Volume Title: Measurement of Business Inventories

Volume Author/Editor: Murray F. Foss, Gary Fromm, and Irving Rottenberg

Volume Publisher: U.S. Census Bureau

Volume ISBN: 3024029227

Volume URL: http://www.nber.org/books/foss81-1

Publication Date: 1981

Chapter Title: Indirect and Overhead Production Costs and the Problem of Full Cost Absorption

Chapter Author: Murray F. Foss, Gary Fromm, Irving Rottenberg

Chapter URL: http://www.nber.org/chapters/c11088

Chapter pages in book: (p. 116 - 123)

10. INDIRECT AND OVERHEAD PRODUCTION COSTS AND THE PROBLEM OF FULL COST ABSORPTION

The different bases, such as FIFO and LIFO, used to value inventories constitute the principal but not sole problem in inventory valuation. Other difficulties concern the kinds of costs, specially indirect and overhead production costs, that should be included in inventories and cost of goods sold. The problem, which is relevant to manufacturing, mining and goods-producing industries generally, affects the measurement of business inventories because of variations in the treatment of indirect and overhead production costs among firms and industries, and because of income tax regulations recently issued by IRS relating to such costs. Compliance with these new IRS regulations will cause changes in inventory book value data that are nothing more than changes in accounting methods, but which could be interpreted as changes in real stocks.

How to treat indirect and overhead production expenses is one of the most difficult problems accountants face. The objective in this chapter is to note different approaches accountants use and to indicate the relevance of these differences to inventory measurement. Part of the problem is definitional: What accountants call indirect production and overhead costs embrace what economists call both fixed and variable costs. Some of these costs may be very little different from direct materials costs while others may be completely invariant with respect to the volume of output in the short run, say, one year. The fact that there are many types of indirect and overhead costs has tended to feed the controversy within the accounting profession and between accountants and tax authorities. Accountants must provide periodic reports on business through annual, quarterly or even monthly statements, but they are confronted with long-lived inputs like plant and equipment, the costs of which are difficult to determine in the short run. This problem is particularly awkward because there is wide disagreement among economists as well as among accountants regarding the measurement of capital inputs over the life of capital assets.

ALTERNATIVE METHODS OF TREATING OVERHEAD

The accounting issue revolves around the manner in which overhead and indirect costs are charged against revenues. There are two basic views. In the first, exposed by proponents of direct or period costing, a large class of overhead costs is independent of the level of output in a particular period, say, a year, and are therefore treated as costs applicable to the period. These costs should not be included in inventory costs but instead should be directly deducted from receipts. Proponents of the other view, often called the full absorption principle, maintain that inventories should carry a fixed cost component because fixed costs are required for production no less than variable costs. Costs charged to units produced are routed or assigned to inventory accounts initially and are charged as expenses against revenues only after sales have been made. When inventories are increasing, routing costs through inventory accounts delays charging of costs compared to period costing, as will be shown later in some examples.

A basic criticism of direct costing is that it may result in underpricing in the long run by failing to reflect fixed charges adequately. Another criticism is that balance sheets may be distorted by omission of fixed costs from inventories. Neither of these appears to be very convincing. In the long run, there are no fixed costs and it is hard to see why firms would fail to take, say, capital costs into account in making cost, price, and revenue projections. The charge that balance sheets may be distorted does not appear valid given that many firms now use LIFO. For such firms values of inventories may be greatly understated relative to current replacement costs.

Since 1953 accounting authorities have maintained that "the exclusion of all overhead costs from inventory costs does not constitute an accepted accounting method."[1] Similarly, IRS has always considered the direct cost and prime cost methods as unacceptable.[2] But while accounting authorities disapproved use of direct costing they have not approved a method for treating specific indirect and overhead production costs.

The costs at issue are those associated with production of goods which pass through inventory at some stage. In one sense every cost incurred by a firm might be involved, but in practice accountants divide costs into two groups: those mainly associated with goods production and those mainly associated with general administration, finance, and selling. Although the

[1] Committee on Accounting Procedures, American Institute of Certified Public Accountants, Accounting Research Bulletin No. 43, Chapter 4, Statement 3.

[2] 1.471-2(f) (6) and (7). In paragraph (f) (7), prime cost is defined as "treating all or substantially all indirect production costs (whether classified as fixed or variable) as period costs which are currently deductible."

dividing line is not rigid, the latter are viewed primarily as period costs.

Manufacturers use many approaches in treating overhead costs. Brummet has singled out five as covering the extremes of treatment as well as typical approaches:

(1) *Complete or full absorption costing.* All possible overhead and indirect production cost are assigned to the products produced in the period. Overhead and indirect production costs per unit vary inversely with output.

(2) *Expected or average activity standard costing.* The overhead costs per unit are based on a standard that reflects management's expectations regarding production activity over, say, a year or a half-year, or some average of the experience of past years. Thus, a normal rate of production activity is used rather than the actual rate in (1).

(3) *Practical capacity standard costing.* Overhead costs per unit are based on a standard that accepts plant and equipment in place but scales down the theoretical maximum output that these fixed assets are capable of by reasonable allowances for lost time due to inevitable production delays. The use of practical capacity is considered a normalizing procedure. Effective plant costs are charged to products produced in the period; costs of unused capacity are treated as period costs.

(4) *Direct standard costing.* This method differentiates among types of overhead costs. Overhead product costs include only those overheads that are variable. Fixed overhead costs are treated as period costs.

(5) *Prime standard costing.* Only standard direct material and direct labor costs are associated with product costs. This method represents the opposite of (1).[3]

Methods (1) and (4), which are the practical extremes, are shown for three periods in table 10.1. Data are shown for two firms, identical except that one firm treats overhead through full absorption costing and the other through direct standard costing. In Period 1 it is assumed that there are no beginning inventories, output is 100 units and sales are 90, direct or prime costs are 1 per unit, aggregate overhead for the year is 10, and the selling price per unit is 2. Note that inventories have increased during the year. The firm using full cost absorption includes part of the full year's charge for depreciation in closing inventory. This has the effect of making closing inventories greater than they would be otherwise, while cost of goods sold is smaller and profits correspondingly larger. The firm using direct costing, charges only variable costs to inventories. Since depreciation in this latter view should be independent of the number of units produced, the entire depreciation charge for the year, 10, is entered as a deduction. This results in a gross profit that, after deducting depreciation as a period cost, is smaller than under the full absorption method. Note that depreciation is used here as an example of a cost at issue in order to illustrate the principle. In practice there are many types of similar costs.

Table 10.1. **EXAMPLE: COMPARISON OF FULL COST ABSORPTION AND DIRECT COST METHODS FOR TREATING OVERHEAD COSTS**

Item	Full cost absorption	Direct cost
	Period 1	
Sales.....90 units..	180	180
Beginning inventory.....0 units..	0	0
Production.....100 units..		
Wage cost.....$1 per unit..	100	100
Depreciation.....	10	(X)
Ending inventory (FIFO)..10 units..	11	10
Wage component of ending inventory.....	10	10
Depreciation component of ending inventory.....	1	(X)
Cost of goods sold.....	99	90
Depreciation as period cost.....	(X)	10
Gross profit (other period costs to be subtracted).....	81	80
	Period 2	
Sales.....89 units..	178.00	178
Beginning inventory.....10 units..	11.00	10
Production.....110 units..		
Wage costs.....$1 per unit..	110.00	110
Depreciation.....	10.00	(X)
Ending inventory (FIFO)..31 units..	33.82	31
Wage component of ending inventory.....	31.00	31
Depreciation component of ending inventory.....	2.82	(X)
Cost of goods sold.....	97.18	89
Depreciation as period cost.....	(X)	10
Gross profit (other period costs to be subtracted).....	80.82	79
	Period 3	
Sales.....115 units..	230.00	230
Beginning inventory.....31 units..	33.82	31
Production.....110 units..		
Wage costs.....$1 per unit..	110.00	110
Depreciation.....	10.00	(X)
Ending inventory (FIFO)....26 units..	28.36	26
Wage component of ending inventory.....	26.00	26
Depreciation component of ending inventory.....	2.36	(X)
Cost of goods sold.....	125.46	115
Depreciation as period cost.....	(X)	10
Gross profit (other period costs to be subtracted).....	104.54	105

X Not applicable.

[3] R. Lee Brummet, *Overhead Costing, The Costing of Manufactured Products* (Ann Arbor: University of Michigan, 1957), pp. 32-33.

In Period 2 there is a production rise all of which is reflected in closing inventory. Inventories (FIFO) increase less for the direct costing firm than for the full absorption firm. In the next period (3) production remains at the Period 2 level while sales rise substantially and inventories are depleted. The value of inventories declines somewhat less for the direct costing firm than for the full absorption firm but the rise in profits is sharper.

Table 10.2 **SUMMARY OF INVENTORY CHANGE AND GROSS PROFITS FROM TABLE 10.1**

Period	Inventory Change		Gross Profits	
	Full Cost	Direct Cost	Full Cost	Direct Cost
1	11.82	10	81.00	80
2	22.82	21	80.82	79
3	–5.46	–5	104.54	105

To summarize (see table 10.2), because of the different ways inventoriable costs are defined, the full absorption firm has inventories valued at a higher level than the direct cost firm. Depreciation (and other indirect and overhead production costs) are included, by a full absorption firm, in the valuation of inventory. When physical stocks are rising, a full cost firm will have a larger rise in inventories and higher profits than a direct cost firm. When physical stocks are decreasing, a full cost firm will show a larger decline in inventory and a smaller profit than a direct cost firm.

THE PREVALENCE OF ABSORPTION AND DIRECT COSTING–SOME ASPECTS

The simple example cited in the last two tables suggests that different treatments of overhead costs can have significant effects on levels and changes in profits and inventories. These effects can be important in a comparison of firms or industries at a point of time, as well as for the same firm or industry through time.

Little published information exists on the prevalence of use of various costing methods. In a survey of diversified corporations conducted by the Financial Executives Institute in the 1960's, a question was asked regarding the nature of the method(s) used to determine costs of goods sold for internal management purposes. Of the methods cited–and several companies indicated use of more than one–approximately one-fifth were direct costing and somewhat more than 35 percent were full or absorption costing.[4]

A special survey on costing methods was conducted by the National Association of Accountants (NAA) in August and September 1972.[5] The questionnaire was directed to senior officials of manufacturing companies who were asked whether they "allocated (at least on a broad-brush basis) all expenditures that are indirectly related to production." Responses were received from 1,290 firms, a response rate of 22 percent; 1,200 responses were tabulated. The membership of NAA is a good cross-section of American manufacturers, but it is weighted toward larger firms. Dollar inventories reported in the tabulated responses accounted for 22.6 percent of total manufacturing inventories as measured by the Census Bureau. What biases, if any, were introduced by the information provided by respondents, given the 78 percent nonresponse rate, are unknown.

Some special terminology should be noted. When accountants speak of "allocating" certain costs, they mean that costs are assigned to production (or capacity) operations and are inventoriable. By "not allocating" they mean that the cost item is treated as a period cost. "External reporting" is reporting to stockholders, SEC, and the like as distinct from reporting for internal management.

Aside from the low response rate, not all firms answered all questions; this could lead to some ambiguities in interpreting responses. Furthermore there was no assurance that all firms were interpreting a particular question in the same manner or using consistent principles or approaches.

First, regarding external and internal reporting, of the 1,200 tabulated responses, only 52 firms allocated fully for external reporting but not for internal reporting, while 26 allocated fully for internal reporting and not for external reporting. Thus, over 1,100 of the 1,200 companies used the same concepts in their internal management accounting as in their external reporting. Because so few firms allocated differently for external and internal reporting, hereafter all data presented from the NAA survey will be in terms of the external or financial accounts of firms.

Second, less than half of the firms said they allocate all expenditures indirectly related to production. In terms of inventory values, the two groups were about evenly divided. However, as noted above, it is not clear that all respondents defined "indirectly related to production" in the same way.

Item	Allocating Fully	Not Allocating Fully	Total
Number of firms	529	671	1,200
Firms reporting inventory value	517	655	1,172
Value of inventories reported (billions of dollars)	12.7	13.0	25.7

Note: These data related primarily to inventories at the end of 1971.

[4] Robert K. Mautz, *Financial Reporting by Diversified Companies* (New York: Financial Executives Research Foundation, 1968), p. 218.

[5] Reported in Stephen Landekich, "Cost Allocations to Inventory," *Management Accounting*, March 1973. The National Association of Accountants also provided the authors with some unpublished tabulations.

Unfortunately, the tables received from the NAA do not show separate figures for firms that allocate no indirect production costs. That is, the 671 firms noted in the table above cannot be segregated into those allocating no indirect costs and those allocating some but not all. However, firms in the group not allocating fully were asked to report increases in ending 1971 inventory values that would have occurred if they had allocated fully. Some firms in the allocating fully group also answered this question, augmenting their inventory value slightly:

Item	Allocating fully		Not allocating fully	
	Number of firms	Value (billion dollars)	Number of firms	Value (billion dollars)
Reported value of inventories.	517	12.7	655	13.0
Increase if all indirect costs were allocated.	117	.8	546	3.4
Total.....		13.5		16.4

According to the NAA study an aggregate inventory value of $25.7 billion would be raised to an estimated $29.9 billion if all indirect costs were allocated. This is by far the most crucial piece of information to be extracted from the NAA tables. The implication is that if all firms used full cost absorption, as these firms define full cost absorption, manufacturing inventories would be considerably higher than presently reported. It might be noted that the NAA survey included some categories of costs, like general and administrative, that are typically not allocated.

Table 10.3 shows expenditures that are excluded in full by those firms who do not allocate indirect manufacturing costs to inventories. It is important to note that the percentages do not cover firms who made partial exclusions of these items, nor does the table cover all types of expenditures that are excluded. The results are not surprising in that general and administrative costs typically are not allocated to inventory. Allocating these costs to inventory obviously would raise the value of inventories considerably, as suggested by the earlier survey table. On the other hand it is of interest that in a significant number of cases, important costs like depreciation, repair and maintenance, and pensions are completely excluded from inventories.

The main concern in inventory measurement is with changes in inventories rather than with levels of inventories. Whatever degrees of cost absorption firms adopt, so long as they are consistent year after year, potential errors in changes in inventories are not likely to be serious as compared to the results using some ideal degree of cost absorption. However, large errors may occur in inventory changes, and in net income as well, if a substantial number of manufacturing firms make abrupt changes in the degree of cost absorption.

Table 10.3. **PERCENTAGE OF FIRMS WHO DO NOT ALLOCATE INDIRECT MANUFACTURING COSTS TO INVENTORIES: 1971**

Expenditures	Percent of Firms
General and administrative (corporate)	87
General and administrative (divisional)	75
Service department (cost accounting)	69
Service department (personnel)	58
Franchise taxes	58
Pension contribution (current)	31
Pension contribution (past)	30
Property tax	28
Fire/casualty insurance	26
Depreciation	24
Service department (stores)	23
Repairs and maintenance	17

Source: Unpublished tabulations from the National Association of Accounts.

IRS AND FULL COST ABSORPTION

Direct costing has been of concern to the Internal Revenue Service for many years. According to basic principles of tax equity, taxpayers in identical circumstances ought to have the same tax liability; yet they pay different taxes depending on whether they use direct costing or full absorption. Furthermore, some direct costing companies report on one basis to their stockholders and on a different basis to IRS. The general philosophy at IRS is, although there are different methods by which net income can be calculated, the income reported to IRS should be the same as that reported to stockholders except where clearly permitted by regulations. Finally, there is an overall revenue loss to the Treasury when firms use direct costing because in a growing economy inventories in manufacturing and mining will in all probability also be growing. IRS has made a number of attempts to persuade rulemaking authorities in the accounting profession to establish guidelines for the treatment of indirect production costs, but the efforts apparently were unsuccessful.

An important court decision, which was a turning point for IRS, was the *All-Steel Equipment Inc.* case (54TC1749, 1970). In this case the Tax Court ruled that IRS had authority to tell individual taxpayers how various types of indirect production and overhead costs should be treated in determining income for Federal tax purposes. The decision confirmed the principle that for tax purposes, direct costing did not "clearly reflect income" and that IRS could require firms to use full absorption methods. In December 1971, IRS issued a proposed amendment to the income tax regulations. Hearings and discussions with representatives of the accounting profession were held over a period of about two years. On September 19, 1973 a full absorption regulation was issued as a part of the IRS Income Tax Regulations (1.471-11):

> . . . both direct and indirect production costs must be taken into account in the calculation of inventoriable costs in accordance with the "full absorption" method of inventory costing.

The main features of the new regulation and three principal categories of costs are summarized below. Details of each of the three categories discussed in the regulation is given in table 10.4.

(1) Direct costing was specifically prohibited for Federal income tax purposes.
(2) Taxpayers who were practicing direct costing could elect to make a transition to full cost absorption so that the tax impact resulting from the shift would be spread over a 10-year period.
(3) Three categories of cost were established:
   i. Those indirect production costs that had to be included in inventoriable costs "regardless of their treatment . . . in financial reports."
   ii. Those that need not be included in inventoriable costs "regardless of their treatment . . . in financial reports."
   iii. Those indirect production costs whose inclusion in inventoriable costs depends on their treatment in financial reporting provided that treatment "is not inconsistent with generally accepted accounting practices."

IRS, through this new regulation, has forced companies to include in inventory costs certain direct costs that they had been excluding. IRS did not attempt to take a position on some of the more difficult problems that plague accountants and economists, like the treatment of normal depreciation. In these cases IRS simply asked taxpayers to be consistent in their reporting to stockholders and to IRS.

IRS also allowed some flexibility to cover periods of underutilization of capacity by introducing a "practical capacity concept" (1.471-11(b)4). Under this procedure firms may assign a portion of fixed indirect production costs as a period cost, rather than as an inventoriable production cost, when capacity is underutilized. First, a firm establishes an estimate of practical capacity. If production in a taxable year is below that estimated level, a proportion of fixed indirect production costs may be assigned as a period cost. Thus, if practical capacity of a machine is 100 units, only 90 units are produced, and the rental cost of the machine is 1,000, 100 may be assigned as a period cost.

Since the introduction of full cost absorption by firms could abruptly increase taxable profits, IRS sought to soften impacts on tax liabilities. Its new regulations provided a 2-year transition period, which has now expired. If a firm shifted to full cost absorption by filing form 3115, Application for Change in Accounting Method (see appendix J), on a timely basis and the changes to be made were approved by IRS, two attractive benefits would result: (1) Any increase in taxable profits relating to accounting methods in use prior to 1954 would be forgiven; and (2) any increase in tax liability due to adopting full cost absorption could be spread out for up to 10 years. Failure to adopt full absorption during the transition period results in a loss of these privileges. That is, if a firm were found after the 2-year transition period, say, in 1977, to be using an improper cost absorption method, any increased tax liability resulting would be payable in full for that taxable year.

Table 10.4. CATEGORIES OF INDIRECT COSTS UNDER IRS FULL COST ABSORPTION REGULATIONS

Category i (must be included in inventory costs)
Repair expense
Maintenance
Utilities, such as heat, power and light
Rent
Indirect labor and production supervisory wages and wage supplements
Indirect materials and supplies
Tools and equipment not capitalized
Costs of quality control and inspection
Category ii (need not be included in inventory cost)
Marketing expenses
Advertising expenses
Selling expenses
Other distribution expenses
Interest
Research and experimental expenses
Losses under Section 165
Percentage depletion in excess of cost depletion
Depreciation and amortization under Federal income tax purposes in excess of depreciation reported by taxpayer in financial reports
Income taxes attributable to income received on sale of inventory
Pension contributions for past services
General and administrative expense and officers' salaries applicable to company activities as a whole rather than manufacturing operations
Category iii (inclusion dependent on treatment in reporting to stockholders)
Taxes (other than State and local and foreign income taxes)
Depreciation and depletion
Employee benefits representing current service costs
Costs attributed to strikes, rework labor, scrap and spoilage
Factory administrative expense incident to manufacturing operations
Officers' salaries incident to manufacturing operations
Insurance costs

Source: 1.472-11 Income Tax Regulations.

On the basis of company filings through early 1975, IRS concluded that some firms were attempting to offset increases in taxable income associated with category i indirect costs by changing their financial reporting practices with respect to category iii costs. For example, an increase in inventory valuation due to absorption of the foreman's salary might be offset by dropping the absorption of depreciation of machinery in financial accounting. Since the latter is a category iii item, financial accounting provisions and generally accepted accounting practices are the nominal governing standards. The IRS interpretation of the regulation does not condone such offsets.

Practical Aspects of the IRS Full Absorption Regulation

Changes that could occur from application of the full absorption regulation are illustrated in the following tables. The figures are taken from the hypothetical case presented in

table 10.1. Assume the following first year results of a firm using direct costing:

Period 1

Sales	180
Cost of goods sold	90
Beginning inventory	0
Wage cost	100
Less ending inventory	10
Depreciation	10
Gross profit (other period costs to be subtracted)	80

Next, assume that in the second period, the firm adopts full cost absorption with respect to depreciation previously charged as a period cost. The procedure is to restate beginning inventory to what it would have been under proper cost absorption; any increase (or decrease) is treated as an increase (or decrease) in sales.[6] The second period statement under full cost absorption for the example in table 10.1 would be:

Period 2

Sales	179.00
Cost of goods sold	97.18
Beginning inventory	11.00
Wages and depreciation	120.00
Less ending inventory	33.82
Gross profit (other period costs to be subtracted)	81.82

In this period the gross profit of the firm that switched from direct costing to full absorption is 81.82, an increase of 1.82 over the preceding year. If the firm had not switched, its gross profit would have fallen by 1, from 80 to 79. With the switch, its profit becomes 81.82, 1 more than the profit of the firm in period 2 already on full absorption in the prior year. In switching to full absorption the firm adds to its current profits all of the understated profits of earlier years. In this hypothetical presentation the amount was 1. If a firm has been on direct costs for 20 years, the amount of added profits at the time of transition can be large indeed.

The inventory change from the end of the first year to the end of the second year will be from 10 to 33.82. The old understatement appears as an ordinary increase in inventory. In financial reports any changes of this nature that are material must be disclosed.

The reason for studying this problem is to determine whether inventory and profits statistics jumped in 1975 or 1976 as a consequence of the accounting changes caused by the IRS full absorption regulation. It has been impossible to form even an estimate of the impact of this change, or to learn whether the change in methods had a negligible impact or an impact running into several billion dollars. IRS informed us that thousands of firms made filings relating to full cost absorption, but that it has no comprehensive knowledge of practical effects of the changes. A clue might be obtained from tabulating form 3115, Section E (see appendix J), but IRS has not made such a tabulation, nor can this be done externally since these returns are privileged.

Profits statistics used for calculating national income come from IRS and would be affected by changes caused by application of the full absorption regulation. Inventory data, which come from the Census Bureau and probably are taken from balance sheet financial statements, may not reflect changes to the same degree as in IRS profits statistics arising from the full absorption regulation because firms already use the more comprehensive absorption basis for their balance sheets.

Examples From 1975 Annual Reports

Because data could not be obtained from IRS on the likely effect of the cost absorption regulation, other sources were consulted. Conversations with accountants in a few large industrial firms did not provide any hard information. In their examination of 1975 annual reports to stockholders for 600 large corporations, the American Institute of Certified Public Accountants found a handful of references to the new IRS regulation on full cost absorption and its impact on inventories and company earnings.[7] The citations may reflect only a fraction of firms affected by the new regulation because accountants would tend to cite only differences considered material. However, what constitutes a material difference has not been established in absolute or relative standards. Some examples of references to the regulation follow.

Fairchild Camera

During 1974, the Company adopted an improved method of inventory costing under which certain elements of manufacturing overhead, which were previously charged to operations as period costs, were included in inventory. In addition, certain elements of manufacturing overhead (primarily depreciation) previously included in inventory were charged to operations as period costs. During 1975, the Company made further improvements in its method of inventory costing. As a result, the overhead content of inventory was increased and now includes certain manufacturing overhead (primarily depreciation) which had been excluded from inventory in connection with the 1974 accounting change. The effect of these changes resulted in an increase in the amount of overhead included in inventory in both years. In the opinion of Management, these accounting changes represent adoption of preferable accounting methods and also comply with the Internal Revenue Service inventory costing regulations. . . .

[6] Typically the increase in profit resulting from adoption of full cost absorption would be credited to "other income" in the income statement. To simplify the presentation the profit increase has been added to sales.

[7] References found by AICPA in 1976 were almost nonexistent. This information was supplied to NBER by AICPA.

The cumulative effect of the 1974 accounting change, as of the beginning of 1974, was not material. The cumulative effect of the 1975 accounting change as of the beginning of 1975, in the amount of $2,649,000 ($.51 per share) after related income taxes of $2,117,000, is included in income for the year. The effect of the 1975 accounting change on 1975 income before cumulative effect of change in accounting method was not material. The 1975 accounting change did not have a material effect on 1974 net income as reported.[8]

Apparently the firm offset the increased absorption of category i items for 1974 by removing the absorption of depreciation, category iii, in their financial accounting for 1974. When IRS tightened its regulations in this respect the firm restored depreciation as an inventoriable cost for 1975.

The citations below come from Moody's for 1975.

Dresser Industries Inc.

During 1975 the company refined its full absorption costing practices used in 1974 LIFO inventory values. This change increased 1975 net earnings by approximately $3.5 million.

Outboard Marine Corp.

Under full absorption, inventory values include a portion of all of the manufacturing overhead expended to produce such inventory. The effect was to increase September 30, 1975 inventory by $3.85 million and increase net (after tax) earnings for the year by $1.93 million.

Pennwalt Corp.

January 1, 1975 adjusted inventories include certain additional overhead costs [that] increase inventories by $2.64 million with corresponding after-tax increase in retained earnings of $1.81 million.

Zenith Radio Corp.

On January 1, 1975 began including certain overhead costs in inventory, having been treated as period expenses in prior years. The effect was to reduce net income (excluding cumulative effect) by $0.4 million. The prior years cumulative effective of application of the change resulted in an increase in 1974 net income by $4.8 million.

U.S. Steel

In 1975 certain employee benefits were included as a part of inventory costs. The effect of the change for 1975 was to increase income by $4.9 million.[9]

[8] Fairchild Camera 1975 Annual Report.
[9] *Moody's Industrials* (New York) 1975.

Five other firms (Cyclops, Burndy, Mt. Vernon Mills, Westinghouse, and Bethlehem) mentioned full absorption but indicated that the effect was insignificant or immaterial.

A summary for the 1975 information for a sample of firms listing such data is shown below. The first and third columns show effects on earnings and inventory, respectively. The second and fourth columns give total earnings and inventories for comparison with the first and third columns.

Firm	Prior Years' Cumulative Effect on 1975 Income After Tax	Total Income After Tax	Effect on Inventory[1]	Inventory End of 1975
	(Millions of dollars)			
Fairchild Camera	2.6	13.1	4.7	93.0
Dresser Industries	3.5	123.9	8.0	53.6
Outboard Marine	1.9	20.0	3.8	154.4
Penwalt Corp.	1.8	33.4	2.6	150.8
Zenith Radio	4.8	30.8	9.6	199.0
U.S. Steel	4.9	559.6	9.8	1,160.0

[1] Reflects addition of taxes to column (1).

Source: Taxes roughly estimated by the NBER unless shown in *Moody's Industrials* (New York) 1975.

Effect on Deflation of Inventories

Aside from the interpretation of book value data during periods when accounting methods may change, use of full cost absorption in principle increases the difficulty of deflating inventories. This is because deflators for inventories would tend to be based on weights that are unchanging in the short run. Insofar as inventories reflect only direct costs, physical inputs per unit of output can be expected to be relatively stable or at least subject to only moderate changes due to longrun changes in productivity. The more inventories reflect indirect costs as well, the greater are fluctuations in total inputs per unit of output. It is well known that fixed costs per unit of output show pronounced variations over the business cycle.

RECOMMENDATIONS

1. As a matter of routine IRS should tabulate results from accounting changes caused by new regulations showing effects on profits and other key statistics.

2. In the special yearend inventory report recommended to the Census Bureau, respondents should be asked to note by year and by quarters any accounting changes that would significantly affect year-to-year and quarterly comparisons. It might be desirable to provide a standard of "significant" change.

3. An interagency committee should be established to consider complex problems that one agency acting alone cannot solve. Committee members would represent several Government agencies: OMB, Census Bureau, BEA, IRS, CEA and

BLS. The committee's coordinating and research activities should involve cases where joint, rather than single, agency action is required.

To cite an example: In 1975 IRS received thousands of applications on form 3115 from companies wishing to change their accounting methods in order to comply with the new IRS regulation on full cost absorption. These accounting method changes have the overall effect of raising profits and inventories, but, in the absence of IRS summary tabulations, the importance of these changes for national income and product estimates is not known. There was no unified voice in the Federal Government to request that the Treasury Department make a tabulation of form 3115 applications.

Joint action through such an interagency committee might have contributed in important ways to improvements in inventory measurement during the turbulent period of LIFO switching in 1974. A further example of the recommended committee's activities, relating to treatment of long-term, fixed-price production contracts, is provided in chapter 11.

4. Census should determine as part of a one-time survey the treatment of major overhead cost items in inventories reported in Census surveys. The limited information available suggests that there may be considerable variation in the way important items like depreciation, maintenance, and pension costs are treated. This information should be of considerable help in deflation of inventories. (See appendix K.)