unable to recognize and express their needs for accounting information beyond the types of information that they are already receiving.<sup>12</sup> Efforts to remedy that deficiency by discovering or constructing user decision models have not progressed sufficiently to provide criteria for selecting accounting alternatives.<sup>13</sup>

Nevertheless, because the needs of users seem to be a potential source of criteria for selecting allocation methods, a survey designed to identify those needs (see chapter 2) was conducted as a part of this study. But the results tended to confirm the observation that

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<sup>11</sup> See, for example, Robert R. Sterling, "On Theory Construction and Verification," *The Accounting Review*, July 1970, pp. 444-57.

<sup>12</sup> Howard Ross's analogy with transportation is particularly appropriate:

Consider the stage-coach days and suppose that a group of forward-looking practitioners (coachmen and coach-builders) were discussing how to improve their performance. It might have occurred to some really bright person to suggest that before dreaming up a lot of changes, they should ask their clients—i.e., the passengers—what they would like. If this had happened, imagine the replies! "Some device to keep the draft from the ventilator from blowing down the passenger's neck"; "Straw on the floor in winter to prevent frostbite"—that sort of thing, with perhaps some really imaginative type suggesting a grading of steep hills so that passengers would not have to get out and walk up them. If anyone had suggested that the whole contraption should be made to hurtle through the air at 700 m.p.h. while pretty uniformed girls passed around instant coffee, he would have been locked up in the local loony-bin.

*Financial Statements: A Crusade for Current Values* (New York: Pitman Publishing Corp., 1969), p. 165.

<sup>13</sup> See, for example, "Report of the Committee on Accounting Theory and Verification," *The Accounting Review*, Supplement to Vol. XLVI, 1971, p. 68.

users are unable to articulate their needs for accounting information and thus did not provide criteria for selecting or evaluating cost allocation methods.

### Deriving Criteria From Methods Used in Practice

Perhaps the most common way to develop criteria for evaluating accounting procedures is to derive them from procedures used in practice. The principal weakness of that approach is that it does not provide a basis for judging the worth, as opposed to the popularity, of the criteria.<sup>14</sup> However, deriving criteria from methods in use can provide a starting point for analysis.

Therefore, allocation methods used in practice were examined in three ways to identify the criteria that underlie present accounting for depreciable assets. First, a questionnaire survey was conducted to determine the extent that the various allocation methods are used in practice, the circumstances in which each method tends to be used, and the apparent motives for selecting alternative methods. Although the survey questioned some of the popular notions about accounting for depreciable assets, it did not produce suitable criteria for evaluating depreciation methods.

Second, Thomas's analysis of depreciation accounting, in the context of the general allocation problem in financial accounting, was evaluated.<sup>15</sup> That analysis concludes that depreciation accounting is an entirely arbitrary process.

Third, arguments that have been advanced in accounting literature to support alternative methods of cost allocation were examined to identify the criteria on which they rest. The arguments examined are those used in accounting literature to support (1) net-revenue-contributions methods, (2) the straight-line method, (3) units-of-production and units-of-service methods, (4) decreasing-charge methods, and (5) increasing-charge methods.

**Nature of Methods in Use.** Thomas contended that only three main approaches to calculating depreciation are possible in present financial accounting practice: (1) arbitrary approaches, (2) net-

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<sup>14</sup> See, for example, Robert R. Sterling, "On Theory Construction and Verification," p. 449.

<sup>15</sup> Arthur L. Thomas, *The Allocation Problem in Financial Accounting Theory*.

revenue-contributions approaches, and (3) other-services approaches.<sup>16</sup> He concluded, however, that other-services approaches must be based on net-revenue contributions or be arbitrary and that the net-revenue contributions of an asset cannot be determined.

The term "other services" relates to outputs associated with an asset that are related to its net-revenue contributions. Cost allocations on the basis of other services involve the identification of some services or outputs expected from an asset—such as years of service, hours of use, or units of production—and the allocation of the cost of the asset on some basis to those services or outputs. The cost is then associated with revenue as the services or outputs are realized.

Some accountants may contend that cost allocations on the basis of other services approximate, or are equivalent to, direct association of cost with revenue on the basis of cause and effect. They may reason that allocation of the cost of an asset on the basis of use produces the same result as direct association of cost on the basis of cause and effect because measures of use are equivalent to measures of the effort—the "cause" of "cause and effect"—put forth to produce the revenue. For example, for a particular asset, say a bus, each unit of use, say miles traveled, can be directly associated with the revenue received from the passengers carried. Therefore, allocation of the cost of the bus on the basis of miles traveled would seem to associate cost with revenue according to an identifiable cause and effect relationship.

But that appearance is deceptive. Units of use (miles) and units of revenue (dollars) are associated in the example. To translate that association into a direct association of cost with revenue requires restating units of use (miles) in terms of dollars, and that in turn requires a preliminary allocation of the asset's depreciable base (in dollars) to each mile of use. And that allocation must be based on a decision as to what part of the total cost should be represented by each mile. Equal portions of the cost of the asset could be assigned to each mile (the units-of-production method). Alternatively, each mile could be weighted by the number of passengers carried (the units-of-service method), or cost could be allocated to each mile on the basis of engineering studies of patterns of wear and use. The significant point is that none of these or other possible decisions can be definitively demonstrated to be equivalent to the direct association on the basis

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<sup>16</sup> Arthur L. Thomas, *The Allocation Problem in Financial Accounting Theory*, p. 18.

of cause and effect, not, as commonly supposed, because of an inability to find a measure of use that can be associated with revenue, but because the relationship between the cost of an asset and its use is indeterminate.

On the basis of similar reasoning, Thomas concluded that the other-services allocation methods must be arbitrary or ultimately based on the net-revenue contributions of an asset. He contends that other-services methods require the accountant to make a series of decisions to justify his or her choice. The accountant must decide (1) the services to be used as a basis of allocation; (2) the cost to be allocated to each unit of service; and (3) the ultimate basis on which to justify the allocation, which, to avoid endless regress, must be based on net revenue contributions or be arbitrary.<sup>17</sup>

Thomas presented the following cogent argument in support of his conclusion.

Suppose that an accountant is deciding how to depreciate a newly-acquired machine, *and that he wishes to follow conventional accounting rules*. He *could* make an arbitrary decision—for example, he could decide to depreciate the asset straight-line merely because he depreciates all machines straight-line without worrying about their individual characteristics. Or he could decide to depreciate the machine by the most rapid approach allowed for tax purposes, without worrying whether or not this was really appropriate for income statement purposes. But suppose that the accountant wants to justify his depreciation allocations theoretically . . . yet does *not* wish to base his justification on an estimate of the future net revenues or cost savings generated by the machine. The following argument shows that he has wished the impossible. From this impossibility it follows that if the accountant does not want to use an arbitrary approach he *must* use a net-revenue contributions approach (or else abandon conventional accounting rules).

The reasoning is as follows. The accountant supposedly wishes to defend his depreciation allocations on theoretical grounds, but without basing his defense on the machine's net-revenue contributions. Therefore he must allocate the machine's acquisition price according to some other service or characteristic of the machine—such as its years of service life, the number of units of output that it will produce, or the number of hours that it can be operated.

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<sup>17</sup> Arthur L. Thomas, *The Allocation Problem in Financial Accounting Theory*, pp. 26-27.

But, having made *that* decision, the accountant is not yet through. He still must decide how much of the acquisition price should be associated with each service year, each unit of output, or each operating hour. He may decide that some years, units, or hours should have more of the acquisition price associated with them than others. He may decide that all years, units, or hours, should bear the same share of the acquisition price. But in either case the accountant is making a decision. In particular, he cannot escape making this decision by treating all years, units, or hours alike, *for doing this is a decision, too.*

How is this decision to be made? If the accountant still does not wish his decision to be arbitrary, he must defend his decision in terms of some *other* characteristic or service of the asset. But this leads to exactly the same problem as before . . . unless the characteristic or service chosen is the net-revenue contributions associated with the machine.<sup>18</sup>

Thomas argues that allocations of cost can be justified only on the basis of net-revenue contributions. The net-revenue contributions of an asset may be defined as a series of revenues or cost savings attributable to the acquisition and use of an asset, less the amounts that should be allocated to other costs that are required to generate the series. Net-revenue-contributions approaches are designed to allocate the cost of an asset on a direct cause and effect basis according to the pattern of its net-revenue contributions. The cost of an asset is related to its estimated net-revenue contributions by an implicit rate of return under the presumption that a company would not purchase an asset unless the present value of its series of net-revenue contributions or cost savings discounted at a positive implicit rate of return equals the purchase price of the asset.

Thomas argued persuasively that net-revenue-contributions methods cannot be theoretically justified because revenue is a result of the interaction of myriad inputs and the amount of revenue attributable to an asset cannot be determined. He concluded that

for the net-revenue contributions approach to avoid being arbitrary itself, interaction effects must be absent. Moreover, this absence of interaction effects must hold true when the revenue function is viewed over time, as well as within individual years. Otherwise, the net-revenue-contributions approach leads to grave ambiguities that are insoluble under present allocation

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<sup>18</sup> Arthur L. Thomas, *The Allocation Problem in Financial Accounting Theory*, pp. 29-30, footnote 35.

theory within the framework of conventional accounting. *Unless interaction effects are absent, both within and among years, the net-revenue-contributions approach will give arbitrary results.* And it is clear that interaction effects usually will be present.<sup>19</sup>

Thus, Thomas views all present allocation methods in financial accounting as arbitrary.

An allocation method is arbitrary if it cannot be “theoretically justified”—defended against all competing alternatives. “Arbitrary” relates to the grounds for choosing an allocation method, not to the method itself. If a method is selected on conventional grounds, the method is arbitrary. For example, a method would be considered arbitrary if it were selected on the grounds that it is rational and systematic or acceptable for tax purposes or on any grounds that do not directly relate to the determination of net income. All the methods in present use are necessarily “arbitrary” in that sense, whatever the ostensible grounds for choosing them.

By demonstrating that all allocation methods in present use are arbitrary, Thomas merely confirmed what most accountants recognize—that present methods of allocation are conventional. But what are the implications of his conclusion for depreciation accounting? If all present methods are arbitrary, or conventional, can tailoring criteria that are not equally arbitrary be derived from those methods? Tailoring criteria, like allocation methods, may also be conventional if the objective is to narrow the range of acceptable practices. Thus, the effort to derive criteria from allocation methods in present use need not be abandoned.

**Derived Tailoring Criteria.** Examining arguments that support individual methods in order to identify tailoring criteria may not be an entirely satisfactory procedure, because tailoring criteria are used to test the information produced and may be satisfied by the information produced by more than one method. Because acceptable methods should produce results that meet the objectives specified by a set of criteria, determining objectives is a process that should logically precede the identification of methods. Nonetheless, deriving tailoring criteria from arguments for individual methods may help to identify a set of tailoring criteria that can be refined for general use.

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<sup>19</sup> Arthur L. Thomas, *The Allocation Problem in Financial Accounting Theory*, p. 75.



First, however, some essential characteristics of tailoring criteria will be noted. Tailoring criteria, as defined in this study, specify objectives to be attained by accounting methods. Those objectives should be reasonably capable of attainment by methods of cost allocation and should be expressed in terms of attributes that can be measured. Also, to achieve reasonable uniformity in applying tailoring criteria, the objectives should be stated in a manner that permits empirical investigation to develop implementing criteria to select methods in particular circumstances.

Arguments that support various methods in use are examined in this section to identify possible tailoring criteria.

*Net-revenue contributions.* A number of accountants have proposed allocation methods based on some measure of the expected net-revenue contributions of an asset.<sup>20</sup> Although the proposals differ in details, all are intended to be ways of allocating the cost of an asset in proportion to expected net-revenue contributions and are defended on those grounds. The objectives of the methods are generally consistent with the objective of the pervasive expense-recognition principle of associating cost with revenue on the basis of cause and effect. Arguments based on net-revenue contributions differ only in the amount of knowledge each presumes. Thomas explained that

an accountant may believe that he lacks sufficient data to estimate the exact net-revenue contributions that a particular good would generate in each year of its estimated service life. Yet he still might believe that these net-revenue contributions would decline sharply with age. If so, he might argue that a declining-charge depreciation pattern was more consistent with what he was able to estimate than was straight-line depreciation.<sup>21</sup>

An argument for decreasing-charge methods of depreciation<sup>22</sup> that is essentially based on net-revenue contributions is as follows.

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<sup>20</sup> Arthur L. Thomas, *The Allocation Problem in Financial Accounting Theory*, p. 18, footnote 8 provides a comprehensive bibliography of writings on the net-revenue-contributions methods.

<sup>21</sup> *Ibid.*, p. 21.

<sup>22</sup> Several methods can be used to compute depreciation on a decreasing-charge basis. The methods familiar to most accountants are the declining-balance and the sum-of-the-years digits methods. Decreasing-charge methods have the same general effect, and the various arguments advanced in support of those methods apply equally to each of them.

The contribution of a depreciable asset to the operations of a business, whether measured by operating efficiency or on some other basis, typically declines more rapidly in the early years of the estimated useful life of an asset than in the later years.<sup>23</sup>

The following tailoring criterion can be derived from the argument:

- Allocate the cost of a depreciable asset in proportion to its operating efficiency or some other measure of its contribution to the business.

The objective specified, which is essentially an unattainable ideal, is to allocate the cost of a depreciable asset on the basis of its net-revenue contributions. It is consistent with one of the recognized meanings of matching: to associate costs with revenue on the basis of cause and effect. But it is unattainable because, as previously demonstrated, the net-revenue contributions of an asset cannot be measured. The objective stands, however, as the ideal against which the results of each method of cost allocation must ultimately be judged.

*Other-services concept.* Methods based on the “other-services” concept are usually supported as alternative ways of approximating the ideal of allocating the cost of a depreciable asset on the basis of its net-revenue contributions. Arguments based on the concept are made in support of the straight-line, units-of-production, and the units-of-service methods.<sup>24</sup> The units-of-production and the units-of-service methods may be viewed as variations of the straight-line method; some authors group all three under the general category of straight-line methods.<sup>25</sup>

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<sup>23</sup> See, for example, Robert L. Dixon, “Decreasing Charge Depreciation—A Search for Logic,” *The Accounting Review*, October 1960, pp. 591-92.

<sup>24</sup> The distinction between the units-of-production method and the units-of-service method is not clear, but the former generally relates to units of input (miles traveled, hours operated, and so forth) and the latter relates to units of output (passenger miles, units of product, and so forth). The distinction is not important for the purpose of the analysis in this section.

<sup>25</sup> See, for example, Paul Grady, *Accounting Research Study No. 7, “Inventory of Generally Accepted Accounting Principles for Business Enterprises”* (New York: AICPA, 1965), pp. 149-50.

The complete arguments for the three methods differ only as to the circumstances that contribute to the exhaustion of the services of an asset. The argument for straight-line allocation over time assumes that the circumstances that contribute to the exhaustion of the usefulness of an asset are related to time and accordingly concludes that the cost should be allocated on the basis of time; the argument for the units-of-production and units-of-service methods assumes that the exhaustion of the usefulness of an asset is attributable to use, and therefore the cost should be allocated on the basis of units of use or units of product. The criterion underlying the arguments is

- Allocate the cost of a depreciable asset in proportion to the incidence of events contributing to the exhaustion of its usefulness.

The objective specified is to allocate the cost of a depreciable asset in proportion to the exhaustion of its usefulness. The objective seems capable of attainment by a method of cost allocation if the incidence of events contributing to the exhaustion of an asset is capable of being measured.

But *can* the incidence of events contributing to the exhaustion of the usefulness of an asset be measured? Accountants can decide when the useful life of an asset begins and ends and can measure the *use* of the asset during the intervening period, but they cannot measure directly the change in the *usefulness* of an asset during its useful life because the concept of “usefulness” has not been defined. Of course, something that cannot be measured directly can always be measured indirectly by defining it as equal to something that can be measured. For example, intelligence is measured by equating it to scores on IQ tests. By applying an accepted formula to the number of correct answers on an IQ test, psychologists arrive at a number that they have agreed to accept as a measure of intelligence. That kind of measurement, called “measurement by fiat,”<sup>26</sup> requires an accepted operational definition of the measurement concept being applied. The usefulness of an asset in depreciation accounting could be measured that way if an authoritative body prescribed an operational definition of the concept. For example, the usefulness of an

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<sup>26</sup> Warren S. Torgerson, *Theory and Method of Scaling* (New York: John Wiley and Sons, Inc., 1958), pp. 21-22.

asset in depreciation accounting could be defined in terms of the total services that the asset is expected to provide, and the exhaustion of usefulness could then be measured by the amount of services that the asset provided in a period.

For many assets, accountants can identify the services that the assets provide, estimate the total services that the assets are expected to provide over their useful lives, and determine whether the incidence of events contributing to exhaustion of usefulness relate more to time or to use. On the basis of that empirical evidence, the exhaustion of the usefulness of an asset could be measured as the amount determined by multiplying its cost by the ratio of the services provided in a period to total expected services.

*Valuation of service potential.* Although depreciation accounting is defined as a process of cost allocation, not a process of valuation, arguments for some allocation methods are based on valuation concepts. The Committee on Concepts and Standards of the American Accounting Association (AAA) described depreciation accounting as follows:

Any decline in the service potential of plant and other long-term assets should be recognized in the accounts in the periods in which such decline occurs. . . . The service potential of assets may decline because of . . . gradual or abrupt physical deterioration, consumption of service potential through use even though no physical change is apparent, or economic deterioration because of obsolescence or a change in consumer demand.<sup>27</sup>

Hendriksen commented that the AAA “definition of depreciation leads to the same conclusion as the AICPA definition,” but the AAA definition “is based on a measure of asset valuation (the service potential) rather than merely on an allocation of cost.”<sup>28</sup>

Two arguments in support of decreasing-charge methods of depreciation are essentially based on valuation notions. The first is as follows.

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<sup>27</sup> AAA Committee on Accounting Concepts and Standards, *Accounting and Reporting Standards for Corporate Financial Statements and Preceding Statements and Supplements* (Columbus, Ohio: American Accounting Association, 1957), pp. 4, 6.

<sup>28</sup> Eldon S. Hendriksen, *Accounting Theory*, rev. ed. (Homewood, Ill.: Richard D. Irwin, Inc., 1970), p. 386.

An asset is an embodiment of services to be rendered over time, and the cost of an asset represents the value that a "rational purchaser" would place on those services when an asset is acquired. Even if an asset's contribution to operations is expected to be equal for each period of its useful life, a rational purchaser would place higher value on the units of service to be received in the earlier years of the useful life of an asset than on the units of service to be received in the later years of the useful life of an asset. Thus, the expiration of cost is greater in the early years than in the later years of the useful life of an asset.<sup>29</sup>

The second argument is a modification of the first. It can be stated as follows.

The value of an asset to a rational purchaser can be determined periodically by discounting the value of the remaining services expected from the asset at some implicit interest rate, and it can be approximated by the value of the asset in the used asset market, because both characteristically decline more rapidly in the early years of useful life than in the later years.<sup>30</sup>

Both arguments are based on the assumption that an asset is an embodiment of service potential and involve presumptions about "rational purchasers" and the relationship between cost and value.

A single tailoring criterion can be derived from the two arguments:

- Recognize a decline in the service potential of an asset in the period of the decline and measure the decline in conformity with values that a rational purchaser would assign, either at the date of acquisition or at that date and periodically thereafter, to the remaining service potential of the asset.

The objective specified is to allocate the cost of a depreciable asset in proportion to the decline in the service potential of the asset. Although the objective is stated in terms of the decline in service potential, a valuation concept, it is closely akin to the objective specified by the net-revenue-contributions criterion and entails many of the same problems. Ostensibly, a rational purchaser would mea-

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<sup>29</sup> See, for example, Robert L. Dixon, "Decreasing Charge Depreciation—A Search for Logic," p. 592.

<sup>30</sup> See, for example, George Terborgh, *Realistic Depreciation Policy* (Washington, D.C.: Machinery and Allied Products Institute, 1954), especially chapters 4 and 5.

sure the service potential of an asset by estimating the dollar amounts and timing of the revenue to be provided by an asset and would discount those amounts to present value at some implicit interest rate, whether the purchaser makes one or a series of valuations. In its more general form, the criterion does not meet the requirement of empirical verification because assigning a dollar value to the service potential of an asset requires measuring the net-revenue contributions of the asset. Terborgh recognized that problem and proposed the substitution of an empirical test that would permit "measurement by fiat." He equated the value that a rational purchaser would assign to the unused service potential of an asset with the value of the asset in the used asset market.<sup>31</sup> Substituting value in the used asset market for the valuation of a rational purchaser makes the criterion operational for many types of assets and permits the development of empirical procedures to test both methods and circumstances. For example, the patterns of use and the patterns of decline in market prices of vehicles used by automobile rental companies suggest that the pattern of decline in potential services is similar to the pattern of decline in market prices in the used car market.<sup>32</sup>

*Other asset-related charges.* An argument based on the interrelationship between other asset-related charges and depreciation has been used to support decreasing-charge methods. The argument is as follows.

Other asset-related charges, particularly repairs and maintenance, typically increase as an asset ages. A decreasing depreciation-charge and an increasing charge for other asset-related costs would tend to equalize the total asset-related cost for each year of an asset's useful life.<sup>33</sup>

The criterion that can be derived from the argument can be stated somewhat as follows.

- Allocate the cost of a depreciable asset over its useful life in a manner that would tend to equalize the sum of depreciation and other asset-related costs for each year of its useful life.

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<sup>31</sup> George Terborgh, *Realistic Depreciation Policy*.

<sup>32</sup> *Ibid.*

<sup>33</sup> See, for example, Eldon S. Hendriksen, *Accounting Theory*, p. 414.

The objective specified is that the amount of depreciation allocated to a period should decrease as the amount of other asset-related charges increases. All that is necessary to make the criterion satisfy the requirement of empirical investigation is a definition of "other asset-related charges"—a definition that an authoritative body could easily supply. However, a company would need to estimate the amount and timing of those charges at the time an asset is acquired.

*Conservatism and uncertainty.* Another argument sometimes advanced in support of decreasing-charge methods of depreciation is as follows.

In light of uncertainties, the ends of capital conservation are better served if . . . depreciation rates in early years are conservatively high.<sup>34</sup>

That argument is primarily one for conservatism in financial reporting. Grant and Norton argue at length that decreasing-charge methods of cost allocation minimize income taxes, discourage dividends, and generally foster conservative financial policies—thereby conserving the capital of the enterprise. However, a considerable amount of research devoted to that issue<sup>35</sup> has not yet established that the choice of accounting methods for financial reporting (as opposed to accounting for income taxes) influences significantly the financial policies of business enterprises.

*Distortive effects of inflation.* Another argument for decreasing-charge depreciation methods is that those methods counteract the "distortive effects" of inflation.<sup>36</sup> That argument lacks validity and

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<sup>34</sup> Eugene L. Grant and Paul T. Norton, Jr., *Depreciation*, (New York: The Ronald Press Co., 1955), p. 369.

<sup>35</sup> See, for example, Charles P. Bonini, *Simulation of Information and Decision Systems in the Firm* (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1963); William J. Bruns, Jr., "Inventory Evaluation and Management Decision," *The Accounting Review*, April 1965, pp. 345-57; Thomas R. Dyckman, "The Effects of Alternative Accounting Techniques on Certain Management Decisions," *Journal of Accounting Research*, Spring 1964, pp. 91-107; and Betrum Horwitz and Reza Shabahang, "Published Corporate Accounting Data and General Wage Increases of the Firm," *The Accounting Review*, April 1961, pp. 243-52.

<sup>36</sup> See, for example, Robert L. Dixon, "Decreasing Charge Depreciation—A Search for Logic," p. 592.

can easily be refuted. Clearly, depreciation accounting should not be used to accomplish something that it is not designed to do—change the unit of measure in financial accounting. If the effects of changes in the general price level are to be reported in financial statements, a comprehensive restatement of the statements in terms of units of purchasing power should be made in accordance with the procedures prescribed in APB Statement No. 3. Manipulating depreciation accounting to counteract the “distortive effects” of inflation tends to conceal, rather than reveal, the effects of inflation.

*Rate of return on investment.* The sinking-fund method and the annuity method, two increasing-charge methods that have been described in the accounting literature but are rarely used in practice, have the same general effect and are supported by the same basic argument. That argument is as follows.

The methods tend to equalize each year’s reported rate of return on the net book value of a depreciable asset.<sup>37</sup>

The argument implies a criterion that can be stated somewhat as follows.

- If everything else, especially revenue and use, is equal in each period, depreciable assets should be reported as earning a constant rate of return.

The objective specified is to allocate the cost of depreciable assets so as to maintain a constant rate of return. That objective can be easily implemented in concept without the need for empirical investigation. However, the other-things-equal condition required by the criterion is seldom, if ever, found in practice.

*Simplicity of method.* An argument for the straight-line method, the method most commonly used in practice, holds that the method is as reasonable and equitable as any other method and does not rely on questionable assumptions or complicated calculations.<sup>38</sup> The argument is essentially that, given a set of rational and system-

<sup>37</sup> See, for example, Maurice Moonitz and Louis H. Jordan, *Accounting, an Analysis of Its Problems*, Vol. I, rev. ed. (New York: Holt, Rinehart and Winston, 1963), pp. 392-94.

<sup>38</sup> See, for example, Perry Mason, *Principles of Public Utility Depreciation* (Evanston, Ill.: American Accounting Association, 1937), p. 69.



atic methods, the one that requires the smallest number of questionable assumptions and the simplest calculations is the best. The validity of the argument is, at best, doubtful. The assumptions underlying the straight-line method are certainly questionable. Moreover, questionable assumptions and simplicity are matters of opinion. Assumptions may be more or less questionable, and calculations may be more or less complex. Reliance on questionable assumptions is not necessarily bad, and simplicity should influence the choice of method only when other tests of quality establish that competing alternatives are nearly equal.

The argument is also stated in terms of the lower cost of implementation and the ease of understanding the results. However, as one writer observed,

These are naive arguments because certainly the cost of accounting would be less if the asset were charged off at the time of acquisition. Depreciation accounting is relatively costly and can be justified only if more useful results are obtained. If an accounting method results in a relatively high cost, the question must be raised as to whether the added benefits obtained are worth the added cost. Unfortunately, the benefits are not easily measurable. The supposed greater ease of understanding is also subject to question. If an individual understands accounting and, more specifically, depreciation, he will have no difficulty understanding the more complex methods. The "ease of understanding" is a delusion; understanding a depreciation method is much more than understanding the arithmetic.<sup>39</sup>

Furthermore, the argument is based on purely practical considerations that relate to the method itself and does not imply a tailoring criterion that specifies a valid objective for depreciation accounting.

**Derived Implementing Criteria.** Many significant problems remain after acceptable tailoring criteria have been identified. Achievement of reasonable uniformity in applying tailoring criteria, in other than obvious circumstances, requires implementing criteria based on empirical investigation. For example, one of the derived tailoring criteria specifies that the cost of a depreciable asset should be allocated in proportion to the incidence of events that contribute to the exhaus-

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<sup>39</sup> Carl L. Nelson, "Depreciation," *Handbook of Modern Accounting*, Sidney Davidson, editor-in-chief (New York: McGraw-Hill Book Co., 1970), chapter 18, p. 10.

tion of the asset's usefulness. Since the incidence of those events is not readily observable, the method or methods that will satisfy that criterion in specific circumstances are not obvious. To select a specific allocation method that would reasonably satisfy the derived tailoring criteria requires empirical investigations to develop implementing criteria. This section explores the possibility of developing implementing criteria for some of the methods in use based on the tailoring criteria identified in the preceding section.

*The straight-line method.* The straight-line method of cost allocation assigns equal amounts of the depreciable base of an asset to each year of its useful life. Are there circumstances in which the straight-line method would tend to allocate costs more nearly in proportion to the utilization of the asset as measured by operating efficiency, exhaustion of usefulness, or decline in service potential? By empirical investigation, accountants may be able to identify some assets that are capable of rendering an equal amount of service during each year of the useful lives of the assets. They may also be able to determine that the incidence of events contributing to the exhaustion of usefulness relates more to time than to use and that other asset-related charges, operating efficiency, and revenue are relatively constant over the useful lives of the assets.

The straight-line method of allocation would probably produce results that conform with the objectives of the derived tailoring criteria better than the results produced by other methods under circumstances in which empirical evidence indicated that

- Net-revenue contributions or operating efficiency is indeterminate or tends to be relatively constant over the estimated useful life of the asset.
- The incidence contributing to the exhaustion of usefulness relates more to time than to use.
- Other asset-related charges tend to be relatively constant over the estimated useful life of the asset.
- The discounted value of future service potential tends to decline as a function of time rather than use.
- The interest factor is relatively insignificant or tends to be offset by other factors.
- The effect of obsolescence can be reasonably estimated.

These empirical tests represent the types of implementing criteria that could be used to determine the circumstances in which the straight-line method of depreciation is most appropriate. For example, the straight-line method of depreciation would probably be appropriate for a specialized building that is expected to provide the same amount of floor space throughout its useful life for a relatively stable manufacturing operation.

*Units-of-production and units-of-service methods.* Units-of-production and units-of-service methods spread the depreciable base of an asset over the total estimated input or output of the asset. Generally, equal portions of the cost of the asset are assigned to each unit of input or output, although, as previously demonstrated, assigning equal portions to each unit cannot be theoretically justified.

A units-of-production or units-of-service method would probably produce results that conform with the objectives of the derived tailoring criteria better than the results produced by other methods under circumstances in which empirical evidence indicated that

- The net-revenue contributions or operating efficiency of an asset is indeterminate or tends to be proportionate to use.
- Discrete units of input or output (production or services) can be identified and measured.
- The incidence of events contributing to the exhaustion of usefulness relates more to use than to time.
- Other asset-related charges tend to be proportional to use.
- Total input or output can be reasonably estimated.
- Obsolescence is not a significant factor or can be reasonably estimated in relation to the estimate of total input or output.

These empirical tests are the types of implementing criteria that could be used to determine the circumstances in which the units-of-production or the units-of-service methods are most appropriate. For example, those methods would probably be most appropriate for commercial aircraft, oil well equipment, and certain other types of machinery and equipment.

*Decreasing-charge methods.* Decreasing-charge depreciation can be computed by several formulas, the most common being the de-

clining-balance and the sum-of-the-years'-digits methods. All decreasing-charge methods assign a larger amount of the cost of a depreciable asset to the earlier years of its useful life than to the later years.

A decreasing-charge method would probably produce results that conform with the objectives of the derived tailoring criteria better than the results produced by other methods under circumstances in which empirical evidence indicated that

- The net-revenue contributions or operating efficiency of an asset is indeterminate or, to the extent determinable, is a decreasing function of the age of the asset.
- Reasonably good resale market data are available and the decline in market value over time follows a decreasing pattern.
- Other asset-related charges are expected to follow an increasing pattern.
- Obsolescence is a significant but uncertain factor in estimating useful life.
- The interest factor is significant in estimating the value of the future service potential of the asset.

These empirical tests represent the types of implementing criteria that could be used to determine the circumstances in which decreasing-charge methods of depreciation are most appropriate. For example, those methods would probably be most appropriate for automobiles, other forms of rolling stock, and many forms of machinery and equipment when those assets are used under certain circumstances.

*Increasing-charge methods.* Increasing-charge methods of depreciation are primarily based on the notion that some fixed rate of return should be realized on the investment in depreciable assets. The two methods that have been mentioned, the sinking-fund method and the annuity method, are based on an assumed fixed rate of return on the net investment in an asset.

An increasing-charge method would probably produce results that conform with the objectives of the derived tailoring criteria better than the results produced by other methods under circumstances in which empirical evidence indicated that

- The net-revenue contributions or operating efficiency of an asset is indeterminate or, to the extent determinable, tends to be constant or to increase with the age of the asset.
- The asset is used by an enterprise that is able to price its goods or services so as to obtain a fixed rate of return on investment (for example, rates established by regulatory authorities).
- Other asset-related charges are expected to be constant or to decrease over the estimated useful life of the asset.

These empirical tests represent the types of implementing criteria that could be used to determine the circumstances in which increasing-charge methods of depreciation are most appropriate. For example, those methods would probably be most appropriate for the depreciable assets of public utility companies under some circumstances.

## Summary and Conclusions

The foregoing analysis reaffirms the conclusion that depreciation accounting under GAAP is a wholly conventional process. Three types of criteria—constraining, tailoring, and implementing—that might prove useful in rationalizing the process have been identified and analyzed. Some conclusions with respect to those criteria are presented in this section.

**Constraining Criteria.** The five constraining criteria identified in chapter 3 and accepted in this study as establishing the set of acceptable depreciation methods under GAAP are

1. The method should be rational; that is, it should be based on reasonable and relevant data.
2. The method should be systematic rather than discretionary.
3. The method should produce periodic charges to expense rather than lump-sum writeoffs.
4. The method should allocate a depreciable base defined in terms of historical cost.
5. The method should allocate the depreciable base over the life of the asset.

Acceptable methods must meet all five of the constraining criteria. However, since these criteria admit many more methods than those traditionally used in practice, they should be expanded to further restrict acceptable allocation methods. As one observer wrote,

What is the typical course of capital consumption or value erosion over the service lives of capital assets? It should hardly be necessary to say that if we had the requisite data to answer this question we would find not one but many patterns of value erosions for different types of assets, depending on their physical characteristics, the length of the service life, the trend of operating costs with age, the tempo of obsolescence, and other factors.

The data actually available are, however, too fragmentary and defective to permit any such proliferation of erosion patterns. Moreover, since the objective of the whole undertaking is to develop a more realistic basis for allocating depreciation, and since it is obviously impractical to use more than a very few allocation procedures in any event, a multiplicity of patterns would serve no useful purpose. To be significant in the present context, a pattern must have very broad coverage.<sup>40</sup>

Acceptable methods should be restricted to those that are now used in practice. Specifically, they should be limited to (1) net-revenue-contributions methods, (2) the straight-line methods, (3) the units-of-production or the units-of-service methods, (4) decreasing-charge methods (declining-balance and sum-of-the-years'-digits methods), and (5) increasing-charge methods (sinking-fund and annuity methods). That action would make explicit an implicit collective decision of the profession. Also, further constraining the choice of methods would ease the burden of specifying tailoring and implementing criteria.

**Tailoring Criteria.** An ideal tailoring criterion was derived from the concept of "matching" in the sense of associating cause and effect and from the analysis of arguments in support of net-revenue-contributions methods of allocation. The ideal objective of depreciation accounting is to associate cost with the revenue produced on a cause and effect or net-revenue-contributions basis. Since attaining that objective is impracticable, depreciation accounting must be viewed as a wholly conventional process designed to achieve agreed-on objectives. Therefore, tailoring criteria that specify those objectives are desirable.

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<sup>40</sup> George Terborgh, *Realistic Depreciation Policy*, p. 28.

The following five tailoring criteria were derived from arguments in support of allocations methods in use.

1. Allocate the cost of a depreciable asset in proportion to its operating efficiency or some other measure of its contribution to the business.
2. Allocate the cost of a depreciable asset in proportion to the incidence of events contributing to the exhaustion of its usefulness.
3. Recognize a decline in the service potential of a depreciable asset in the period of the decline and measure the decline in conformity with values that a rational purchaser would assign, either at the date of acquisition or at that date and periodically thereafter, to the remaining service potential of the asset. (Market value in the used-asset market may be used as the equivalent of the value that a rational purchaser would assign to the remaining service potential of an asset.)
4. Allocate the cost of a depreciable asset over its useful life in a manner that would tend to equalize the sum of depreciation and other asset-related costs for each year of its useful life.
5. Allocate the cost of a depreciable asset so as to report, other things being equal, a constant rate of return on the net investment in the asset.

Those criteria are recommended tests of the information produced by allocation methods to help guide the choice of method to one that produces comparable results in similar circumstances. The criteria specify some objectives that conflict and that are not equally capable of attainment. Obviously, tradeoffs will be necessary.

The specified objectives are alternative approaches to approximating the ideal of associating cost with revenue on the basis of cause and effect. They are based on the assumptions that the costs of depreciable assets are necessary inputs to the process of producing goods and services and that the patterns of use have a relationship to patterns of revenue production. To the extent that empirical evidence can be adduced about patterns of use, that information can help to determine the pattern of cost allocation. The tailoring criteria should be used to determine the pattern of allocation that produces

results that best approximate the ideal of matching cost with revenue on a cause and effect basis. The weights assigned to each of the criteria would necessarily vary with the circumstances.

The recommended criteria are conventional guides that recognize all the factors generally considered significant in selecting an allocation method. Those factors include (1) the patterns of expected net-revenue contributions and expected changes in those patterns, (2) the susceptibility of assets to wear and tear over time, (3) the relationship between other services and revenue, (4) the effect of obsolescence, (5) the relationship between the decline over time in the market value of an asset and the value that a rational purchaser would assign to the remaining service potential of an asset, (6) the anticipated pattern of other asset-related charges including repairs and maintenance, (7) the anticipated decline in operating efficiency, (8) the interest factor or the time value of services, and (9) the degree of uncertainty relating to the realization of the services that an asset is expected to provide.

**Implementing Criteria.** Implementing criteria are empirical tests to determine the appropriateness of a particular method of allocation in specified circumstances. For broad classes of assets and broad ranges of circumstances, implementing criteria similar to those previously suggested can be developed on the basis of empirical studies. The profession, through its standard-setting machinery, should apply those criteria to prescribe particular methods acceptable for broad classes of assets either by industries or by commonly identifiable circumstances of use. The choice of a particular method in particular circumstances would be made on the basis of the preponderance of empirical evidence that the results produced by a method conform with the objectives of the derived tailoring criteria better than the results that would be produced in those circumstances by other acceptable methods. The straight-line method should be the prescribed method in circumstances for which other methods cannot be justified on empirical grounds. The straight-line method cannot be justified as a superior choice over other methods on logical grounds. But, since depreciation accounting is based on largely conventional rules, the needs of users of financial statements would be best served by as much uniformity in practice as possible.

Given the conventional nature of the depreciation process, the conflicting objectives of the derived tailoring criteria, and the obvious difficulty of applying implementing criteria to test methods, the



straight-line method would undoubtedly become the prescribed method for a significant portion of depreciable assets that are now used in business enterprises. This study, however, recognizes that under some conditions and circumstances the preponderance of empirical evidence would probably justify the use of other methods, if those conditions and circumstances were clearly designated and all companies were required to use the same method in the designated conditions and circumstances. The framework of criteria should be flexible enough, however, to permit companies to depart from the prescribed methods if they are able to demonstrate empirically on an individual basis that another method produces superior results because of conditions peculiar to the individual company.

## Other Matters Relating to Depreciation Accounting

Three additional matters that relate to accounting for depreciable assets are discussed in this chapter: (1) the disclosure of information on depreciable assets in financial statements, (2) the relationship between accounting for depreciable assets for financial statement purposes and for tax and regulatory purposes, and (3) the applicability of the recommendations of this study to specialized industries such as not-for-profit enterprises, government agencies, and certain regulated industries.

### Disclosures in Financial Statements

Generally accepted accounting principles (GAAP) have become more and more explicit as to the information required to be disclosed in financial statements. The Accounting Principles Board (APB) in its final years issued several Opinions that dealt explicitly with required supplementary disclosures in financial statements.<sup>1</sup> The Financial Accounting Standards Board (FASB) continued that practice in its first pronouncement.<sup>2</sup> The Securities and Exchange

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<sup>1</sup> See for example, American Institute of Certified Public Accountants (AICPA) Accounting Principles Board (APB) Opinion No. 22, "Disclosure of Accounting Policies," 1972; APB Opinion No. 31, "Disclosure of Lease Commitments by Lessees," 1973.

<sup>2</sup> Financial Accounting Standards Board (FASB), Standard No. 1, "Disclosures of Foreign Currency Translation Information," (Stamford, Conn.: FASB, 1973).

Commission (SEC) has usually endorsed the pronouncements of the APB and the FASB and in its own pronouncements has frequently enlarged the amount of information required to be disclosed in financial statements. Indeed, the Chief Accountant of the SEC contends that his agency has the primary responsibility to establish and enforce disclosure standards and that the FASB has the primary responsibility to establish measurement standards.<sup>3</sup> Ironically, disclosure threatens to become the tail that wags the dog in financial reporting; as disclosure rules become more and more explicit, they tend to override, if only by implication, generally accepted measurement principles in financial reporting.

**Disclosure Requirements.** Existing disclosure requirements pertaining to depreciation and depreciable assets are set by APB Opinion No. 12 and Opinion No. 22 and by Sections 5-02-14, 5-02-15, and 3-16(m) of Regulation S-X. Opinion No. 12 states that

4. Disclosure of the total amount of depreciation expense entering into the determination of results of operations has become a general practice. The balances of major classes of depreciable assets are also generally disclosed. Practice varies, however, with respect to disclosure of the depreciation method or methods used.

5. Because of the significant effects on financial position and results of operations of the depreciation method or methods used, the following disclosures should be made in the financial statements or in notes thereto:

- a. Depreciation expense for the period,
- b. Balances of major classes of depreciable assets, by nature or function, at the balance-sheet date,
- c. Accumulated depreciation, either by major classes of depreciable assets or in total, at the balance-sheet date, and
- d. A general description of the method or methods used in computing depreciation with respect to major classes of depreciable assets.

In Opinion No. 22, the APB concluded that disclosure of information about the accounting policies of a company are essential to users of financial statements. Among the examples of policies required to be disclosed (paragraph 13) are those relating to depreciation methods.

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<sup>3</sup> John C. Burton, "The SEC and the Changing World of Accounting," *Journal of Contemporary Business*, Spring 1973, pp. 51-64.

The SEC requires more detailed information on depreciable assets. Sections 5-02-14 and 5-02-15 of Regulation S-X state

14. *Property, plant, and equipment.* (a) State separately here, or in a note referred to herein, if practicable, each major class, such as land, buildings, machinery, and equipment, leaseholds, or functional grouping such as revenue producing equipment or industry categories, and the basis of determining the amounts; i.e., cost, cost plus manufacturing profit, etc.

(b) Tangible and intangible utility plant of a public utility company shall be segregated so as to show separately the original cost, plant acquisition adjustments, and plant adjustments, as required by the system of accounts prescribed by the applicable regulatory authorities. This subparagraph shall not be applicable in respect of companies which are not otherwise required to make such a classification or have not completed the necessary original cost studies. If such classification is not otherwise required or if such original cost studies have not been completed, an appropriate explanation of the circumstances shall be set forth in a note which shall include a specific statement as to the status of the original cost studies and, to the extent practicable, the results indicated thereby.

15. *Accumulated depreciation, depletion, and amortization of property, plant, and equipment.*

And Section 3-16(m) of that regulation adds the following disclosure requirements.

(m) *Depreciation, depletion, obsolescence, and amortization.* State the policy followed with respect to—

(1) The provision for depreciation, depletion, obsolescence, and amortization of physical properties and capitalized leases, including the methods and, if practicable, the rates used in computing the annual amounts; . . .

(3) The accounting treatment for maintenance, repairs, renewals, and betterments; and

(4) The adjustment of accumulated depreciation, depletion, obsolescence, and amortization at the time the properties are retired or otherwise disposed of, including the disposition of any gain or loss on sale of such properties.

**Disclosure Practices.** The survey of six hundred companies in the 1973 edition of *Accounting Trends & Techniques*, an annual publication of the American Institute of Certified Public Accountants (AICPA), indicated that virtually all the companies comply with APB Opinion No. 12. For example, over 99 percent of the companies disclose the bases of valuation and the methods of depreciation, and over 97 percent present details (91 percent by type of property) of

depreciable assets. The survey also indicated that most companies disclose the amount of accumulated depreciation in the balance sheet, the amount of depreciation expense in the income statement or the statement of changes in financial position or in notes to the statements. Most companies also disclose the differences, if any, between depreciation expense in computing income taxes and depreciation expense in determining net income, including the tax effect of the differences, as required by APB Opinion No. 11.

**Evaluation of Users' Needs.** Reporting requirements and practices influence, quite naturally, the ways in which users of financial statements perceive their needs. The amount and type of information on depreciation and depreciable assets that *should* be disclosed in financial statements can be evaluated only against that background. The survey of financial analysts and creditors described in chapter 2 (Table 18), p. 32 of this study, indicates that both analysts and creditors perceive a need for several different types of information on depreciation expense and depreciable assets and assign relatively heavy weight to the information required to be disclosed under GAAP. However, the data from the survey can be interpreted in two ways. The data may suggest that (1) users of financial statements are preconditioned to perceive a vague need for all information suggested to them, whether or not they contemplate a specific use for the information; or (2) they recognize that the available information influences the market behavior of securities even though the type of information that has been traditionally available has little bearing on the intrinsic value of securities. Thus, the meaning of the data from the survey is, at best, ambiguous.

Another view of the significance of the attitude of users to the information on depreciable assets traditionally disclosed in financial statements runs as follows:

A brief survey of literature on financial analysis and of some financial analysts does not reveal any desire for specific additional information [about depreciation]. In fact, the survey rather indicates that the analysts do not care to know anything other than the amount of depreciation, so they can remove it from the figures.<sup>4</sup>

If that conclusion were valid, then the perspicacity of financial ana-

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<sup>4</sup> John H. Myers, "Depreciation Manipulation for Fun and Profit," *Financial Analysts Journal*, November-December 1967, pp. 122-23.

lysts would be laudable, because if the objective is to provide information on the current economic condition and prospects of an enterprise, most accountants, economists, and possibly financial analysts would probably agree that, outside the framework of traditional financial reporting, details of the disposition of the historical cost of assets in financial statements are not very informative.

**Recommended Disclosures.** A possible response to the significance that users assigned to the disclosure of information on depreciable assets, as indicated in Table 18 (chapter 2), p. 32, would be to assume that, in the absence of convincing information to the contrary, each item of information in which they expressed an interest is valuable to them and to recommend that financial statements provide as much of that information as possible. However, to recommend that approach would be to withhold one of the benefits of research—the conclusions of the researcher based on his or her evaluation of the evidence. An alternative response, adopted in this study, is to recommend disclosure of information that, based on an evaluation of the evidence considered, should be relevant to users of financial statements in making economic decisions.

If the recommended criteria for determining useful lives and for selecting depreciation methods set forth in this study are adopted, users of financial statements would probably continue to perceive a need for much of the information traditionally disclosed in financial statements. However, adoption of the recommended guidelines would provide an improved structure for the process of depreciation and, perhaps, would make the information disclosed more relevant and understandable. Accordingly, present disclosure requirements should be continued with only minor modification. The supplemental disclosures recommended include the following.

1. Total depreciation expense for the period.
2. The following information in total and by major categories of depreciable assets (for example: buildings, machinery and equipment, leasehold improvements, and furniture and fixtures).
  - a. Amount invested.
  - b. Depreciation methods used for financial statements and income taxes.
  - c. Accumulated depreciation and the undepreciated balance.
  - d. The range of, and average, useful lives.

- e. The cost of additions and the cost of, and the amount of accumulated depreciation on, retirements.
3. Depreciable assets pledged to secure debt.
4. The total amount of other asset-related costs for the period.
5. Commitments for expenditures for depreciable assets during the next reporting period.

No recommendations are made with respect to disclosure of information on current values and product lines. That type of information may well be useful, but the desirability of the disclosure of that type of information involves broader questions than can be considered in this study. The recommended disclosures also omit information about the relative age and state of repair of the assets, the degree of utilization, the susceptibility to obsolescence, and the likelihood that the assets will soon be replaced. Although information of that type may be useful, present accounting and auditing techniques do not appear capable of accumulating and verifying that information.

## **CASB Standards**

The Cost Accounting Standards Board (CASB) was established to prescribe cost accounting standards for government contractors. Inevitably, the standards promulgated by the CASB will tend to overlap financial reporting standards. The impact on accounting for depreciable assets is already evident in the standards on capitalization and depreciation of tangible capital assets. The purpose of the standard on capitalization is stated as follows:

This Standard requires that, for purposes of cost measurement, contractors establish and adhere to policies with respect to capitalization of tangible assets which satisfy criteria set forth herein. Normally, cost measurements are based on the concept of enterprise continuity; this concept implies that major asset acquisitions will be capitalized so that the cost applicable to current and future accounting periods can be allocated to cost objectives of those periods. A capitalization policy in accordance with this Standard will facilitate measurement of costs consistently over time.<sup>5</sup>

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<sup>5</sup> Commerce Clearing House, *Cost Accounting Standards Guide*, 1973, Section 4381, par. 404.20.

The standard on depreciation is intended to

provide criteria and guidance for assigning costs of tangible capital assets to cost accounting periods and for allocating such costs to cost objectives within such periods in an objective and consistent manner. The Standard is based on the concept that depreciation costs identified with cost accounting periods and benefiting cost objectives within periods should be a reasonable measure of the expiration of service potential of the tangible assets subject to depreciation. Adherence to this Standard should provide a systematic and rational flow of the costs of tangible capital assets to benefited cost objectives over the expected service lives of the assets.<sup>6</sup>

The standards of the CASB are issued for a special purpose and should not serve as models for financial accounting standards. The objectives of financial reporting, which should be the only guide to the development of financial accounting standards, differ significantly from the objectives of CASB standards. However, the methods of developing the two sets of standards may be similar. For example, the CASB standards on depreciable assets illustrate the use of criteria in establishing guidelines for depreciation accounting.

### **Income Tax vs. Financial Accounting**

Historically, accounting for depreciable assets has been influenced by the reporting requirements of other users, particularly taxing authorities. Before 1954, for example, the great majority of companies used the straight-line method of allocation, which was the method clearly preferred by the Internal Revenue Service. Then, when the Internal Revenue Code of 1954 allowed the use of decreasing-charge methods in computing taxes, many companies adopted those methods, most not only for taxes but also for financial reporting. In the last several years, however, many of those companies returned to the straight-line method for financial reporting and retained decreasing-charge methods for taxes.

The tendency for depreciation accounting to follow tax law and regulation creates more problems than it solves, because the objectives of financial accounting and taxation differ. Within the past two decades in particular, taxing authorities have adopted tax accounting provisions to stimulate the economy or to promote other objec-

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<sup>6</sup> Cost Accounting Standards Board, "Rules and Regulations," Part 409, Section 409.20, *Federal Register*, January 29, 1975, p. 4264.



tives that have little to do with financial reporting. The tax advantages such provisions have produced have tended to make both management and public accountants less critical of their validity for financial reporting.

The income tax laws as originally conceived in the United States obviously intended to base income taxes on business income as determined in financial accounting.<sup>7</sup> The Revenue Act of 1918, Section 212(b), specified that "The net income shall be computed . . . in accordance with the method of accounting regularly employed in keeping the books of such taxpayer." That intent was reaffirmed by early tax regulations and by subsequent legislation.

Practical necessity stands out as the principal reason why tax laws and tax authorities have relied and will continue to rely on financial accounting to provide the data necessary to compute taxable income. Income tax returns and financial statements are both summaries of a large number of transactions—essentially the same transactions. If taxable income were to be computed independently of financial accounting, the task of prescribing the detailed procedures for tax accounting would be formidable. Tax laws and regulations would need to specify the treatment of all the transactions of a business enterprise instead of depending on financial accounting. A business of even moderate size would find the burden of maintaining separate records for tax purposes intolerable. Thus, both practicality and economy dictate that taxable income and financial income be based on essentially the same records.

But despite historical and practical reasons for the basic identity of taxable income and financial income, differences between the two have arisen for several reasons, including the following:

1. Concern that the incidence of taxation be fair.
2. Economic and social policies of government.
3. Efforts to reduce the burdens of compliance with, and administration of, tax laws.
4. Changes in GAAP.

Differences arising from all four of these causes are not likely to decrease, and they may well increase. Equitable distribution of

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<sup>7</sup> See, for example, George O. May, "Historical Foreward" in Dan Throop Smith and J. Keith Butters, *Taxable and Business Income* (New York: National Bureau of Economic Research, Inc., 1949).

the tax burden has long been a mark of a good tax system, and efforts to make the federal income tax more equitable will undoubtedly continue. Also, despite numerous objections, the evident tendency to use tax laws and regulations to achieve economic and social goals is likely to continue. Reducing the dual burdens of compliance with, and administration of, tax law is another commendable goal that will be pursued in the future. Finally, changes and improvements in financial accounting continue to be made.

Whatever their cause, changes in taxation and financial accounting have over the years created two separate concepts of income—accounting income and taxable income. And that result is more than a historical fact and a future probability; it is an inherent necessity, because many of the changes in taxable income have resulted from, and will continue to result from, considerations that have no relevance to accounting income. And those changes should not affect reports to investors, creditors, and other users of general-purpose financial statements. Likewise, improvements in financial accounting should not be held back simply because tax law and regulation cannot or should not follow. Competition between the objectives of financial reporting and of taxation is not in the public interest. And that competition is forestalled by recognizing accounting income and taxable income as distinctly different concepts.

As long as conflicts between objectives do not arise, accounting for depreciable assets for federal income tax purposes should follow the accounting for financial statement purposes. But when conflicts arise, as they inevitably will, they should be resolved by permitting differences between the accounting procedures employed for tax and financial statement purposes.

This study's recommendations for accounting for depreciable assets are based on nontax considerations exclusively and do not relate to the nonaccounting considerations appropriate in tax law and regulations. However, to the extent that conforming the measurement of taxable income to the measurement of accounting income is appropriate, the recommendations are appropriate for the computation of taxable income.

### **Applicability of Recommendations to Specialized Enterprises**

Historically, accounting for depreciable assets in some enterprises, both business enterprises and not-for-profit organizations, has dif-

ferred from depreciation accounting under GAAP. Railroads, for example, have traditionally followed a unique practice known as "replacement accounting," under which replacements of certain assets such as rails and other track materials are charged to expense rather than capitalized. Public utilities capitalize interest on assets constructed for their own use, a practice seldom followed in other industries. And many governmental units and not-for-profit enterprises do not recognize depreciation as an operating expense. Most of those practices and others are defended on the grounds that either they are required or encouraged by regulatory authorities or they are necessary to reflect relevant economic circumstances.

To the extent that regulatory authorities have made certain accounting procedures either mandatory or economically so beneficial that companies cannot be realistically expected to abandon them, accountants may have no alternative to accepting those procedures. For example, the Interstate Commerce Commission still requires railroads to use replacement accounting, and public utility rate structures give economic incentives for public utility companies to include as much as possible in the cost of depreciable assets. Until the regulations are changed, those practices can only be recognized for what they are, as aberrations from GAAP.

The existing diversity in accounting for depreciable assets with respect to financial accounting and reporting in business enterprises organized for profit has been the principal concern of this study, and some conclusions and recommendations have been developed. In accounting for governmental units and not-for-profit enterprises, however, some considerations in accounting for depreciable assets differ fundamentally from those appropriate to accounting in business enterprises organized for profit. To the extent that organizations are not profit-seeking enterprises or required to make cost determinations, there is no need to match costs with revenue or to assign costs to cost objectives and, accordingly, no need to allocate the costs of fixed assets to determine net profit or the costs of specific projects. The primary emphasis in those circumstances, which is reflected in fund accounting, is an accountability for the resources and their utilization to meet the objectives of the organization. In those circumstances, not-for-profit organizations, through the financial statements, direct their attention to the stewardship of the funds entrusted to them and to "the uses made of such funds, by careful segregation into separate fund groups, according to the pur-

poses specified by or inherent in the fund source.”<sup>8</sup> It is customary in those circumstances to record fixed assets in fixed-asset or plant-fund groups to provide accountability for the amounts invested in fixed assets. That type of accounting also serves the “stewardship needs to provide for physical and dollar value control.”<sup>9</sup> In circumstances in which fund accounting is used strictly for accountability and stewardship, depreciation accounting is neither necessary nor recommended.

In other circumstances, however, depreciation accounting is useful for governmental or not-for-profit organizations. It is useful for (1) enterprise and intragovernmental service funds or other “quasi-business” funds (for example, hospital “unrestricted funds”) that include fixed assets as a part of fund groups; (2) organizations that require depreciation data in accounting for the cost of services or programs; (3) programs that require depreciation to be included as a cost for reimbursements or grants; and (4) organizations or programs in which systematic amortization of cost is desired to recognize use or obsolescence.

Whether or not depreciation is recorded in the financial statements and when and how it is reported depend on the specific purpose of the governmental fund or the type of not-for-profit organization.<sup>10</sup> Analysis of the reasons for the variations among the various organizations is outside the scope of this study. Nonetheless, the general statement may be made that whenever there is a need to match costs with revenue or whenever it is relevant to measure and report the cost of rendering current services, depreciation accounting is required and should be included in the financial statements. In those circumstances, the basic criteria set forth in this study are applicable.

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<sup>8</sup> American Council on Higher Education, *College and University Business Administration*, rev. ed. (Washington, D.C.: American Council on Higher Education, 1968), p. 286.

<sup>9</sup> AICPA, *Industry Audit Guide, Audits of State and Local Governmental Units*, (New York: AICPA, 1974) p. 17.

<sup>10</sup> For a discussion of the various rules relating to the needs for depreciation and when and how such depreciation should be recorded in the financial statements, see the following AICPA Industry Audit Guides: *Audits of State and Local Governmental Units*, 1974, pp. 17-18; *Audits of Colleges and Universities*, 1973, pp. 9-10; *Hospital Audit Guide*, 1972, pp. 4-5.

# 8

## Summary of Findings and Conclusions

A framework for analysis of accounting for depreciable assets under generally accepted accounting principles (GAAP) has been developed in this study. It is hoped that this framework will prove useful in developing policies that will improve accounting for depreciable assets and narrow the areas of difference in practice. Specific conclusions and recommendations are summarized in this chapter. As previously noted, the framework for analysis may prove to be more useful than the conclusions and recommendations.

### Survey of Preparers and Users

The results of separate questionnaire surveys of preparers (financial executives) and users (financial analysts and creditors) of financial statements which were conducted for this study are presented and analyzed in chapter 2. A great deal of significant information was gathered, but the information alone does very little to resolve the many complex issues in depreciation accounting.

The information obtained from an analysis of the results of the surveys is summarized as follows:

1. Preparers and users agree substantially on the costs that should be capitalized and on the adjustments to capitalized costs necessary to determine the depreciable base.
2. The straight-line method of depreciation is more widely used than all other methods of depreciation combined. The straight-line method is more frequently used in companies with
  - a. Relatively large investments in depreciable assets.
  - b. Relatively high depreciation charges.
  - c. Common stock listed on the major stock exchanges or traded in the over-the-counter market.
  - d. Managements that evidence a high level of concern for matching costs with revenue and comparability with other firms in the industry and a low level of concern for conforming depreciation accounting in financial reporting and in determining income taxes.
3. Decreasing-charge methods are most frequently used for financial reporting in companies with
  - a. An investment appeal that is influenced by income tax considerations.
  - b. Small companies in which financial accounting tends to conform with income tax requirements.
4. No correlation is evident between allocation methods and the nature of assets or types of industries.
5. Preparers and users generally agree (with slight differences in ranking) on the factors that are significant in selecting an allocation method.
6. The misconception that depreciation accounting provides funds is found among both preparers and users.
7. The following objectives of depreciation accounting are generally ranked low by both preparers and users:
  - a. To equalize total annual charges for depreciation and other asset-related expenses for each year of the useful life of an asset.

- b. To obtain a constant rate of return on the net investment in depreciable assets (cost less accumulated depreciation).
  - c. To offset changes in the general price level.
  - d. To measure the decline in the present value of the estimated future revenue or net income on an asset.
8. Most of the recent changes in allocation methods in financial accounting have been from decreasing-charge methods to the straight-line method.
  9. The most common reasons given for changing depreciation methods were
    - a. "Conformity to industry practice."
    - b. "The trend in financial reporting."
  10. Most changes in methods increased net income in the year of the change.
  11. Both preparers and users generally selected the same factors as important in estimating useful life as they selected for choosing an allocation method.
  12. Companies that reported differences between financial and tax accounting for depreciable assets tended to be large companies and companies with relatively large investments in depreciable assets. The effects, where determinable, of the great majority of the differences were to report income earlier in financial statements than for taxes. The nature of the differences and the percentage of respondents reporting each type were as follows:
 

a. Allocation methods	68 percent
b. Useful lives	40 percent
c. Property units	25 percent
d. Capitalization policies	17 percent
e. Adjustments to determine depreciable base	8 percent
  13. Depreciation accounting for internal and external reporting was generally the same.
  14. Virtually all respondents to the users' questionnaire identified correctly the concept of depreciation accounting under GAAP, and more respondents prefer that concept to

any of the alternatives that were suggested in the questionnaire. However, a reasonable inference from the responses to the questionnaire is that users have difficulty in determining and articulating their needs for information about depreciable assets.

The surveys provided useful background information for an analysis and evaluation of depreciation accounting from the perspectives of both preparers and users of financial statements. The results of the surveys suggest a need to improve accounting and reporting practices, particularly in those areas in which no broad consensus of practice exists.

### **Criteria in Accounting**

Chapter 3 contains a conceptual analysis of criteria that develops a decision framework for selecting alternative accounting methods. The analysis identifies three types of criteria that are essential to rationalizing the process of selecting accounting alternatives: (1) constraining criteria, (2) tailoring criteria, and (3) implementing criteria.

In depreciation accounting, constraining criteria identify acceptable allocation methods by prescribing the features that each method must possess. Tailoring criteria identify the objectives of depreciation accounting and thereby help to tailor acceptable methods to circumstances. Implementing criteria, ideally based on empirical investigation, describe the circumstances in which each acceptable method is to be used to accomplish the objectives established by the tailoring criteria.

### **Depreciable Base**

The decision framework developed in chapter 3 is used in chapter 4 to analyze the accounting issues that relate to determining the depreciable base. Depreciable assets are measured at their historical cost under GAAP. Thus, the measurement basis is constrained to a single method with an explicit objective, and tailoring criteria are unnecessary. However, accepting the historical cost principle as a given constraint still leaves several implementation issues that relate to determining depreciable base in particular circumstances. Those issues relate to the policies for determining property units, the com-



position of acquisition cost, the disposition of salvage value and removal costs, the disposition of postacquisition expenditures, and the propriety of reducing the depreciable base to recoverable cost for an impairment in value.

Most of those issues have been resolved by a consensus of practice. Although a consensus of practice does not represent the most satisfying resolution of an accounting issue, that type of resolution is accepted in this study as the best available under the circumstances. Essentially, the objective of the study is to recommend means of narrowing the areas of differences in practice. Therefore, in areas of practice in which no substantive differences were found, no changes are deemed necessary.

However, the following conclusions and recommendations were developed to deal with those areas of practice in which no consensus was found.

1. A general solution to the complex problem of determining property units is not feasible, but individual companies should establish policies that facilitate making the capitalize/expense decision and estimating the useful lives of depreciable assets and then follow those policies consistently.
2. In order to eliminate the diversity in practice in allocating overhead costs (especially interest during construction) to self-constructed assets, all companies should be required to allocate to self-constructed assets overhead costs of the type considered to have "discernible future benefits" for the purpose of determining the cost of inventory.
3. Only those postacquisition expenditures on depreciable assets that enhance the future benefits expected from the assets should be capitalized; other expenditures should be charged to expense as incurred.
4. Material amounts of estimated removal costs should be recognized in determining the depreciable base of an asset only to the extent of the estimated salvage value; actual removal costs in excess of salvage value should be recognized in the depreciable base of the replacement asset.
5. The carrying value of a depreciable asset should be reduced to recoverable cost to recognize an impairment in value only in unusual circumstances to prevent gross misrepresentation.

These rules represent implementing criteria that can be applied on the basis of empirical evidence to narrow differences in practice.

## Useful Life

Chapter 5 considers the process of estimating useful life with the objective of finding means of structuring the largely judgmental process to improve the consistency and comparability of estimates. Within the framework of criteria developed in this study, constraining criteria designate “useful life” as the measurement concept for the allocation period in depreciation accounting. But that concept is troublesome in accounting because applying it requires the prediction of the outcome of uncertain future events.

The conclusion reached in chapter 5, after consideration of the nature of estimates and the factors involved in estimating useful lives of depreciable assets, is that users of financial statements would be best served if objectivity and comparability, not ultimate accuracy, were the standards for evaluating the process. The means recommended for increasing the objectivity of the process and improving the comparability of the results are implementing criteria that represent relatively straightforward rules or guides to structure the process and restrict management’s exercise of judgment in particular circumstances.

The recommended criteria, each of which involves empirical tests, are as follows.

1. The estimate of “useful life” encompasses that span of time beginning after an asset is wholly ready for use and begins to benefit the owner significantly *or* when its ability to benefit the owner begins to expire, and ending when the asset is no longer expected to benefit the owner *or* when its ability to benefit the owner is expected to expire.
2. The estimate does not reflect unpredictable events (casualties that are not routine and predictable hazards, sudden obsolescence from revolutionary changes in technology, losses from unexpected government action, and similar events) as events contributing to the end of useful life.
3. The estimate recognizes in a reasonably adequate manner
  - The pattern of anticipated use.
  - The predictable effects of obsolescence.

- The effects of wear and tear from use or from the passage of time.
  - The level of maintenance that a prudent person would consider normal for the asset or class of assets.
4. The estimate is consistent with reliable past average lives (determined on the basis of competent historical data and, if feasible, by the use of statistical techniques) for the asset or class of assets in
    - a. The industry, if the use of the asset or class of assets is unique to the industry or if the circumstances of use in the industry have unique characteristics.
    - b. The circumstances of use, if the circumstances of use of the asset or class of assets have characteristics that are common to more than one industry.
    - c. The individual company, if the use of the asset or class of assets is unique to a company or the circumstances of use in the company have unique characteristics.
  5. The estimate is supported by other competent evidence, such as engineering studies, if competent historical evidence is not available.

The profession should apply the criteria to develop guidelines for estimating the useful lives for broad classes of assets by industries or commonly identified circumstances of use. Guidelines need to be developed to cover all significant classes of depreciable assets that are now used in business enterprises, but they need not be established for classes of assets—such as office furniture, fixtures, and equipment—for which depreciation charges are not normally a significant factor in the operations of a company. For those classes of assets for which guidelines are prescribed, companies should be required to follow the guidelines or to justify a departure from the guidelines on the basis of the established criteria. For other assets, companies should be required to follow the established criteria in estimating useful lives.

### **Allocation Methods**

Criteria for choosing allocation methods are developed in chapter 6. The analysis in that chapter confirms previous findings that the process of cost allocation is wholly conventional, but, nonetheless,

an attempt is made to develop criteria, based on the decision framework developed in chapter 3, for rationalizing and structuring the process. Specific criteria consistent with that framework are identified and evaluated.

**Constraining Criteria.** The definition of depreciation accounting in *Accounting Terminology Bulletin No. 1* contains the following five constraining criteria that prescribe acceptable allocation methods.

1. The method should be rational; that is, it should be based on reasonable and relevant data.
2. The method should be systematic rather than discretionary.
3. The method should produce periodic charges to expense rather than lump-sum write-offs.
4. The method should allocate a depreciable base defined in terms of historical cost.
5. The method should allocate the depreciable base over the life of the asset.

Acceptable methods must meet all five of these constraining criteria.

**Tailoring and Implementing Criteria.** Several approaches to deriving tailoring and implementing criteria are explored in chapter 6. An appeal to postulates is dismissed as a possible approach because of the limitations of the study. An appeal to accounting concepts and conventions provides little conceptual guidance. An appeal to the needs of users of financial statements proves to be fruitless.

Finally, five tailoring criteria are derived from allocation methods in use and several empirical tests are suggested as illustrations of implementing criteria to associate methods with particular circumstances. The five derived tailoring criteria are as follows:

1. Allocate the cost of a depreciable asset in proportion to its operating efficiency or some other measure of its contribution to the business.
2. Allocate the cost of a depreciable asset in proportion to the incidence of events contributing to the exhaustion of its usefulness.
3. Recognize a decline in the service potential of a depreciable asset in the period of the decline, and measure the decline

in conformity with values that a rational purchaser would assign, either at the date of acquisition or at that date and periodically thereafter, to the remaining service potential of the asset. (Market value in the used asset market may be used as the equivalent of the value that a rational purchaser would assign to the remaining service potential of an asset.)

4. Allocate the cost of a depreciable asset over its useful life in a manner that would tend to equalize the sum of depreciation and other asset-related costs for each year of its useful life.
5. Allocate the cost of a depreciable asset so as to report, other things being equal, a constant rate of return on the net investment in the asset.

The derived criteria are tests of the information produced by allocation methods that can help guide the choice of method to those that produce comparable results in similar circumstances. The criteria specify some objectives that conflict and obviously require tradeoffs. The specified objectives are alternative approaches to approximating the ideal of associating cost with revenue on the basis of cause and effect.

**Conclusions.** The appeal for criteria to govern an essentially conventional process is an appeal to policy-making authority to establish necessary criteria to help achieve the objectives of financial accounting and financial statements. The conclusions and recommendations based on the analysis in chapter 6 are as follows.

1. The set of acceptable allocation methods should be further constrained to those that are now widely accepted in practice.
2. The tailoring criteria derived from arguments in support of methods in use should be adopted to specify the objectives of depreciation accounting.
3. Implementing criteria for broad classes of assets and broad ranges of circumstances should be developed on the basis of empirical studies.
  - a. The profession through its standard-setting machinery should apply those criteria to prescribe particular meth-

- ods for assets or for broad classes of assets by industry or by common circumstances of use. The choice should be made on the basis of the preponderance of empirical evidence.
- b. The straight-line method should be the prescribed method in circumstances for which a choice of methods cannot be made on the basis of empirical evidence.
  - c. Companies should be allowed to use a method different from the prescribed method only if they are able to demonstrate empirically that in the particular circumstances another method produces superior results in conformity with the objectives specified by the tailoring criteria.

These conclusions and recommendations are based on the premise that it is better for a wholly conventional process to be structured to achieve agreed-on objectives, even if short of an ideal objective, than for the process to be left to the whims of a company's management and its accountants.

## **Other Issues**

Conclusions and recommendations are developed in chapter 7 with respect to four issues that relate to depreciation accounting.

First, a recommendation is developed for the disclosure in financial statements of information on depreciation and depreciable assets. Factors considered in developing the recommendation include the increasing significance of disclosure in financial reporting, present disclosure requirements and reporting practices, and the needs of users as indicated in the survey conducted for this study. The recommended disclosures include all the types of information relating to depreciable assets that are now required, in one form or another, in financial statements; explicit requirements for more detailed disclosures by major categories of depreciable assets; and the disclosure of commitments to acquire additional depreciable assets. Justification for the recommendations is found in the broad consensus in practice that substantially conforms to existing reporting requirements; the expressed needs of users of financial statements for the forms of information traditionally disclosed in financial statements; and the belief that, if the other recommendations in this study are adopted, the traditional forms of disclosure will become

more relevant and understandable to users of financial statements.

Second, the conclusion is reached that, although substantially the same basic data are used to measure taxable income that are used to measure accounting income, the two concepts of income differ and different considerations are appropriate in measuring each. Accordingly, the conclusions and recommendations in this study are not intended to apply to the computation of taxable income, except to the extent that the computation of taxable income conforms with the measurement of net income in financial accounting.

The third issue considered is the possible impact of the standards of the Cost Accounting Standards Board (CASB) on depreciation accounting. The CASB standards, like income tax accounting, serve a special purpose and should not serve as models for financial accounting standards.

Fourth, a discussion of accounting for depreciable assets in specialized enterprises and not-for-profit organizations recognizes that those forms of organizations often follow practices in accounting for depreciable assets that differ from those appropriate to business enterprises in general. Regulatory authorities often require or encourage regulated industries to follow accounting practices that cannot be justified on any grounds and must be viewed as accounting anomalies. However, considerations other than those appropriate in financial accounting may be appropriate in determining whether many governmental units and not-for-profit organizations should use depreciation accounting. Nevertheless, to the extent that those organizations need to allocate the cost of depreciable assets to cost objectives or to reporting periods for the purpose of measuring the cost of products or services or performance in terms of accounting net income, depreciation accounting appropriate in financial accounting for business enterprises in general is appropriate in accounting for those organizations. Thus, under those circumstances the recommendations of the study apply to accounting for depreciable assets in those organizations.

# **Questionnaire Used in Survey of Practices**



**American Institute of Certified Public Accountants  
Accounting Research Division**

**Project Advisory Committee on Depreciation Accounting**

**MICHAEL N. CHETKOVICH, *Chairman***  
Partner, Haskins & Sells

**NORTON M. BEDFORD**  
Professor, University of Illinois

**GORDON R. COREY**  
Chairman of the Finance Committee  
Commonwealth Edison Company

**WRIGHT C. COTTON**  
General Assistant Comptroller  
General Motors Corporation

**ROBERT E. PFENNING**  
Comptroller  
General Electric Company

**JAY H. PRICE, JR.**  
Partner  
Arthur Andersen & Co.

**GEORGE TERBORGH**  
Research Director  
Machinery and Allied Products  
Institute

## Letter Sent With Questionnaire Used in Survey of Practices

June 22, 1970

The Accounting Research Division of the American Institute of Certified Public Accountants needs your assistance in its efforts to gather facts and opinions on accounting for depreciable assets and requests your cooperation in completing the enclosed questionnaire. The responses to the questionnaire will be used as part of the source data for a research study on accounting for depreciable assets, which is being conducted by a research team under the supervision of Charles W. Lamden, partner of Peat, Marwick, Mitchell & Co. The members of the project advisory committee for the study are shown on the enclosed list.

The study will analyze the concepts underlying current practice in accounting for depreciable assets to develop recommendations for narrowing alternative generally accepted accounting practices and improving the usefulness of general purpose financial statements to users. The Accounting Principles Board will consider the study in preparing an Opinion on the topic.

The questionnaire seeks to gather information about depreciation practices and policies and to elicit opinions and suggestions from responsible financial executives. Its structure and content are as follows:

Part I.            General Information

Information on the nature, size, and internal financial relationships of the company.

Part II.           Accounting Policies and Practices

Information on:

- a. Recorded value of depreciable assets
- b. Capitalization policies
- c. Useful lives of depreciable assets
- d. Depreciation methods
- e. Property units
- f. Use of depreciation in internal reports.

Part III.          Opinions

Opinions on the relative importance of various objectives of depreciation and suggestions for improvements.

Questions relate to accounting for domestic assets only. They are designed to minimize respondents' efforts in answering them. Many questions can be answered merely by circling code numbers, which are provided to facilitate processing the data and have no significance to respondents, other than their location on the page. Two fold-out sections are included in the questionnaire to facilitate answering questions involving common information. You may supplement your responses to the questions with further opinions that you think pertinent to the study.

Multi-industry companies may find that a code number has been circled in question F2 (page 2) to indicate their principal business activity for which information is requested. Those companies should omit from their responses information about assets devoted to other business activities.

Although space is provided in Part I for the name of the company and of the person completing the questionnaire, you may not want to identify yourself or the company. No company or person will be identified with the published results, however, and I hope you will identify your company so that I can contact you further should the need arise. Your answers to specific questions will be included only in statistical tabulations and your views and suggestions will not be identified with your company.

I am sending the questionnaire to about 420 industrial companies, but please do not feel that because your company is only one of a large number that your cooperation is unimportant. I realize the questionnaire is complex and that completing it will be time consuming. If the Accounting Principles Board is to carry out its mission, however, it needs your assistance. I would appreciate it very much if you carefully complete the questionnaire and return it to me by July 24, 1970. A stamped, addressed envelope is enclosed for your convenience.

Sincerely yours,

Reed K. Storey, Director  
Accounting Research

RKS:mb  
Enclosures

# Survey of Policies and Practices

## Accounting Research Study Accounting for Depreciable Assets 1970

American Institute of Certified Public Accountants

### PART I. GENERAL INFORMATION

A. COMPANY NAME \_\_\_\_\_

B. ADDRESS \_\_\_\_\_

C. RESPONDENT NAME \_\_\_\_\_

RESPONDENT TITLE \_\_\_\_\_

D. May our research team contact you for purposes of:

1. Clarification, if necessary? Yes \_\_\_\_\_ No \_\_\_\_\_

2. A more intensive follow-up interview? Yes \_\_\_\_\_ No \_\_\_\_\_

E. TELEPHONE NUMBER (If either D1 or D2 is answered "yes")

\_\_\_\_\_  
Area Code

\_\_\_\_\_  
Number

\_\_\_\_\_  
Extension

PART I. GENERAL INFORMATION (Continued)

F. PRINCIPAL BUSINESS ACTIVITY:

1. Standard Industry Classification Code Number (PLEASE WRITE IN THE SIC CODE NUMBER THAT BEST DESIGNATES YOUR PRINCIPAL ACTIVITY.)

SIC Code Number \_\_\_\_\_ 10/14

2. Please indicate *principal* business activity by circling code number to the right.

(CIRCLE)

- a. Mining (excluding petroleum extraction) ..... 1 15/
- b. Contract construction ..... 2
- c. Railroad ..... 3
- d. Steamship ..... 4
- e. Airline ..... 5
- f. Other transportation and related services ..... 6
- g. Electric, gas, water and telephone utilities ..... 7
- h. Wholesale and retail trade ..... 8
- i. Finance, banking, brokerage, insurance ..... 9
- j. Real estate ..... 1 16/
- k. Hotels, motels ..... 2
- l. Personal services ..... 3
- m. Motion picture, amusements, recreation ..... 4
- n. Food processing and tobacco ..... 5
- o. Wood products, furniture, paper, packaging ..... 6
- p. Printing and publishing ..... 7
- q. Chemical, petroleum, rubber (including petroleum extraction) ..... 8
- r. Primary metals ..... 9
- s. Machinery, equipment, instruments, other metal products, and manufacturing not otherwise classified ..... 1 17/
- t. Textile mills, apparel (excluding footwear) ..... 2
- u. Leather, stone, clay, glass (including footwear) ..... 3
- v. Agriculture, forestry and fishery ..... 4
- w. Other (please describe) ..... 5

(INSTRUCTIONS FOR COMPLETING THIS FLAP ARE ON PAGE 3)

OFFICE USE ONLY	ASSET CATEGORY
	A- BUILDINGS _____>
	B- _____>
	C- _____>
	D- _____>
6/	E- BUILDING IMPROVEMENTS _____>
	F- LEASEHOLD IMPROVEMENTS _____>
	G- MACHINERY _____>
	H- _____>
	I- _____>
7/	J- _____>
	K- FURNITURE AND FIXTURES _____>
	L- _____>
	M- _____>
	N- _____>
8/	O- TRANSPORTATION EQUIPMENT _____>
	P- _____>
	Q- _____>
	R- _____>
	S- OTHER EQUIPMENT _____>
9/	T- _____>
	U- _____>
	V- _____>
	W- TOOLS _____>
	X- DIES, PATTERNS, MOLDS, DRAWINGS _____>
	Y- CONTAINERS _____>
	Z- OTHER (DESCRIBE) _____>
	a- _____>
	b- _____>
	c- _____>

G. FINANCIAL DATA, LATEST YEAR:\*

Please circle the appropriate code number under each recording column

	At least:	But under:	Total revenue	Net income**	OR	Net loss**
	\$ _____	\$ 1 million	1	1		1
	1 million	10 million	2	2		2
	10 million	100 million	3	3		3
	100 million	500 million	4	4		4
	500 million	1 billion	5	5		5
	1 billion	_____	6	6		6
			18/	19/		20/

H. FINANCIAL RELATIONSHIPS, LATEST YEAR:\*

Please circle the appropriate code number under all four recording columns:

	At least	But under	Net depreciable assets as a % of total assets	Depreciation charges as a % of net income or loss**	Maintenance expense as a % of net income or loss**	Rental expense for depreciable assets as a % of net income or loss**
	—	5%	1	1	1	1
	5%	10%	2	2	2	2
	10%	25%	3	3	3	3
	25%	50%	4	4	4	4
	50%	75%	5	5	5	5
	75%	—	6	6	6	6
			21/	22/	23/	24/

\*If the latest year is materially untypical, please use the most recent representative year.

\*\*Before extraordinary items.

## PART II. ACCOUNTING POLICIES AND PRACTICES

The next section of the questionnaire is devoted to your company's financial statement (non-tax) accounting policies and practices as they relate to domestic depreciable assets. On the fold-out flap to the left are listed 10 categories of depreciable assets. Please complete the following three steps:

- a. Circle all the listed categories which comprise the depreciable assets of your company. Ignore categories where the company's investment is negligible.
- b. For certain of the listed categories space is provided for you to write in any subcategories that are treated differently for depreciation purposes, e.g., depreciation method, or useful life, or property unit, etc. Please write them in briefly on the lines provided, one to a line.
- c. If some of your depreciable assets cannot be properly classified under any of the ten designated categories, please write them in briefly on the lines provided under the "Other" heading at the bottom of the flap, one to a line.

### ASSET CATEGORY EXAMPLE

This example shows how you would record the left-hand flap if your assets consisted of:

1. Buildings—depreciated individually but all over the same useful life and same method.	A- BUILDINGS _____>
	B- _____>
	C- _____>
	D- _____>
	E- BUILDING IMPROVEMENTS _____>
2. Large mixing machines—each depreciated on declining balance method.	F- LEASEHOLD IMPROVEMENTS _____>
	G- MACHINERY _____>
	H- Large mixing machines _____>
	I- Small machines _____>
3. Small machines—each depreciated on the straight line method.	J- _____>
	K- FURNITURE & FIXTURES _____>
	L- _____>
4. Furniture and fixtures—depreciated straight line on the composite life method.	M- _____>
	N- _____>
	O- TRANSPORTATION EQUIPMENT _____>
	P- Railroad cars _____>
5. Railroad cars and related equipment—depreciated individually, straight line method.	Q- Autos and trucks _____>
	R- _____>
	S- OTHER EQUIPMENT _____>
6. Autos and trucks—individually depreciated, declining balance method.	T- _____>
	U- _____>
	V- _____>
	W- TOOLS _____>
7. Small tools—depreciated on the composite life method.	X- DIES, PATTERNS, MOLDS, DRAWINGS _____>
	Y- CONTAINERS _____>
	Z- OTHER (DESCRIBE) _____>
	a- _____>
	b- _____>
	c- _____>

**VALUE AT WHICH DEPRECIABLE ASSETS ARE RECORDED ON FINANCIAL STATEMENTS**

**Question 1:** If under your company's current capitalization policy *all* depreciable assets are recorded at *acquisition cost*, please circle the code number to the right, and then skip to Question 2:

\_\_\_\_\_ All assets recorded at acquisition cost → 1 25/

If any of your depreciable assets are recorded at other than acquisition cost, please *write in next* to the value used the asset category (categories) you specified on the fold-out flap to the left.

	<i>Asset category (write in)</i>	
a. Replacement cost .....	_____	26/29
b. Original cost (utility concept, viz., cost to the person first devoting it to public service) .....	_____	30/33
c. Appraised value .....	_____	34/37
d. Price level adjusted cost .....	_____	38/41
e. Estimated realizable value .....	_____	42/45
f. Nominal amount .....	_____	46/49
g. Other (describe) _____	_____	50/54

**Question 2:** If your firm has had *no* significant experience with acquiring depreciable assets in exchange for its own stock, or its only acquisition of depreciable assets in exchange for its own stock was in a business combination, circle the code number to the right and skip to Question 3.

No significant experience, assets for own stock . . . > 1 55/

If your firm *has* had significant experience in this matter, please indicate the basis on which depreciable assets acquired by this means are recorded by circling the code number to the right.

	(CIRCLE)
a. The estimated price which would have been paid if the asset had been purchased for cash .....	2
b. The estimated price which would have been obtained if the stock given as consideration had been sold for cash .....	3
c. Either "a" or "b," above, whichever is more readily determinable .....	4
d. The carrying value on the books of the seller .....	5
e. A nominal amount .....	6
f. Some other amount (describe) _____	

**Question 3:** If your firm has had *no* significant experience with acquiring depreciable assets in exchange for non-cash assets (other than company stock), circle the code number to the right, and skip to Question 4.

No significant experience, assets for non-cash assets . . . > 1 56/

If your firm *has* had significant experience in this matter, please indicate the basis on which depreciable assets acquired by this means are recorded by circling the code number to the right.

	(CIRCLE)
a. The estimated price which would have been paid if the asset had been purchased for cash .....	2
b. The estimated price which would have been obtained if the asset given as consideration had been sold for cash .....	3
c. Either "a" or "b," above, whichever is more readily determinable .....	4
d. The carrying value of the asset given as consideration .....	5
e. The seller's carrying value of the asset acquired .....	6
f. A nominal amount .....	7
g. Some other amount (describe) _____	

**Question 4:** A "basket purchase" is a term applied to a purchase of a variety of assets for a lump sum without identifying the price of each separate asset. If your company has had *no* significant experience with a basket purchase, circle the code number to the right, and skip to Question 5.

No significant experience, basket purchase . . . > 1 57/

If your firm *has* had significant experience with a basket purchase, please indicate the basis on which these purchases are recorded by circling the code number to the right.

(CIRCLE)

- a. Allocation of the total price on the basis of the estimated price which would have been paid for each asset if purchased separately . . . . . 2
- b. Allocation of the total price on the basis of the relative net revenue which is expected to be derived from each of the component assets . . . . . 3
- c. Each component asset recorded at the carrying value on the books of the seller . . . . . 4
- d. Some other method (please describe) \_\_\_\_\_



## CAPITALIZATION POLICIES

Please indicate your answers to Questions 5 through 8 by circling the code numbers in *both* the "financial statement" and "income tax" columns. For all items *not* applicable to your firm, please circle in the right-hand column.

**Question 5:** Is it your firm's policy to include (or deduct) the following items, whenever applicable, in (or from) the acquisition cost of depreciable assets:

	For financial statement purposes		For income tax purposes		Not applicable	
	Yes	No	Yes	No		
	1	2	3	4		
a. Include incoming transportation costs? _____>	1	2	3	4	5	58/
b. Include installation costs? _____>	1	2	3	4	5	59/
c. Include costs of temporary storage and handling? _____>	1	2	3	4	5	60/
d. Include cost of removing old assets (other than razing buildings to clear land)? _____>	1	2	3	4	5	61/
e. Include setting up or breaking in costs? _____>	1	2	3	4	5	62/
f. Include import duties? _____>	1	2	3	4	5	63/
g. Include sales or excise taxes? _____>	1	2	3	4	5	64/
h. Deduct purchase discounts when <i>taken</i> ? _____>	1	2	3	4	5	65/
i. Deduct purchase discounts when <i>not taken</i> ? _____>	1	2	3	4	5	66/
j. Include interest on credit purchases, when specifically <i>identified</i> in the credit agreement? _____>	1	2	3	4	5	67/
k. Include interest on credit purchases, when <i>not</i> specifically identified in the credit agreement? _____>	1	2	3	4	5	68/
l. Include gain on assets traded in? _____>	1	2	3	4	5	69/
m. Include loss on assets traded in? _____>	1	2	3	4	5	70/
n. Include/deduct other (describe and circle) _____>	1	2	3	4		72/

71/

**Question 6:**

In calculating the depreciable base or depreciation rate of assets, is it your firm's policy to include the following factors:

a. Estimated salvage value of the asset required? _____>	1	2	3	4	5	73/
b. Estimated disposal costs of the asset acquired? _____>	1	2	3	4	5	74/
c. Costs of removing the asset replaced, where applicable? _____>	1	2	3	4	5	75/
d. Other (describe and circle) _____>	1	2	3	4		77/

76/

**Question 7:**

If your firm has had *no* significant experience in constructing its own depreciable assets, circle the code number to the right and skip to Question 9.

No significant experience constructing depreciable assets ..... > 1 6/

If your firm *has* had significant experience, please indicate whether any of the following interest costs are included in the acquisition cost of self-constructed depreciable assets:

	For financial statement purposes		For income tax purposes		Not applicable	
	Yes	No	Yes	No		
	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>		
a. Interest expense relating only to debt specifically incurred to finance construction? _____ >	1	2	3	4	5	7/
b. Interest expense without regard to the specific purpose for which debt was incurred? _____ >	1	2	3	4	5	8/
c. Imputed interest on stockholders' equity? _____ >	1	2	3	4	5	9/

**Question 8:**

Please indicate whether any of the following indirect costs are included in the acquisition cost of self-constructed depreciable assets:

a. Variable manufacturing overhead? _____ >	1	2	3	4	5	10/
b. Fixed manufacturing overhead? _____ >	1	2	3	4	5	11/
c. Variable general and administrative overhead? _____ >	1	2	3	4	5	12/
d. Fixed general and administrative overhead? _____ >	1	2	3	4	5	13/
e. Other (describe and circle) _____ >	1	2	3	4		15/

14/

USEFUL LIVES OF DEPRECIABLE ASSETS

Question 9:

The reasons for selecting the useful lives of depreciable assets can vary with the nature and use of the asset. On Page 9 opposite is a list of lettered factors that might be important in deciding upon estimated useful life. For each of the categories or subcategories of assets you specified on the left-hand flap, would you circle below the letter or letters of the factor(s) important in estimating useful life for financial statement purposes?

Example: If "a. Physical deterioration," "g. Conformity with income tax regulations," and "i. Recovery of funds to provide for replacement of the asset" were important reasons for deciding upon estimated useful life of "BUILDINGS," you would circle the lettered factors "a," "g," and "i" below on the "BUILDING" asset category line.

FACTORS CONSIDERED IN SELECTING ESTIMATED USEFUL LIFE													FOR OFFICE USE ONLY			
	a	b	c	d	e	f	g	h	i	j	k	l		m	n	Other (describe)
A-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
B-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
C-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
D-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
E-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
F-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
G-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
H-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
I-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
J-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
K-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
L-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
M-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
N-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
O-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
P-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
Q-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
R-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
S-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
T-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
U-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
V-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
W-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
X-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
Y-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
Z-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
a-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
b-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	
c-	a	b	c	d	e	f	g	h	i	j	k	l	m	n	_____	

**FACTORS CONSIDERED IN SELECTING ESTIMATED USEFUL LIFE**

- a. Physical deterioration.
- b. Functional obsolescence of the asset.
- c. Obsolescence of the product or service derived from the asset.
- d. Deferral of income tax payments.
- e. Avoidance of burdensome charges to income.
- f. Reflecting a conservative income measurement.
- g. Conformity with income tax regulations.
- h. Conformity with government or public agency (FPC, ICC, etc.) regulations, other than tax.
- i. Recovery of funds to provide for replacement of the asset.
- j. Conformity with debt retirement schedules.
- k. Offsetting effects of price level changes.
- l. Matching costs with total period benefited.
- m. Term of lease (other than rental of the depreciable property itself).
- n. Term of job or contract.
- o. Other considerations (describe).

**Question 10:** Which of the following guides do you use in determining the useful life of assets for financial statement depreciation purposes? Please indicate your answer by circling the code number of one or more of the items listed.

	<u>Please circle one or more</u>	
a. Experience in your industry .....	1	16
b. Experience of your firm .....	2	
c. U.S. Treasury Department "guideline lives" .....	3	
d. Government prescription, other than tax regulations .....	4	
e. Engineering estimates of future life .....	5	
f. Other (describe) _____		

**Question 11:**

If in your firm there are *no* differences between useful lives for financial statement and income tax purposes, please circle the code number at the right and skip to Question 12.

No differences in useful lives for financial statement and income tax purposes ..... > 1 17/

If there *are* differences between useful lives for financial statement and income tax purposes, please complete the three following steps:

- a. Write in the asset category (categories) from among those you specified on the fold-out flap to the left.
- b. Circle the code number in the appropriate column indicating whether the useful life is shorter or longer for tax purposes than for financial statement purposes.
- c. Explain in the space provided the reason why the useful life differs for financial statement and tax purposes.

Asset category (write in)	Useful life for financial statement purposes		Reasons why financial statement and tax depreciation differ (write in)	FOR OFFICE USE ONLY	
	Shorter than for tax purposes (circle)	Longer than for tax purposes (circle)			
_____	1	2	_____	18/ 19/ 20/	
_____	1	2	_____	21/ 22/ 23/	
_____	1	2	_____	24/ 25/ 26/	
_____	1	2	_____	27/ 28/ 29/	
_____	1	2	_____	30/ 31/ 32/	
_____	1	2	_____	33/ 34/ 35/	
_____	1	2	_____	36/ 37/ 38/	
_____	1	2	_____	39/ 40/ 41/	
_____	1	2	_____	42/ 43/ 44/	
_____	1	2	_____	45/ 46/ 47/	

DEPRECIATION METHODS

Question 12:

a. If you use *one* depreciation method for *both* financial statement and tax purposes for *all* depreciable assets, complete steps 1 and 2 below. If *more than one* depreciation method is used for financial statement and/or income tax purposes, complete parts "b" and "c" on Page 13.

1. Indicate method you use by *circling* the code number next to the method on the list below.

<u>Method</u>			
Straight line .....	1	Gross income, net income .....	5
Declining balance .....	2	Sinking fund, annuity .....	6
Sum-of-the-years' digits .....	3	Other (describe) _____	
Machine hours, units of production .....	4	_____	6/

2. Examine the reasons listed on the *right-hand* flap. In the space provided below *write* in the letter or letters of the principal reasons why you use this method of depreciation for financial statement purposes: \_\_\_\_\_ . Then, ignore the rest of this question and skip to Question 13.

(write in letter(s))

DEPRECIATION METHODS

	Straight line		Declining balance		Sum-of-the-years' digits		Machine hours, units of production		Gross income, net income		Sinking fund, annuity	
	Book	Tax	Book	Tax	Book	Tax	Book	Tax	Book	Tax	Book	Tax
A-	1	2	3	4	5	6	7	8	1	2	3	4
B-	1	2	3	4	5	6	7	8	1	2	3	4
C-	1	2	3	4	5	6	7	8	1	2	3	4
D-	1	2	3	4	5	6	7	8	1	2	3	4
E-	1	2	3	4	5	6	7	8	1	2	3	4
F-	1	2	3	4	5	6	7	8	1	2	3	4
G-	1	2	3	4	5	6	7	8	1	2	3	4
H-	1	2	3	4	5	6	7	8	1	2	3	4
I-	1	2	3	4	5	6	7	8	1	2	3	4
J-	1	2	3	4	5	6	7	8	1	2	3	4
K-	1	2	3	4	5	6	7	8	1	2	3	4
L-	1	2	3	4	5	6	7	8	1	2	3	4
M-	1	2	3	4	5	6	7	8	1	2	3	4
N-	1	2	3	4	5	6	7	8	1	2	3	4
O-	1	2	3	4	5	6	7	8	1	2	3	4
P-	1	2	3	4	5	6	7	8	1	2	3	4
Q-	1	2	3	4	5	6	7	8	1	2	3	4
R-	1	2	3	4	5	6	7	8	1	2	3	4
S-	1	2	3	4	5	6	7	8	1	2	3	4
T-	1	2	3	4	5	6	7	8	1	2	3	4
U-	1	2	3	4	5	6	7	8	1	2	3	4
V-	1	2	3	4	5	6	7	8	1	2	3	4
W-	1	2	3	4	5	6	7	8	1	2	3	4
X-	1	2	3	4	5	6	7	8	1	2	3	4
Y-	1	2	3	4	5	6	7	8	1	2	3	4
Z-	1	2	3	4	5	6	7	8	1	2	3	4
a-	1	2	3	4	5	6	7	8	1	2	3	4
b-	1	2	3	4	5	6	7	8	1	2	3	4
c-	1	2	3	4	5	6	7	8	1	2	3	4

12b. Six different depreciation methods are shown as column heads on Page 12 to the left. For each of your asset categories or subcategories on the fold-out flap to the left, please indicate the depreciation method you use for *both* financial statement *and* tax purposes, by circling the code number in the appropriate column (two circled numbers for each category).

If you use some other method(s) for financial statement or tax purposes, please describe in the space provided below on Page 13.

c. Please examine the reasons listed on the *right-hand* flap. In the "Reasons" column at the right below, please *write in* the letter or letters of the principal reasons why you use each method of depreciation for *financial statement* purposes (financial statement purposes only).

<u>DEPRECIATION METHODS</u>		<sup>c.</sup> <u>REASONS FOR BOOK PURPOSES</u> (write in code letter or letters)	<u>FOR OFFICE USE ONLY</u>
<u>Other financial statement method (please describe)</u>	<u>Other Tax Method (please describe)</u>		
A- _____	_____	_____	
B- _____	_____	_____	
C- _____	_____	_____	
D- _____	_____	_____	
E- _____	_____	_____	
F- _____	_____	_____	
G- _____	_____	_____	
H- _____	_____	_____	
I- _____	_____	_____	
J- _____	_____	_____	
K- _____	_____	_____	
L- _____	_____	_____	
M- _____	_____	_____	
N- _____	_____	_____	
O- _____	_____	_____	
P- _____	_____	_____	
Q- _____	_____	_____	
R- _____	_____	_____	
S- _____	_____	_____	
T- _____	_____	_____	
U- _____	_____	_____	
V- _____	_____	_____	
W- _____	_____	_____	
X- _____	_____	_____	
Y- _____	_____	_____	
Z- _____	_____	_____	
a- _____	_____	_____	
b- _____	_____	_____	
c- _____	_____	_____	



## Question 13:

If your firm has *not* changed depreciation methods for financial statement (non-tax) purposes in the last five years, please circle the code number to the right and skip to Question 14.

Not changed depreciation methods . . . > 1 6/

If your firm *has* changed depreciation methods in the last five years, please follow the directions on Page 15.

a. Method Change														
	Straight line		Declining balance		Sum-of-years' digits		Machine hours, etc.		Gross, net incomes		Sinking fund, annuity		Other	
	To	From	To	From	To	From	To	From	To	From	To	From	To	From
A-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
B-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
C-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
D-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
E-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
F-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
G-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
H-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
I-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
J-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
K-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
L-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
M-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
N-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
O-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
P-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
Q-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
R-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
S-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
T-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
U-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
V-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
W-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
X-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
Y-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
Z-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
a-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
b-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
c-	1	2	3	4	5	6	7	8	1	2	3	4	5	6

Question 13 (Continued)

If you have changed depreciation methods, please complete the three following steps:

- a. Please indicate the method changed to *and* from for each of the applicable asset categories shown on the fold-out flap to the left by circling the code *numbers* in the appropriate column on Page 14.
- b. Next, for each change, please indicate the year in which the change was effected by circling the code number in the appropriate column below.
- c. Please refer again to the list of reasons on the *right-hand* flap. Then *write in* under the right-hand column below the *letter or letters* corresponding to the principal reasons for the change in depreciation method.

	<u>b.</u> Year changed:					<u>c.</u> Reasons (write in letter or letters)	FOR OFFICE USE ONLY
	1970	1969	1968	1967	1966		
A-	1	2	3	4	5	_____	
B-	1	2	3	4	5	_____	
C-	1	2	3	4	5	_____	
D-	1	2	3	4	5	_____	
E-	1	2	3	4	5	_____	
F-	1	2	3	4	5	_____	
G-	1	2	3	4	5	_____	
H-	1	2	3	4	5	_____	
I-	1	2	3	4	5	_____	
J-	1	2	3	4	5	_____	
K-	1	2	3	4	5	_____	
L-	1	2	3	4	5	_____	
M-	1	2	3	4	5	_____	
N-	1	2	3	4	5	_____	
O-	1	2	3	4	5	_____	
P-	1	2	3	4	5	_____	
Q-	1	2	3	4	5	_____	
R-	1	2	3	4	5	_____	
S-	1	2	3	4	5	_____	
T-	1	2	3	4	5	_____	
U-	1	2	3	4	5	_____	
V-	1	2	3	4	5	_____	
W-	1	2	3	4	5	_____	
X-	1	2	3	4	5	_____	
Y-	1	2	3	4	5	_____	
Z-	1	2	3	4	5	_____	
a.	1	2	3	4	5	_____	
b.	1	2	3	4	5	_____	
c.	1	2	3	4	5	_____	

Question 14: Instructions ----->

PROPERTY UNITS														
	<u>a.</u> Individual assets accounted separately		<u>b.</u> All assets combined single group		<u>c.</u> Assets grouped by function		<u>d.</u> Assets grouped by year acquired		<u>e.</u> Assets grouped by useful lives		<u>f.</u> Major components accounted separately		<u>g.</u> Some other unit	
	Book	Tax	Book	Tax	Book	Tax	Book	Tax	Book	Tax	Book	Tax	Book	Tax
A-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
B-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
C-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
D-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
E-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
F-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
G-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
H-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
I-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
J-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
K-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
L-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
M-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
N-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
O-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
P-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
Q-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
R-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
S-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
T-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
U-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
V-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
W-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
X-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
Y-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
Z-	1	2	3	4	5	6	7	8	1	2	3	4	5	6
a.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
b.	1	2	3	4	5	6	7	8	1	2	3	4	5	6
c.	1	2	3	4	5	6	7	8	1	2	3	4	5	6



DEPRECIATION IN INTERNAL REPORTS

Question 15:

- a. Listed below at the left are five numbered types of internal management analyses on reports which your firm may or may not prepare. For each type, please make one recording by circling the code number under the four possibilities:

- Report prepared, depreciation is considered, calculated the same as for external reports
- OR
- Report prepared, depreciation is considered, calculated differently than for external reports
- OR
- Report prepared, depreciation is not considered
- OR
- No such report is prepared

	<u>REPORT IS PREPARED</u>				
	<u>Depreciation is considered</u>		Depreciation is not considered	REPORT IS NOT PREPARED	
	Calculated same as for external reports	Calculated different than for external reports			
1. Analyses of the profitability of divisions, product lines, etc. ....>	1	2	3	4	48/
2. Analyses of return on investment ....>	1	2	3	4	49/
3. Analyses for pricing decisions ....>	1	2	3	4	50/
4. Analyses for capital expenditure decisions ....>	1	2	3	4	51/
5. General purpose financial statements prepared for management ....>	1	2	3	4	52/
6. Other (describe) _____>	1	2	3	4	54/

53/

- 15b. If you have answered "Calculated different than for external reports" for any of the listed analyses in Question 15a, would you please describe below the differences between the calculation of depreciation for the internal report as against that for financial statements for external purposes:

Analysis:	Description of differences
1. (Profitability)	55/
_____	56/
2. (Return on investment)	57/
_____	58/
3. (Pricing decisions)	59/
_____	60/
4. (Capital expenditure)	61/
_____	62/
5. (General purpose)	63/
_____	64/
6. (Other)	65/
_____	66/

### PART III. OPINION

Among the objectives of our study are to determine whether accounting for depreciable assets is serving useful objectives and to consider ways in which it can achieve its objectives more effectively. The following questions are designed to gather opinion concerning the relative importance of various objectives and to elicit suggestions for improvements.

**Question 16:** The following is a list of suggested useful objectives of financial statement (non-tax) accounting for depreciable assets. Please consider how important each item is in relation to the other objectives listed and circle the code number in that column which designates your opinion of its relative importance. Use number 3 for most important and number 0 for not important.

a. Determining the real value of the firm's investment in depreciable assets _____ >	3	2	1	0	6/
b. Reporting as a custodian the amount of funds the firm has expended for depreciable assets _____ >	3	2	1	0	7/
c. Determining the amount of funds expended for depreciable assets that are expected to be recovered out of future operations _____ >	3	2	1	0	8/
d. Periodic matching of costs with revenue _____ >	3	2	1	0	9/
e. Avoiding the effects of annual income peaks and valleys _____ >	3	2	1	0	10/
f. Determining the amount of cash flow from depreciation _____ >	3	2	1	0	11/
g. Providing funds for replacement of depreciable assets _____ >	3	2	1	0	12/
h. Preventing the payment of dividends out of capital _____ >	3	2	1	0	13/
i. Mitigating the effects of changes in the general price level _____ >	3	2	1	0	14/
j. Providing a base for statutory rate-setting _____ >	3	2	1	0	15/
k. Determining the average age of plant and equipment _____ >	3	2	1	0	16/
l. Measuring unexpired asset service potential _____ >	3	2	1	0	17/
m. Providing information for determining asset replacement needs _____ >	3	2	1	0	18/
n. Providing meaningful components of return on investment calculations _____ >	3	2	1	0	19/
o. Providing basis for information required for maintaining adequate property insurance coverage _____ >	3	2	1	0	20/
p. Providing adequate accounting controls over the firm's physical property _____ >	3	2	1	0	21/
q. Providing information for pricing decisions _____ >	3	2	1	0	22/
r. Providing information for revenue forecasting _____ >	3	2	1	0	23/
s. Providing information for measuring division performance _____ >	3	2	1	0	24/
t. Providing information for measuring the effectiveness of plant investment decisions _____ >	3	2	1	0	25/
u. Other objectives (describe and circle) _____ >	3	2	1	0	27/
					26/

#### *Reasons for using a given method of depreciation*

- a. Conformity with income tax regulations
- b. Conformity with government regulations, other than tax
- c. Periodic matching of costs with revenue
- d. The pattern of decline in the present (discounted) value of estimated future gross revenue or net income derived from the asset
- e. Decline in the value of the asset in the used asset market
- f. Reflecting a constant rate of return on undepreciated cost
- g. Reflecting a level annual total expense in conjunction with maintenance and other asset-related expenses
- h. Complexities of the method, clerical time and cost
- i. Recovering funds to provide for replacement of the asset
- j. Conformity with debt retirement schedules
- k. Avoiding burdensome charges to income
- l. Reflecting a more conservative income measurement
- m. Avoiding the recording of deferred income taxes
- n. The pattern of expected physical deterioration
- o. The pattern of expected functional obsolescence
- p. Offsetting the effects of changes in the general price level
- q. Effect on the payment of dividends
- r. Comparability with other firms in the industry
- s. Comparability with other divisions of the firm
- t. Other considerations (describe)

(PLEASE TURN TO PAGE 20 AND COMPLETE)

**Question 17:** In what ways could practices and generally accepted accounting principles be changed to improve accounting for depreciable assets for financial statement purposes? Please give us your ideas and suggestions.

28/

29/

30/

31/

**Question 18:** If you have recently made or contemplate making any significant changes in accounting for depreciable assets for financial statement purposes, please describe the changes and explain why you believe they are desirable.

32/

33/

34/

35/

(THANK YOU FOR YOUR COOPERATION)

# **Questionnaires Used in Survey of Users**



**American Institute of Certified Public Accountants  
Accounting Research Division**

**Project Advisory Committee on Depreciation Accounting**

**MICHAEL N. CHETKOVICH, *Chairman***  
Partner, Haskins & Sells

**NORTON M. BEDFORD**  
Professor, University of Illinois

**GORDON R. COREY**  
Chairman of the Finance Committee  
Commonwealth Edison Company

**WRIGHT C. COTTON**  
General Assistant Comptroller  
General Motors Corporation

**ROBERT E. PFENNING**  
Comptroller  
General Electric Company

**JAY H. PRICE, JR.**  
Partner  
Arthur Andersen & Co.

**GEORGE TERBORGH**  
Research Director  
Machinery and Allied Products  
Institute

## Letter Sent With Questionnaire Used in Survey of Users—Financial Analysts

May 21, 1971

The Accounting Research Division of the American Institute of Certified Public Accountants needs the assistance of financial analysts in its efforts to gather facts and opinions on accounting for depreciable assets and requests your cooperation in completing the enclosed questionnaire. Responses to the questionnaire will be used as part of the source data for a research study that is being conducted by a research team under the supervision of Charles W. Lamden, CPA, partner of Peat, Marwick, Mitchell & Co. The membership list of the project advisory committee for the study is enclosed.

The study will analyze the concepts underlying current practice in accounting for depreciable assets to develop recommendations for narrowing alternative generally accepted accounting practices and improving the usefulness of general-purpose financial statements. The Accounting Principles Board will consider the study in preparing an Opinion on the topic.

The informed opinions of financial analysts can contribute significantly to the project. The Financial Analysts Federation has a continuing interest in the development of accounting principles and through its financial accounting committees supports the effort of the Accounting Principles Board to identify and formulate financial reporting policies that are responsive to the needs of financial statement users.

The questionnaire asks for information about financial analysts' needs for financial data, their accounting interpretations, and the procedures that they use to evaluate relatively long-term investments in debt and equity securities. The structure and content of the questionnaire are as follows:

- Part I.        General Information. Basic information about the respondent.
  
- Part II.      Accounting for Depreciable Assets. Questions on the significance of the accounting treatment of depreciable assets and depreciation and the extent to which the disclosure of certain financial statement information related to depreciable assets and depreciation contribute to the analysts' objectives.
  
- Part III.     Concept of Depreciation. Questions on analysts' concepts of depreciation and the importance of those concepts to the analysts' objectives.

I realize that completing the questionnaire will take time, but the Accounting Research Division and the Accounting Principles Board need facts and your opinions to deal realistically with this issue. I would therefore appreciate it if you would complete and return the enclosed questionnaire to me by June 21, 1971.

Sincerely yours,

Reed K. Storey, Director  
Accounting Research Division

RKS:sb  
Enclosures

# Survey of Financial Analysts

## Accounting Research Study Accounting for Depreciable Assets 1971

American Institute of Certified Public Accountants

### PART I. GENERAL INFORMATION

- A. FIRM NAME \_\_\_\_\_
- B. ADDRESS \_\_\_\_\_
- C. RESPONDENT NAME \_\_\_\_\_  
RESPONDENT TITLE \_\_\_\_\_
- D. SPECIAL FIELDS OF SECURITY RESEARCH (if any) \_\_\_\_\_
- E. May our research team contact you for purposes of:  
1. Clarification if necessary? Yes \_\_\_\_\_ No \_\_\_\_\_  
2. A more intensive follow-up interview? Yes \_\_\_\_\_ No \_\_\_\_\_
- F. Telephone number (if either E1 or E2 is answered yes)

\_\_\_\_\_  
Area code

\_\_\_\_\_  
Number

\_\_\_\_\_  
Extension

## PART II. ACCOUNTING FOR DEPRECIABLE ASSETS

The first six questions are designed to determine the following:

The significance of the accounting treatment of depreciable assets and depreciation in evaluating the investment potential of a company.

The extent to which the disclosure of certain data in financial statements related to depreciable assets and depreciation contribute to the evaluation.

### Question 1

Based on the objectives of your investment evaluation process, please check one of the following which best describes the significance of acquisition cost of a company's depreciable assets.

Very significant \_\_\_\_\_ Barely significant \_\_\_\_\_  
Fairly significant \_\_\_\_\_ Insignificant \_\_\_\_\_

### Question 2

The following items all pertain to the acquisition cost of depreciable assets. By placing a check mark in the appropriate column, please indicate whether each item should be included in or excluded from the acquisition cost of depreciable assets.

	<u>Exclude</u>	<u>Include</u>
a. Costs of temporary storage and handling	_____	_____
b. Costs of removing old assets	_____	_____
c. Costs of setting up or breaking in	_____	_____
d. Sales or excise taxes	_____	_____
e. Purchase discounts	_____	_____
f. Interest on credit purchases	_____	_____
g. Gain or loss on assets traded in	_____	_____
h. Indirect costs (e.g., fixed manufacturing overhead, fixed general and administrative overhead)	_____	_____

Should the treatment given the items (a-h) above be the same for all companies? Yes No  
\_\_\_\_\_

Please explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Question 3**

Based on the objectives of your investment evaluation process, please check one of the following which best describes the significance of a company's policy with respect to provision for salvage value in calculating the depreciable base of assets.

Very significant \_\_\_\_\_ Barely significant \_\_\_\_\_  
Fairly significant \_\_\_\_\_ Insignificant \_\_\_\_\_

**Question 4**

Please check one of the following which best describes the significance of a company's reported net book value (under generally accepted accounting principles) in achieving the objectives of your investment evaluation process.

Very significant \_\_\_\_\_ Barely significant \_\_\_\_\_  
Fairly significant \_\_\_\_\_ Insignificant \_\_\_\_\_

**Question 5**

How could the accounting for depreciation be improved in the measurement of company net book value to achieve the objectives of your investment evaluation process?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Question 6**

The following items of information all pertain to depreciable assets and, with varying frequency, appear in financial statements or in the notes accompanying them.

By placing a check mark in the appropriate column, please indicate how important each item is in the analysis of financial statements for investment purposes, using 3 for most important and 0 for not important.

	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
a. Total investment in depreciable assets	—	—	—	—
b. Details of investment in depreciable assets by major categories (e.g., buildings, equipment, fixtures, automotive equipment, machinery)	—	—	—	—
c. Details of investment in depreciable assets by operating divisions or product lines	—	—	—	—
d. The basis of valuation of depreciable assets (e.g., acquisition cost, cost to replace, appraisal value)	—	—	—	—
e. Total accumulated depreciation taken to date	—	—	—	—
f. Details of accumulated depreciation taken to date by major categories of assets	—	—	—	—
g. Total additions to and retirements of depreciable assets for the year	—	—	—	—
h. Details of additions to and retirements of depreciable assets by major categories for the year	—	—	—	—
i. Planned additions to depreciable assets for the coming year(s)	—	—	—	—
j. The nature and amount of depreciable assets pledged to secure debt	—	—	—	—
k. Total depreciation expense for the year	—	—	—	—
l. Details of depreciation expense for the year by major categories of assets	—	—	—	—
m. Details of depreciation expense for the year by operating division or product lines	—	—	—	—
n. The depreciation method(s) used for financial statement purposes (e.g., straight-line, declining-balance, units of production)	—	—	—	—
o. The depreciation method(s) used for each major category of depreciable assets	—	—	—	—

	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
p. The depreciation method(s) used for income tax purposes	---	---	---	---
q. The range of useful lives used for depreciation purposes (e.g., 5 years to 25 years)	---	---	---	---
r. The average useful life used for depreciation purposes	---	---	---	---
s. The useful life used for each major category of depreciable assets	---	---	---	---
t. Total maintenance expense for the year	---	---	---	---
u. Details of maintenance expense for the year for major categories of assets	---	---	---	---
v. Insured value of depreciable assets by major category	---	---	---	---

### PART III. CONCEPTS OF DEPRECIATION

The next five questions are designed to determine what you think depreciation is under present generally accepted accounting principles, what you think depreciation *should be*, and how important concepts of depreciation are to your investment evaluation.

#### Question 7

The following is a list of ten possible concepts of depreciation (items a-j) and three alternatives (items k-m). Pick one concept which you think best describes depreciation under *present* generally accepted accounting principles, or choose one of three alternatives, and place one check mark in the left-hand column below. Then pick one concept which you think best describes depreciation as it *should be* reported to make the greatest possible contribution to your investment evaluation objectives, or choose one of the three alternatives and place one check mark in the right-hand column below.



Suggested Depreciation Concepts

Depreciation under  
present generally  
accepted accounting  
principles is

Depreciation  
ideally  
should be

- |                                                                                                                                                                                   | Depreciation under<br>present generally<br>accepted accounting<br>principles is | Depreciation<br>ideally<br>should be |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------|
| a. The difference in asset value measured in terms of currently realizable market value                                                                                           | _____                                                                           | _____                                |
| b. Difference, from the beginning to the end of the period, in asset value measured in terms of current replacement cost                                                          | _____                                                                           | _____                                |
| c. The difference, from the beginning to the end of the period, in asset value measured in terms of the future net cash flow generated by the asset, discounted to present value  | _____                                                                           | _____                                |
| d. Same as suggestion (c) but for the company as a whole instead of individual assets                                                                                             | _____                                                                           | _____                                |
| e. That amount which when added to costs of maintaining and operating the asset (including interest costs) makes the annual total cost equal during each year of the asset's life | _____                                                                           | _____                                |
| f. An amount which varies from year to year in proportion to the revenue generated by the asset                                                                                   | _____                                                                           | _____                                |
| g. Same as suggestion (f) but for the company as a whole instead of individual assets                                                                                             | _____                                                                           | _____                                |
| h. An amount which allocates the asset's historical cost (less salvage) over its life in a systematic and rational manner                                                         | _____                                                                           | _____                                |
| i. Same as suggestion (h) but adjusted for changes in the general price level                                                                                                     | _____                                                                           | _____                                |
| j. The maximum amount allowable for Federal income tax purposes                                                                                                                   | _____                                                                           | _____                                |

Alternatives

- k. No such concept can be specified. (If checked, please explain why.) \_\_\_\_\_  
\_\_\_\_\_
- l. The concept of depreciation is irrelevant to my investment evaluation objectives. (If checked, please explain why.) \_\_\_\_\_  
\_\_\_\_\_
- m. Other (please describe) \_\_\_\_\_  
\_\_\_\_\_

**Question 8**

In applying generally accepted accounting principles, numerous depreciation methods are accepted, e.g., straight-line, declining-balance, sum-of-the-years' digits and units of production. In selecting the proper method in any given case, how do you rank the importance of the following considerations? Indicate your answer by placing a check mark in the appropriate column, using 3 for most important and 0 for not important.

	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
a. Conformity with income tax regulations	_____	_____	_____	_____
b. Conformity with government regulations, other than tax	_____	_____	_____	_____
c. Periodic matching of costs with revenue	_____	_____	_____	_____
d. The pattern of decline in the present (discounted) value of estimated future gross revenue or net income derived from the asset	_____	_____	_____	_____
e. The decline in the value of the asset in the used asset market	_____	_____	_____	_____

	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
f. Reflection of a constant rate of return on undepreciated cost	—	—	—	—
g. Reflection of a level annual total expense in conjunction with maintenance and other asset-related expenses	—	—	—	—
h. Complexities of the method, clerical time and cost	—	—	—	—
i. Recovery of funds to provide for replacement of the asset	—	—	—	—
j. Conformity with debt retirement schedules	—	—	—	—
k. Avoidance of burdensome charges to income	—	—	—	—
l. Reflection of a more conservative income measurement	—	—	—	—
m. Avoidance of recording deferred income taxes	—	—	—	—
n. The pattern of expected physical deterioration	—	—	—	—
o. The pattern of expected functional obsolescence	—	—	—	—
p. Offsetting the effects of changes in the general price level	—	—	—	—
q. The effect on the payment of dividends	—	—	—	—
r. Comparability with other firms in the industry	—	—	—	—
s. Comparability with other divisions of the firm	—	—	—	—
t. Other considerations (describe)				

**Question 9**

In determining over what period of time assets should be depreciated on the books, how do you rank the importance of the following considerations? Indicate your answer by placing a check mark in the appropriate column, using 3 for most important and 0 for not important.

	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
a. Physical deterioration	—	—	—	—
b. Functional obsolescence of the asset	—	—	—	—
c. Obsolescence of the product or service derived from the asset	—	—	—	—
d. Deferral of income tax payments	—	—	—	—
e. Avoidance of burdensome charges to income	—	—	—	—
f. Reflecting a conservative income measurement	—	—	—	—
g. Conformity with income tax regulations	—	—	—	—
h. Conformity with government regulations, other than tax	—	—	—	—
i. Recovery of funds to provide for replacement of the asset	—	—	—	—
j. Conformity with debt retirement schedules	—	—	—	—
k. Offsetting effects of price-level changes	—	—	—	—
l. Matching costs with total period benefited	—	—	—	—
m. Term of lease (other than rental of the depreciable property itself)	—	—	—	—
n. Comparability with other firms in industry	—	—	—	—
o. Term of job or contract	—	—	—	—
p. Other considerations (describe)	—	—	—	—
<hr/>				
<hr/>				

**Question 10**

Should more than one depreciation method be permitted? Check one and please give reasons for your answer.

Yes (please give reasons) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

No (please give reasons) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Question 11**

How could the measurement of depreciation be improved to achieve the objectives of your investment evaluation process?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Letter Sent With Questionnaire Used in Survey of Users—Credit Analysts

May 21, 1971

The Accounting Research Division of the American Institute of Certified Public Accountants needs the assistance of credit analysts in its efforts to gather facts and opinions on accounting for depreciable assets. Accordingly, the enclosed questionnaire, which is designed to gather information from credit analysts of financial institutions, is being sent to the presidents of a selected group of banks and insurance companies. I would appreciate your assistance in directing the questionnaire to the officer in charge of credit evaluations, and the cooperation of your company in completing the questionnaire.

The data collected will be used in a research study that is being conducted by a research team under the supervision of Charles W. Lamden, CPA, partner of Peat, Marwick, Mitchell & Co. The membership list of the project advisory committee for the study is enclosed.

The study will analyze the concepts underlying current practice in accounting for depreciable assets to develop recommendations for narrowing alternative generally accepted accounting practices and improving the usefulness of general-purpose financial statements. The Accounting Principles Board will consider the study in preparing an Opinion on the topic.

The questionnaire asks for information about credit analysts' needs for financial data, their accounting interpretations, and the procedures that they use to evaluate relatively long-term loans. The structure and content of the questionnaire are as follows:

- Part I. General Information. Basic information about the respondent.
- Part II. Accounting for Depreciable Assets. Questions on the significance of the accounting treatment of depreciable assets and depreciation and the extent to which the disclosure of certain financial statement information related to depreciable assets and depreciation contribute to the analysts' objectives.
- Part III. Concepts of Depreciation. Questions on analysts' concepts of depreciation and the importance of those concepts to the analysts' objectives.

The Accounting Research Division and the Accounting Principles Board need facts and opinions to deal realistically with

this issue. I would therefore appreciate it if the officer in charge of credit evaluations would complete and return the enclosed questionnaire to me by June 21, 1971.

Sincerely yours,

Reed K. Storey, Director  
Accounting Research Division

RKS:sb  
Enclosures

# Survey of Creditors

## Accounting Research Study Accounting for Depreciable Assets 1971

American Institute of Certified Public Accountants

### PART I. GENERAL INFORMATION

A. FIRM NAME \_\_\_\_\_

B. ADDRESS \_\_\_\_\_

C. RESPONDENT NAME \_\_\_\_\_

RESPONDENT TITLE \_\_\_\_\_

D. INDUSTRY SPECIALIZATION  
(if any) \_\_\_\_\_

E. May our research team contact you for purposes of:  
1. Clarification if necessary? Yes \_\_\_\_\_ No \_\_\_\_\_  
2. A more intensive follow-up interview? Yes \_\_\_\_\_ No \_\_\_\_\_

F. Telephone number (if either E1 or E2 is answered yes)

\_\_\_\_\_  
Area code                      Number                      Extension



## PART II. ACCOUNTING FOR DEPRECIABLE ASSETS

The first six questions are designed to determine the following:

The significance of the accounting treatment of depreciable assets and depreciation in evaluating the credit of a company.

The extent to which the disclosure of certain data in financial statements related to depreciable assets and depreciation contribute to the evaluation.

### Question 1

Based on the objectives of your credit evaluation process, please check one of the following which best describes the significance of acquisition cost of a company's depreciable assets.

Very significant \_\_\_\_\_ Barely significant \_\_\_\_\_  
Fairly significant \_\_\_\_\_ Insignificant \_\_\_\_\_

### Question 2

The following items all pertain to the acquisition cost of depreciable assets. By placing a check mark in the appropriate column, please indicate whether each item should be included in or excluded from the acquisition cost of depreciable assets.

	<u>Exclude</u>	<u>Include</u>
a. Costs of temporary storage and handling	_____	_____
b. Costs of removing old assets	_____	_____
c. Costs of setting up or breaking in	_____	_____
d. Sales or excise taxes	_____	_____
e. Purchase discounts	_____	_____
f. Interest on credit purchases	_____	_____
g. Gain or loss on assets traded in	_____	_____
h. Indirect costs (e.g., fixed manufacturing overhead, fixed general and administrative overhead)	_____	_____

Yes      No

Should the treatment given the items (a-h) above be  
the same for all companies?      \_\_\_\_\_

Please explain \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Question 3**

Based on the objectives of your credit evaluation process, please check one of the following which best describes the significance of a company's policy with respect to provision for salvage value in calculating the depreciable base of assets.

Very significant \_\_\_\_\_ Barely significant \_\_\_\_\_  
Fairly significant \_\_\_\_\_ Insignificant \_\_\_\_\_

**Question 4**

Please check one of the following which best describes the significance of a company's reported net book value (under generally accepted accounting principles) in achieving the objectives of your credit evaluation process.

Very significant \_\_\_\_\_ Barely significant \_\_\_\_\_  
Fairly significant \_\_\_\_\_ Insignificant \_\_\_\_\_

**Question 5**

How could the accounting for depreciation be improved in the measurement of company net book value to achieve the objectives of your credit evaluation process?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Question 6**

The following items of information all pertain to depreciable assets and, with varying frequency, appear in financial statements or in the notes accompanying them.

By placing a check mark in the appropriate column, please indicate how important each item is in the analysis of financial statements for credit purposes, using 3 for most important and 0 for not important.

	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
a. Total investment in depreciable assets	—	—	—	—
b. Details of investment in depreciable assets by major categories (e.g., buildings, equipment, fixtures, automotive equipment, machinery)	—	—	—	—
c. Details of investment in depreciable assets by operating divisions or product lines	—	—	—	—
d. The basis of valuation of depreciable assets (e.g., acquisition cost, cost to replace, appraisal value)	—	—	—	—
3. Total accumulated depreciation taken to date	—	—	—	—
f. Details of accumulated depreciation taken to date by major categories of assets	—	—	—	—
g. Total additions to and retirements of depreciable assets for the year	—	—	—	—
h. Details of additions to and retirements of depreciable assets by major categories for the year	—	—	—	—
i. Planned additions to depreciable assets for the coming year(s)	—	—	—	—
j. The nature and amount of depreciable assets pledged to secure debt	—	—	—	—
k. Total depreciation expense for the year	—	—	—	—
l. Details of depreciation expense for the year by major categories of assets	—	—	—	—
m. Details of depreciation expense for the year by operating division or product lines	—	—	—	—
n. The depreciation method(s) used for financial statement purposes (e.g., straight-line, declining-balance, units of production)	—	—	—	—
o. The depreciation method(s) used for each major category of depreciable assets	—	—	—	—

	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
p. The depreciation method(s) used for income tax purposes	—	—	—	—
q. The range of useful lives used for depreciation purposes (e.g., 5 years to 25 years)	—	—	—	—
r. The average useful life used for depreciation purposes	—	—	—	—
s. The useful life used for each major category of depreciable assets	—	—	—	—
t. Total maintenance expense for the year	—	—	—	—
u. Details of maintenance expense for the year for major categories of assets	—	—	—	—
v. Insured value of depreciable assets by major category	—	—	—	—

### PART III. CONCEPTS OF DEPRECIATION

The next five questions are designed to determine what you think depreciation is under present generally accepted accounting principles, what you think depreciation should be, and how important concepts of depreciation are to your credit evaluation.

#### Question 7

The following is a list of ten possible concepts of depreciation (items a–j) and three alternatives (items k–m). Pick one concept which you think best describes depreciation under *present* generally accepted accounting principles, or choose one of three alternatives, and place one check mark in the left-hand column below. Then pick one concept which you think best describes depreciation as it *should be* reported to make the greatest possible contribution to your credit evaluation objectives, or choose one of the three alternatives and place one check mark in the right-hand column below.

<u>Suggested Depreciation Concepts</u>	Depreciation under present generally accepted accounting principles is	Depreciation ideally should be
a. The difference in asset value measured in terms of currently realizable market value	_____	_____
b. Difference, from the beginning to the end of the period, in asset value measured in terms of current replacement cost	_____	_____
c. The difference, from the beginning to the end of the period, in asset value measured in terms of the future net cash flow generated by the asset, discounted to present value	_____	_____
d. Same as suggestion (c) but for the company as a whole instead of individual assets	_____	_____
e. That amount which when added to costs of maintaining and operating the asset (including interest costs) makes the annual total cost equal during each year of the asset's life	_____	_____
f. An amount which varies from year to year in proportion to the revenue generated by the asset	_____	_____
g. Same as suggestion (f) but for the company as a whole instead of individual assets	_____	_____
h. An amount which allocates the asset's historical cost (less salvage) over its life in a systematic and rational manner	_____	_____
i. Same as suggestion (h) but adjusted for changes in the general price level	_____	_____
j. The maximum amount allowable for Federal income tax purposes	_____	_____

Suggested Depreciation Concepts

<u>Depreciation under present generally accepted accounting principles is</u>	<u>Depreciation ideally should be</u>
-------------------------------------------------------------------------------------------	-----------------------------------------------

Alternatives

- k. No such concept can be specified. (If checked, please explain why.) \_\_\_\_\_  
\_\_\_\_\_
- l. The concept of depreciation is irrelevant to my credit evaluation objectives. (If checked, please explain why.) \_\_\_\_\_  
\_\_\_\_\_
- m. Other (please describe) \_\_\_\_\_  
\_\_\_\_\_

**Question 8**

In applying generally accepted accounting principles, numerous depreciation methods are accepted, e.g., straight-line, declining-balance, sum-of-the-years' digits and units of production. In selecting the proper method in any given case, how do you rank the importance of the following considerations? Indicate your answer by placing a check mark in the appropriate column, using 3 for most important and 0 for not important.

	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
a. Conformity with income tax regulations	___	___	___	___
b. Conformity with government regulations, other than tax	___	___	___	___
c. Periodic matching of costs with revenue	___	___	___	___
d. The pattern of decline in the present (discounted) value of estimated future gross revenue or net income derived from the asset	___	___	___	___
e. The decline in the value of the asset in the used asset market	___	___	___	___

	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
f. Reflection of a constant rate of return on undepreciated cost	—	—	—	—
g. Reflection of a level annual total expense in conjunction with maintenance and other asset-related expenses	—	—	—	—
h. Complexities of the method, clerical time and cost	—	—	—	—
i. Recovery of funds to provide for replacement of the asset	—	—	—	—
j. Conformity with debt retirement schedules	—	—	—	—
k. Avoidance of burdensome charges to income	—	—	—	—
l. Reflection of a more conservative income measurement	—	—	—	—
m. Avoidance of recording deferred income taxes	—	—	—	—
n. The pattern of expected physical deterioration	—	—	—	—
o. The pattern of expected functional obsolescence	—	—	—	—
p. Offsetting the effects of changes in the general price level	—	—	—	—
q. The effect on the payment of dividends	—	—	—	—
r. Comparability with other firms in the industry	—	—	—	—
s. Comparability with other divisions of the firm	—	—	—	—
t. Other considerations (describe)				
	_____			
	_____			
	_____			
	_____			

**Question 9**

In determining over what period of time assets should be depreciated on the books, how do you rank the importance of the following considerations? Indicate your answer by placing a check mark in the appropriate column, using 3 for most important and 0 for not important.

	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>
a. Physical deterioration	—	—	—	—
b. Functional obsolescence of the asset	—	—	—	—
c. Obsolescence of the product or service derived from the asset	—	—	—	—
d. Deferral of income tax payments	—	—	—	—
e. Avoidance of burdensome charges to income	—	—	—	—
f. Reflecting a conservative income measurement	—	—	—	—
g. Conformity with income tax regulations	—	—	—	—
h. Conformity with government regulations, other than tax	—	—	—	—
i. Recovery of funds to provide for replacement of the asset	—	—	—	—
j. Conformity with debt retirement schedules	—	—	—	—
k. Offsetting effects of price-level changes	—	—	—	—
l. Matching costs with total period benefited	—	—	—	—
m. Term of lease (other than rental of the depreciable property itself)	—	—	—	—
n. Comparability with other firms in industry	—	—	—	—
o. Term of job or contract	—	—	—	—
p. Other considerations (describe)	—	—	—	—

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**Question 10**

Should more than one depreciation method be permitted? Check one and please give reasons for your answer.

Yes (please give reasons) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

No (please give reasons) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Question 11**

How could the measurement of depreciation be improved to achieve the objectives of your credit evaluation process?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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