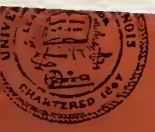

BEBR

FACULTY WORKING
PAPER NO. 1068

Comparison of Conventional and Adjusted Performance Measures Under Simulated Price Stabilization

Robert F. Sharp

College of Commerce and Business Administration
Bureau of Economic and Business Research
University of Illinois, Urbana-Champaign

BEBR

FACULTY WORKING PAPER NO. 1068

College of Commerce and Business Administration

University of Illinois at Urbana-Champaign

August 1984

Comparison of Conventional and Adjusted Performance Measures Under Simulated Price Stabilization

Robert F. Sharp, Assistant Professor
Department of Accountancy

COMPARISON OF CONVENTIONAL AND ADJUSTED PERFORMANCE MEASURES UNDER SIMULATED PRICE STABILIZATION

ABSTRACT: The purpose of this study is to estimate whether there could be any benefits from continuation of adjusted disclosures [e.g., SFAS 33] if inflation were brought under control. Absolute and relative profitability of three "average" firms--a retailer, a manufacturer, and a nonfinancial composite--are simulated using empirical price series through 1982 and then stabilizing prices at their 1982 levels. For at least five years after prices are stabilized, adjusted data and conventional data provide different rankings of absolute and relative performance of these firms. Different rankings are considered to be a necessary condition for justifying continued disclosures of adjusted data. The results further suggest that (1) different rankings can result from factors other than capital intensity and (2) some conventional methods produce artificial differences that would persist after ten years of zero inflation.

COMPARISON OF CONVENTIONAL AND ADJUSTED PERFORMANCE MEASURES UNDER SIMULATED PRICE STABILIZATION

Recent decreases in rates of inflation have generated conflicting opinions about the appropriateness of continuing the present experiment with inflation accounting [FASB, 1979]. Some studies show that important groups of accounting users believe inflation accounting is no longer necessary. Others argue that inflation accounting is still needed, at least for capital-intensive firms. The latter group argues that the effects of past inflation will take many years to work their way through conventional financial statements.

The primary issue is whether the differences between conventional data and data adjusted for changing prices would be large enough to matter. If the adjusted data were terminated before conventional data could provide approximately the same signals, accounting users would be deprived of potentially useful information, and accounting researchers would be unable to continue a variety of research that has just become feasible.

This paper presents findings that support continuation of the experiment. The study combines computer simulation with past empirical data to estimate the conventional performance measures that would result in years following stabilization of all prices. Conventional measures of return on investment and its components are compared with their adjusted values for the simulated firms, and relatively large differences are found to persist for more than five years. The results suggest that adjusted data could facilitate cross-sectional comparisons as well as comparisons over time [Ijiri and Noel, 1984]. As this study does not address the issue of relative price changes, it does not indicate which of the present adjustment alternatives would be more useful. It focuses instead on the effects of general inflation in past years

and a subsequent condition that is most favorable to conventional accounting: completely stable prices.

DEVELOPMENT OF THE RESEARCH QUESTIONS

As predicted by Burton [1981], people tend to lose interest in inflation accounting when inflation has been high and then falls to five percent or less. Inflation fell below five percent in 1982 and is generally expected to remain there for several years. As a result, accounting users and practitioners are saying that inflation accounting may soon be unnecessary. Flesher and Soroosh [1983] elicited this opinion from controllers and financial analysts in the United States. In the United Kingdom, Kinsman [1983] reports that institutional investors already see little need for inflation accounting. Similar opinions have been expressed to the FASB:

> Inflation is no longer at historically high levels; therefore, the objectives of the standard [SFAS 33] are no longer of sufficient concern to justify further experimentation. [FASB, 1983, p. 7]

An implied premise of this argument is that there would be little difference between adjusted data and conventional data now that inflation is no longer as high as it was a few years ago, or that differences would be negligible within a year or two.

The FASB also notes opposing arguments from other users. One reason given for continuing the experiment is that inflation accounting is intended to deal with past inflation as well as current inflation:

> They argue that one of the strongest reasons for continuing the disclosures (either as an experiment or as a permanent part of financial reporting) is that the effects of inflation are cumulative. For at least capital-intensive and low-capital-turnover companies, constant dollar and current cost measures of fixed assets and depreciation will differ

> significantly from historical cost measures even if the annual rate of inflation is below double-digit levels. In addition, the effects of past inflation will take many years to work their way through the [conventional] financial statements. [FASB, 1983, p. 8]

The implication here is that there would still be material differences between adjusted measures and conventional measures, especially for fixed assets and depreciation expense, and that this condition will persist even under low inflation.

A third argument is that a longer time series is needed to determine which of the alternative adjustments are more useful, but its validity is logically dependent on the validity of the second argument. If differences between adjusted data and conventional data would be negligible within a year to two, there would be little to gain from continuing the experiment with adjusted data. It is assumed that a necessary condition for the adjusted data to be useful is that they provide different signals from those provided by conventional data, whether those signals are used for predictions or for feedback about past predictions.

A related consideration is comparability. If comparisons of adjusted data would produce essentially the same signals as comparisons of conventional data, the absolute differences might be less important.

One type of comparability recently analyzed by Ijiri and Noel [1984] is comparability of measurements over time. They extend the idea of reliability developed by Ijiri and Jaedicke [1969] from measurements of absolute wealth of a business (net assets or capital) to "changes in wealth" (net income or profit) and changes in net income, which they call "force." They demonstrate how current cost accounting could be more reliable for measuring wealth and

still be less reliable than historical cost for comparisons of wealth or comparisons of net income over time. This can occur when estimates of current costs are subject to time-independent measurement errors that are offset by using FIFO or LIFO for valuation of inventory.

This paper supplements that analysis by addressing three additional aspects of comparability: (1) cross-sectional comparisons, (2) comparisons of relative performance, and (3) comparisons involving fixed assets. First, when Ijiri and Noel conclude that FIFO or LIFO could be more comparable over time than current cost, their analysis is restricted to a single firm that can use only one of those conventional methods. Since approximately half of actual businesses use FIFO and the other half use LIFO [Accounting Trends and Techniques, 1983], their conclusion may not apply to comparisons across firms. Second, their demonstration that LIFO could be more comparable than current cost does not address the effects of LIFO on measurements of return on investment (ROI), a common indicator of relative performance that can be affected by undervalued inventory. Third, Ijiri and Noel do not address reliability or comparability of alternatives for measuring fixed assets and depreciation expense. Adding this dimension produces significant complications, but, as capital intensity appears to be the predominant factor in the present controversy, fixed assets must be addressed in some manner.

It is obviously not possible to determine actual usefulness of any data under conditions that have not yet occurred. To do so would likely require several years of future research employing future adjusted disclosures.

It is possible, however, to estimate whether adjusted data have a potential for being useful if prices actually stabilize. This study is

intended to provide initial answers to two major questions implied by the preceding analysis:

1. How many years would differences remain large enough to affect users' decisions (i.e., differences that could alter users' comparisons of performance over time or across firms)?

2. Would such differences be limited to capital-intensive firms (or to comparisons involving such firms)?

THE RESEARCH DESIGN

Computer simulation is especially appropriate for an initial investigation of these questions. Arnold and Hope [1975] discuss the value of computer simlulation in examining environmental circumstances that may not have actually occurred in the past (e.g., zero inflation). They also explain that simulation allows variation of parameters and facilitates alternate complex computations over a long period of time, such as variations in capital intensity and computations of performance measures based on different conventional accounting methods. Another advantage of simulation is its capacity for experimental control. By controlling exogenous variables, the results are easier to interpret because they can be traced directly to the variables of primary interest.

On the other hand, simulation as a research tool has two potential weaknesses. First, simulation can be attacked on the grounds that the results are due to the parameters selected by the researcher, and thus the results are subject to bias and manipulation. Second, simulation may be seen as artificial, bearing little resemblance to the real-world cases it is purported to represent. In combination, these characteristics could destroy the ability to

generalize the findings. Because of this possibility, warn Arnold and Hope [1975, p. 104], "The assumptions used in constructing the simulation should be as realistic as possible."

The Data Inputs

Two characteristics of the present research design are intended to minimize these weaknesses. One is the use of empirical price series (published price indices from 1960 through 1982) as data inputs, a technique previously employed by Benjamin [1973]. Future prices are then held constant at the December 1982 level. A second technique employs empirical financial ratios to establish asset intensity, turnover and other financial characteristics of each firm simulated.

The following analysis centers on the results for a hypothetical firm intended to represent a composite of nonfinancial corporations in the United States. The composite firm is constrained to have financial ratios equal to the average financial ratios of all nonfinancial corporations included in the COMPUSTAT Data Base for financial statements through 1982. For contrast, two other firms represent sub-groups within this nonfinancial set. The second firm is an average of all retailers included in COMPUSTAT. The third firm represents an average of all manufacturers. Table 1 presents the ratios used for scaling the operations of these three firms.[1]

Each of these ratios affects the results in one way or another. The effect of capital intensity in the income statement is proportional to DRATIO,[2] and the effect in the balance sheet is jointly proportional to DRATIO times LRATIO. The effect of inventory intensity in the income statement is proportional to GRATIO, and the latter effect in the balance sheet is

proportional to GRATIO divided by TRATIO. PRATIO and KRATIO indicate potential sensitivity of ROI to dollar differences in the income statement and balance sheet, respectively. A lower ratio of profit to sales (PRATIO) indicates greater sensitivity of profit to a given understatement of expenses. A lower ratio of capital to nonmonetary assets (KRATIO) indicates a greater sensitivity of capital to a given understatement of assets. Sensitivity of ROI is thus increased by a lower PRATIO and/or a lower KRATIO.

Price series were obtained from the Citibank Data Base [1983]. Series used as inputs for each firm are intended to approximate prices affecting that type of firm:

Retailer: Producer price index, finished consumer goods (PWFC)

Composite: Producer price index, all commodities (PW)

Manufacturer: Producer price index, manufactured goods (PWM).

The Simulation Program

The scaling ratios are used to convert the price indices into series of dollar-prices and the appropriate relationships among revenues, expenses and balance sheet items for each of the simulated firms. Outputs are generated according to three versions of conventional accounting:

Version	Inventory Method	Depreciation Method
1	first-in, first-out (FIFO)	straight-line (SL)
2	last-in, first-out (LIFO)	SL
3	LIFO	sum-of-the-years' digits (SYD)

Accounting Trends and Techniques [1983] indicates predominant usage of versions 1 and 2, with roughly one-fifth of firms using methods approximated by version

3. Three versions of conventional ROI and its components are generated for each of the three simulated firms.

An important simplification of these simulations is the condition of complete physical stability. Each firm has a stable turnover of inventory from month to month and fixed assets from year to year, with the turnover for a given firm dependent on its ratio constraints. The control of inventory level is favorable to LIFO because it prevents problems resulting from invasion of LIFO layers with older costs. Ijiri and Noel [1984, p. 56] assume the same condition in their analysis. Imposing a similar control on the level of fixed assets aids in interpreting the simulation results: when both future prices and physical levels are stable, all variations in outputs generated by a given method of conventional accounting are determined solely by the way past prices are treated by that method.

The simulation program simultaneously computes each firm's adjusted data, which are determined by current costs. Measurements of adjusted capital are consistent with SFAS 33 and other current cost models in accounting literature. Relative usefulness of alternative types of current cost profit cannot be evaluated in this study because the alternatives converge when prices become stable. "Current cost income from continuing operations" [FASB, 1979] is then identical to "business profit" and "real business profit" [Edwards and Bell, 1961] because these alternatives differ only when there are "holding gains" that result from changing prices in the year of measurement. Adjusted profit also represents "distributable income:" the amount of cash that can be distributed while maintaining operating capability [FASB, 1979].

PRESENTATION OF RESULTS

To provide a feel for general tendencies of the three versions of conventional accounting, this section first presents an analysis of the time series for the nonfinancial composite. Effects on ROI are explained by detailed analyses of the separate effects of each version on ROI's numerator and denominator. These results for the nonfinancial composite are then summarized and compared with results for the simulated retailer and manufacturer.

Effects on the Numerator (Profit)

The upper portion of Figure 1 presents time series of the three versions of historical-cost income (HCI) as a percentage of the composite firm's adjusted profit. As most readers would expect, HCI1 (using FIFO and SL) is the highest estimate of profit during inflation, and this is also true after prices have stabilized. HCI1 is higher than HCI2 (using LIFO and SL) during inflation because FIFO charges older costs than LIFO for goods sold. HCI2 loses most of its advantage when prices stabilize because FIFO and LIFO then charge the same costs for everything except factory depreciation included in cost of goods sold. Part of the factory depreciation charged by FIFO is from the previous year's ending inventory, and that depreciation is one year older than factory depreciation charged under LIFO. This difference diminishes and finally disappears by the seventeenth year (assuming prices remain stable that long).

Also predictable is the result that HCI3 (using LIFO and SYD) is the lowest conventional estimate of profit during inflation, and that relationship continues after prices have stabilized. SYD charges more-recent costs during

inflation, and depreciation approximates current costs more quickly after prices stabilize. (SYD also charges too much before there is significant inflation (1960s), but that problem disappears by 1974). By 1988, the sixth year of stable prices, HCI3 is down to 130 percent of adjusted profit, while HCI1 and HCI2 are only down to 163 and 162 percent respectively.

During the period of stable prices, adjusted profit is a constant amount. While not a sufficient condition for claiming adjusted profit is more useful, this is a necessary condition when volume and prices are stable. All three versions of conventional profit converge on adjusted profit, and equality is reached in 1999.

As a measurement of force, adjusted profit is clearly more reliable in the sense indicated by Ijiri and Noel. "Force" is the change in net income (profit), which must be zero when volume and prices are stable, and that is exactly what is indicated by an adjusted profit that is a constant amount. All three versions of conventional profit indicate a negative force gradually approaching zero, an indication that misrepresents the completely stable nature of the simulated firm.

Effects on the Denominator (Capital)

Divergences from adjusted capital, shown in the lower portion of Figure 1, are in reverse order of divergences from adjusted profit. HCK1 (Version 1 of historical-cost capital) is closest to adjusted capital partly due to FIFO. FIFO represents inventories at near-current costs during inflation (approximately 1.5 months old except for factory depreciation) and nearer-current costs thereafter. In comparison, LIFO costs are those that existed in 1960.

A similar comparison holds for the two depreciation methods. SL depreciation produces amounts for fixed assets that are much closer to current costs than amounts implied by SYD depreciation. BY 1988, SL produces amounts equal to current costs for the newer third of the fixed assets, and the older assets have less effect because most of their lower costs have already been depreciated. Primarily for this reason, HCK1 rises from 72 percent to 92 percent of adjusted capital during the first six years of stable prices. In comparison, SYD has charged more costs to depreciation, leaving lower amounts for the undepreciated balances. Due primarily to SYD and secondarily to LIFO, HCK3 is still only 52 percent of adjusted capital in 1988.

As mentioned above, inclusion of fixed assets poses special problems, some of which go beyond the issue of current cost versus historical cost. In depicting adjusted capital in Figure 1, it is necessary to choose an appropriate method for the adjusted depreciation charges that determine valuation of assets. As approximately 80 percent of business firms use SL for conventional depreciation [Accounting Trend and Techniques, 1983], it is assumed that adjusted assets would also be measured on the basis of SL depreciation (applied to current costs rather than historical costs).[1]

While this assumption can be viewed as arbitrary [Thomas, 1969], it serves two purposes here. First, it is not possible to prove that the majority practice is wrong in general. To assume a "better" method for the adjusted data would not be defensible without reference to the characteristics of specific assets as they are employed in specific uses. Second, using majority practice as a benchmark facilitates analysis of the relative benefits of using accelerated depreciation solely to offset inflationary effects [Schiff, 1977; FASB, 1979]. Such benefits would obviously not be possible during inflation

if accelerated depreciation would have been appropriate in the absence of inflation. This condition also applies when investigating the relative effects of artificial acceleration after inflation.

Effects on ROI

The combined effects on ROI are shown in Figure 2. Conventional ROIs are HCIs divided by ending HCKs. Comparing ROI2 with ROI1, it can be seen that the relative advantage of HCI2 in the numerator is more than offset by the disadvantage of HCK2 in the denominator. Because of version 2's increasing undervaluation of inventory, ROI2 exceeds ROI1 by 1981 and remains higher after prices have stabilized. ROI1 falls to 177 percent of adjusted ROI by 1988, and they converge in 1999 (assuming prices remain stable for that long). ROI2 is 219 percent of the adjusted ROI in 1988, and it remains at 123 percent after 1999 because LIFO inventories are still based on 1960 costs. That problem will not disappear unless inventories are revalued.

The highest estimate of relative performance is produced by conventional version 3. That is because the denominator is undervalued by LIFO and SYD depreciation. ROI3 falls from 482 percent to 251 percent of the adjusted ROI during the first six years of stable prices. It will never fall below 184 percent unless inventories and fixed assets are revalued.

Again it should be noted that these results are dependent on SL depreciation being the appropriate method. If accelerated depreciation were more appropriate, the only combination of conventional methods that would converge with adjusted ROI would be FIFO combined with accelerated depreciation. According to Accounting Trends and Techniques [1983], only about one-fifth of the firms use accelerated depreciation and it is not clear how many of them also use FIFO.

Results for Retailers and Manufacturers

Table 2 provides an intermediate-run summary of the results for all three firms. Amounts generated by the three conventional versions are expressed as percentages of their adjusted counterparts (e.g., HCI as a percentage of adjusted profit). All amounts shown are for the sixth year of stable prices. The sixth year is selected for summary because it is the earliest year that any conventional data come with 10 percent of any adjusted data for all three firms. This condition is referred to below as an "immaterial" difference (or one that is not clearly "material").

Given this definition of materiality, it can be seen that the only conventional data with immaterial differences after six years of stable prices are the estimates of capital provided by Version 1. Versions 2 and 3 are still at least 26 percent below adjusted capital.

An unexpected result is that there is very little difference in the estimates provided by HCK1 for manufacturers and retailers: 94.2% versus 93.2%, respectively. Indeed, the relatively insignificant differences are opposite in sign from what was expected.

The result was traced to two factors that apply to the simulations but would not always apply to actual firms in either category. First, during the years before prices were stabilized, the retailer's index (PWFC) rose faster than the manufacturer's index (PWM). These indices may not be representative of asset costs for actual firms, especially the costs of fixed assets. The second factor is that these firms have very different ratios of capital to nonmonetary assets (KRATIO). For a given error in valuation of assets, the percentage error in valuation of capital is larger when KRATIO is smaller (as for the average retailer). Assets under Version 1 are relatively higher for

the retailer because the higher inflation is offset by a lower fixed-asset intensity, so the estimates of capital would be higher for the retailer if the retailer's KRATIO were at least equal to that of the manufacturer. Since the results are based on a variety of different factors, it cannot be claimed that results would be in the same order for a specific retailer versus a specific manufacturer.

What is important here is that results for some retailers could be more divergent than results for some manufacturers. This is contrary to the predominant view that fixed-asset intensity is the deciding factor. While fixed-asset intensity is obviously important, so are the rates of past price changes and the percentage of nonmonetary assets financed by shareholders. (There are no "monetary purchasing power gains" to offset the latter factor when prices are stable.)

Similar reasoning applies to comparisons of estimated profits. A major reason that the retailer's estimates are still so high after six years of stable prices is its lower margin of profit to sales (PRATIO). The average retailer's margin is 2.5 percent, but this margin can vary from more than 6 percent to less than 1 percent for individual firms. Given the same difference in estimating depreciation expense, for example, a low-margin business would have a much higher relative difference than a high-margin business. Thus, even for firms in the same industry, users could not make reliable comparisons of absolute profitability or earnings per share unless all contributing factors were approximately equal.

The problem is compounded for comparisons of relative profitability (ROI). Since ROI is affected by differences in both the numerator and the denominator, the divergence of conventional estimates is dependent on past

inflation, inventory intensity and turnover, fixed-asset intensity and turnover, KRATIO, PRATIO and the specific firm's choice of conventional methods. It is not just the combination of higher inventory intensity and the LIFO method that makes Version 2 so divergent for retailers. It is not just the combination of a lower KRATIO and SYD depreciation that makes Version 3 the least plausible estimator of ROI. It is all factors working together that would make it a practical impossibility for an external user to assess the degree of divergence for a particular firm.

Table 2 also indicates that zero inflation would not ensure comparability across similar firms using different conventional methods. For example, an average retailer using Version 1 might seem 17 percent more profitable than an identical retailer using Version 3 (138/118 = 1.17), and an average manufacturer might appear 26 percent more profitable when the same versions are employed in comparing identical firms. There is even less comparability across methods for comparisons of capital and ROI. Finally, referring again to Figures 1 and 2, it can also be seen that there is less comparability across methods before the sixth year of zero inflation.

These results do not prove that adjusted data would be more useful in the future. It is possible that, as Ijiri and Noel suggest, errors in measuring individual current costs could destroy the apparent comparability of adjusted data under the ideal conditions of this study. On the other hand, if those errors are randomly distributed as Ijiri and Noel assume, then the overall error in measuring multiple assets would have an expected value of zero. Random or systematic, however, it remains to be seen whether those errors would be enough to make the adjusted data less comparable than conventional data.

The long-run prognosis is estimated in Table 3. Shown there are the number of years of completely stable prices it would take for each version of conventional accounting to approximate their adjusted counterparts (within 10 percent) for all three firms in the study. Version 1 would approximate adjusted capital for all of these firms after six years. Version 3 would approximate adjusted profit after ten years. No method would approximate adjusted ROI for at least thirteen years, and Versions 2 and 3 would continue to be materially higher because of undervalued assets.

LIMITATIONS OF THE STUDY

These results cannot be generalized to conditions that were not addressed in the study. In particular, the study does not address the effects of relative price changes or the effects of "low" inflation, both of which are likely to be more realistic than complete stability of all prices. On the other hand, neither of these complexities would weaken the case for inflation accounting. Conventional data would be more divergent with low inflation than shown here for zero inflation. Conventional data would probably be less divergent in industries where prices have risen less than average producer prices, but the other side of this argument is that conventional data would be even less useful for inter-industry comparisons.

These results should not be generalized to cases they were not intended to represent. Each firm is a simplification of reality, with few of the many complexities that would characterize actual firms. The imposition of a stable operating level is a simplification that reduces generalizability in cases where growth is a factor. On the other hand, growth accounted for as a "pooling of interests" would not likely change the results appreciably unless

the ages of the acquired assets were significantly different from ages of the firm's pre-existing assets. Perhaps more pertinent is that results for each firm are determined by a single price series and a particular set of ratio constraints that determine its unique financial configuration. Those inputs were intended to produce approximate results for several "average" firms, but different price series or different ratios would yield results that would be better or worse than those reported here. The differences discussed above should be considered in attempting to generalize these findings to specific firms or industry subsets with significantly different financial configurations.

IMPLICATIONS OF THE FINDINGS

In spite of these limitation for specific cases, the results suggest that further research would support these hypotheses:

1. Even if prices stabilize, conventional data will not be comparable for at least another decade.

2. During that time, adjusted data would provide different rankings of performance, rankings which could be more useful than conventional rankings, a potential that can be tested only if adjusted disclosures are continued.

3. The divergence of rankings will depend on capital (fixed-asset) intensity, but it will also depend on many other factors including inventory intensity, profit margin, financing structure and the past rate of price changes for particular firms being compared.

4. The most important factor in many cases will be the particular set of conventional methods employed by the reporting firm.

Firms now using accelerated depreciation to counteract the effects of past inflation could provide comparable estimates of absolute profitability in ten years, but artificial acceleration also produces less comparable estimates of assets, capital and ROI. (If accelerated depreciation would have been

appropriate in the absence of inflation, that method could produce comparable data in approximately thirteen years if combined with the FIFO method.) With stabilized prices, the LIFO method would provide the least comparable data because it would not materially improve estimates of profitability and, because inventories are undervalued, LIFO produces more inflated estimates of ROI than those produced by FIFO. Use of LIFO can also cause conventional data to be less reliable for retailers than for manufacturers.

In one sense, the various versions of conventional accounting could be less useful after inflation than they have been in the recent past. Most users have been aware that profits were inflated and assets were undervalued, and they have used those data with caution. They were reminded of this by concurrent high inflation, but they may mistakenly assume that these problems would dwindle to insignificance as inflation is brought under control. If so, they would place more reliance on conventional data than would be warranted by the actual situation. With a wider gap between perceived reliability and actual reliability, users could be harmed more by conventional data in the future than in the past.

TABLE 1

SCALING RATIOS FOR SIMULATED FIRMS

	Nonfinancial Composite	Average Retailer	Average Manufacturer
Cost of goods sold to sales:			
Excluding depreciation (GRATIO)	69.3%	71.4%	68.3%
Inventory turnover per year (TRATIO)	8.86	8.78	6.59
Depreciation expense to sales:			
Manufacturing (FDRATIO)	2.0	—	2.2
Selling and administrative (ODRATIO)	1.9	1.9	1.9
Total (DRATIO)	3.9	1.9	4.1
Average life of fixed assets (LRATIO)	16.2	15.8	15.9
Profit to sales (PRATIO)	5.3	2.5	5.2
Capital to nonmonetary assets (KRATIO)	.77	.60	.82

TABLE 2

COMPARISON OF CONVENTIONAL DATA WITH ADJUSTED DATA
AFTER 6 YEARS OF STABLE PRICES

	Estimated Percent of Adjusted Counterpart		
	Nonfinancial Composite	Average Retailer	Average Manufacturer
Estimates of Profit:			
HCI1 (FIFO, SL)	163%	138%	157%
HCI2 (LIFO,SL)	162%	138%	155%
HCI3 (LIFO, SYD)	130%	118%	125%
Estimates of Capital:			
HCK1	92%	93%	94%
HCK2	74%	60%	70%
HCK3	52%	38%	51%
Estimates of ROI:			
ROI1	177%	148%	166%
ROI2	219%	232%	221%
ROI3	251%	314%	247%

FIGURE 1
CONVENTIONAL ESTIMATES OF PROFIT AND CAPITAL
NONFINANCIAL COMPOSITE

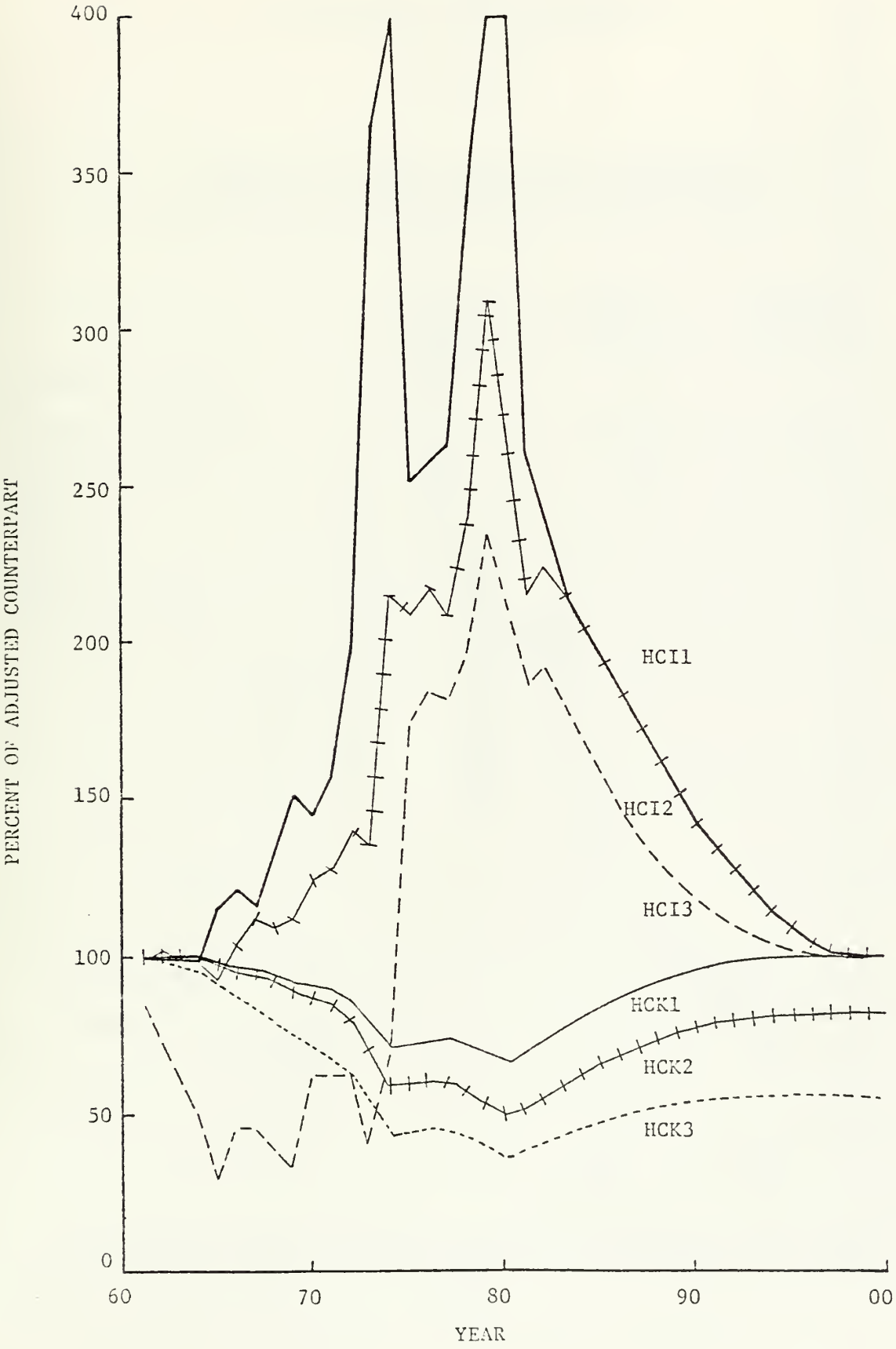

FIGURE 2

ESTIMATES OF RETURN ON INVESTMENT
NONFINANCIAL COMPOSITE

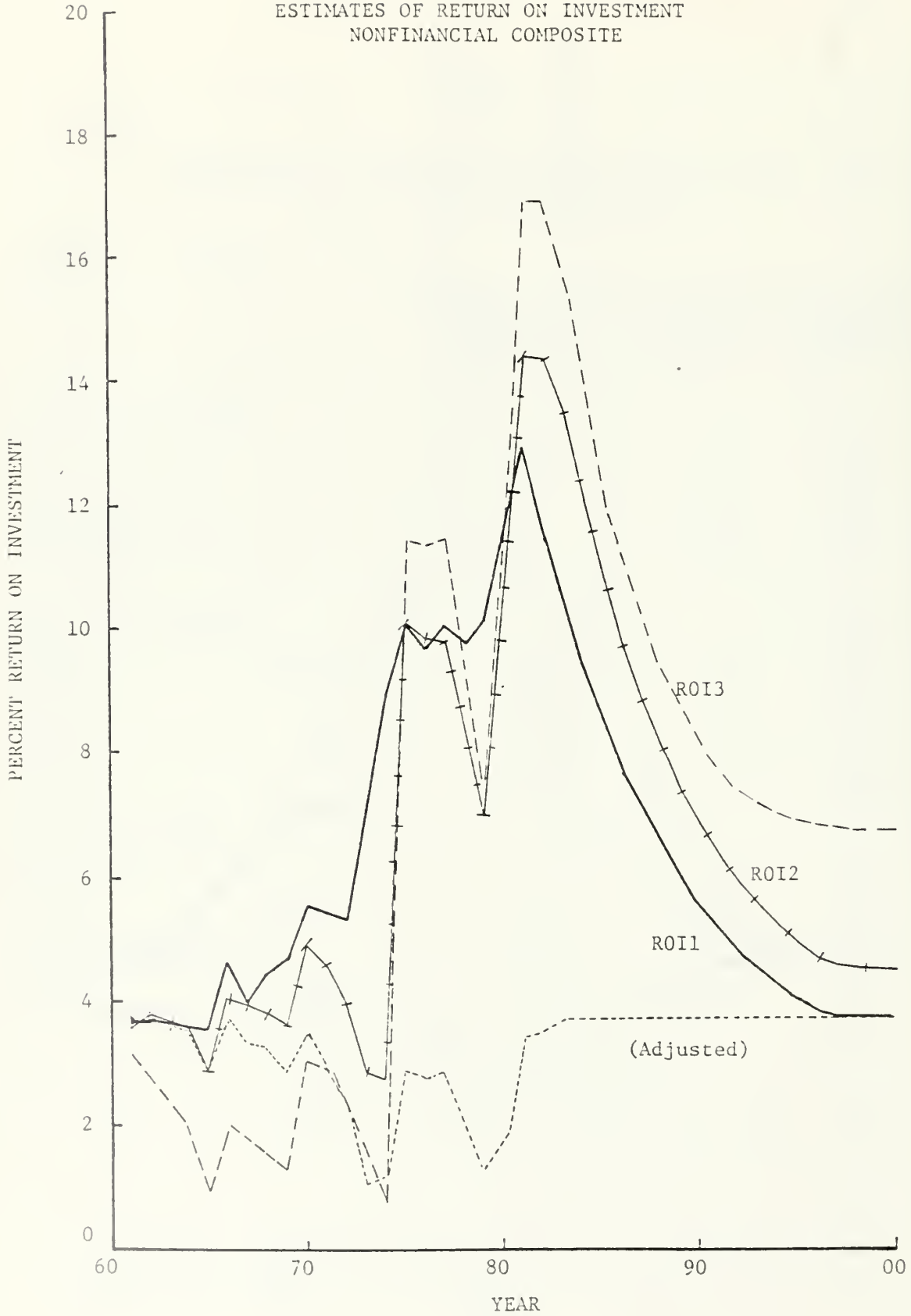

TABLE 3

NUMBER OF YEARS OF STABLE PRICES RQUIRED FOR
CONVENTIONAL DATA TO APPROXIMATE ADJUSTED DATA*

	Version 1 (FIFO/SL)	Version 2 (LIFO/SL)	Version 3 (LIFO/SYD)
Estimates of profit	13	13	10
Estimates of capital	6	NEVER	NEVER
Estimates of ROI	13	NEVER	NEVER

*within 10 percent

FOOTNOTES

[1]In addition to manufacturing and retailing, the nonfinancial composite is based on firms engaged in agriculture, services, and wholesaling. Because these industries have different financial characteristics, the composite ratios do not always fall between the retailing and manufacturing ratios for the same item in Table 1.

[2]The allocation of depreciation expense between manufacturing (FDRATIO) and selling and administrative expense (ODRATIO) for the manufacturing firm is estimated by assuming ODRATIO for manufacturers is the same (1.9%) as it is for retailers. FDRATIO, then, is the remaining share of DRATIO.

[3]The present standard [FASB, 1979, p. 21] allows adjusted depreciation to be based on a different pattern and different estimates of useful life and salvage value if the conventional method was chosen partly to counterbalance the effects of price changes. Thus it is possible to improve the adjusted data without changing the conventional data. For example, had SYD been more appropriate for adjusted capital, conventional versions 1 and 2 would have crossed adjusted capital (from less to more), and version 3 would not converge because of LIFO. In that case, a fourth version employing FIFO and SYD depreciation would need to be considered. Regardless of the depreciation benchmark, adjusted capital would be stable while all versions of conventional capital would indicate significant growth for a stable firm.

REFERENCES

Accounting Trends and Techniques, (AICPA, 1983).

Arnold, J. and A. Hope, "Reporting Business Performance," Accounting and Business Research (Spring 1975), pp. 96-105.

Benjamin, J., "The Effects of Using Current Costs in the Measurement of Business Income," Accounting and Business Research (Summer 1973), pp. 213-217.

Burton, J. C., "Emerging Trends in Financial Reporting," Journal of Accountancy (July 1981), pp. 54-66.

Edwards, E. O. and P. W. Bell, The Theory and Measurement of Business Income (University of California Press, 1961).

Flesher, D. L. and J. Soroosh, "Controllers Say FAS 33 is Not Very Useful," Management Accounting (January 1983), pp. 50-53.

Financial Accounting Standards Board, Statement of Financial Accounting Standards No. 33: Financial Reporting and Changing Prices (FASB, 1979).

_____, Invitation to Comment: Supplementary Disclosures about the Effects of Changing Prices (FASB, 1983).

Ijiri, Y. and J. Noel, "A Reliability Comparison of the Measurement of Wealth, Income and Force," The Accounting Review (January 1984), pp. 52-63.

Kinsman, F., "CCA--Some Viws from the City," Accountancy (March 1983), pp. 131-132.

Schiff, M., "Depreciation Shortfall--Fact or Fiction?" Journal of Accountancy (March 1977), pp. 40-42.

Thomas, A., The Allocation Problem in Financial Accounting Theory (American Accounting Association, 1969).