

# Accounting Changes and Stock Prices

by Robert Kaplan and Richard Roll

“Generally accepted accounting principles” permit many alternative methods for reporting the economic events of a firm. Companies differ greatly, for example, in how they report depreciation, inventory valuation, income and expense recognition, and acquisitions and mergers. If the accounting treatment of an event affects taxable income, the firm’s choice of method has a direct economic impact through its effect on the firm’s cash balances. Frequently, however, companies may differ only in financial reporting to stockholders while using similar or identical methods for computing taxable income (e.g., in the case of depreciation). In this situation, firms are essentially choosing among different forms of communicating the same information, and the value of the firm is unaffected by the choice of accounting method so long as the method is well understood by the financial community.

The firm and especially its auditors are responsible for disclosing to the investment community the accounting conventions used in preparing financial statements. Any change in method that occurs (e.g., a switch in reporting depreciation) should be specifically mentioned at the time that an earnings or financial position is issued or, at the very latest, in the annual report for the year in which the accounting change occurred.

If the stock market is an efficient capital market (i.e., one in which prices always fully reflect available information) sophisticated investors should be able to interpret properly the accounting conventions used by a company. They can then either purchase or sell the security until it is valued consistent with the firm’s true economic condition or, alternatively, sell information to other investors (who may not be able to understand fully detailed financial statements) to clarify the accounting procedures used by a firm. In either case, the existence of sophisticated investors should prevent a company from influencing its stock price by manipulating accounting conventions.

However, the conviction that the stock market is efficient is not shared by many financial analysts and accountants. Many articles and research

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studies have been devoted to describing how companies were able to increase their reported earnings by changing accounting procedures in a manner which left the economic status of the firm unchanged. For example, two articles by Professor John Myers ([1967], [1969]) in the *Financial Analysts Journal* have analyzed in detail companies that switched from accelerated to straight-line depreciation for financial reporting. Dean Graber [1969], in this *Journal*, has also described how some companies maintain “illusory earnings growth” by changing to less conservative accounting methods. Professors Copeland and Wojdak [1969], in a recent issue of the *FAJ* described how 26 acquiring companies have ballooned their earnings by using pooling-of-interests rather than purchase accounting in 169 mergers that occurred in a one-year period ending June 30, 1967. A writer in the *Wall Street Journal* probably echoes the sentiments of many when he states that “the varied methods of accounting . . . fog up reported earnings per share . . . to the bedevilment of accountants, security analysts, and investors alike.”<sup>1</sup>

Yet these and other writers in the accounting and financial analysts literature are all making the unsupported assumption that investors are unable to interpret accounting changes properly. They assume that companies are able to influence stock prices by one-shot accounting changes that do not affect their economic positions. We grant that companies must believe these practices affect their stock prices or they would not take the trouble to change accounting procedures, hinder inter-period and inter-company comparisons, and incur a qualification or supplementary statement in the auditor’s report. But no systematic empirical test has been made of whether such changes have any impact whatever on a company’s valuation in security markets.

We have conducted a study of a large number of companies that implemented two types of accounting changes over the last ten years. Both changes affected only the financial statements prepared for stockholders, having no effect on the taxes or cash position of the firm. One was the switch, principally in 1964, to the full flow-through method of reporting the investment credit. Many companies adopted this new accounting procedure,

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1. Footnotes appear at end of article.

switching from the previously allowed 48-52 method or the productive life method. One might suspect that those companies able to increase their reported earnings by adopting the flow-through method should have had relatively higher increases in stock prices than those companies continuing to use more conservative methods. In the efficient-markets view, however, sophisticated investors should have been able to identify that portion of a company's earnings generated by taking the full investment credit immediately into income. Such investors would have prevented a company from affecting its stock price significantly merely by implementing this accounting change.

A similar situation arises for companies switching back from reporting accelerated depreciation to reporting straight-line depreciation to stockholders. This change also has no direct effect on economic positions since companies continued to use accelerated depreciation for computing taxable income.

The names of companies that implemented either of these accounting changes were obtained from the annual editions of *Accounting Trends and Techniques*, which surveys the annual reports of 600 industrial corporations and, among other items, reports on accounting changes that occur from year to year. We identified 275 companies that switched to the flow-through method and 57 companies who maintained the more conservative productive-life method for reporting the investment credit. A similar survey yielded 71 companies that switched to straight-line depreciation for financial reporting.

For each company we obtained the date of the first earnings announcement in the *Wall Street Journal* for the fiscal year in which the accounting change was implemented (or could have been, for those companies that did not change their investment credit method). Stock prices on either side of this date were observed in order to detect any movement in anticipation or subsequent to the earnings announcement.

In attempting to assess the real impact of accounting changes, however, we had to recognize that many other factors were simultaneously affecting market prices. Whether general market movements or changes in dividends, labor contract, interest rates or technology, they were all nuisances and had to be eliminated in order to perceive clearly the impact of the events under study. To eliminate them, we employed two techniques: first, we constructed rate-of-return models<sup>2</sup> that

eliminated two broadly influential variables. These variables were interest rates and general economic conditions, the latter measured by an index of stock prices. Second, we attempted to purge the effects of many other influences by cross-sectional averaging over a sample of heterogeneous firms, thus minimizing the effect of extraneous events affecting only individual firms or affecting different firms at different times.

Our data analysis was conducted in three stages: first, for every firm in the sample, weekly rates of return (relative market price appreciation plus cash dividends) were regressed simultaneously against rates of return on the Standard and Poor's Composite Average and the interest rate on an average of short-term Federal Debt issues<sup>3</sup> (Johnston [1963]), providing an equation that describes the *normal* relationship between a security's return and the two averages. Second, deviations (or residuals) were calculated about the regression equation found in the first stage. These deviations were attributable to factors not associated with the stock market average and interest rate average used in the regression equation. We call them "abnormal" returns because they are due either to unspecified events or to earnings increases associated with the accounting changes under investigation. Third, to excise the unspecified events, the deviations obtained in stage two were averaged over all the securities in our sample for the week during which the earnings increase was announced. Since this is generally a different calendar week for each firm, the only event *common to all firms* that occurred that week was the earnings announcement. We can be fairly confident, as a consequence, that any unusually high (or low) *average* abnormal return was actually due to the only significant common event that week, the earnings announcement. To derive a picture of the circumstances preceding and following the announcement, we also computed average abnormal returns for thirty weeks before and thirty weeks after the announcement.

To obtain measures of investor experience associated with firms that increased earnings by changing accounting methods, we summed the average abnormal return over time, beginning thirty weeks prior to the earnings announcement. The result is the cumulative return up to that time that investors received, on average, from such a security, abstracting from interest rate and general stock market movements. We called this the "cumulative average abnormal return."

FIGURE 1

Abnormal Returns Around Earnings Announcement Dates

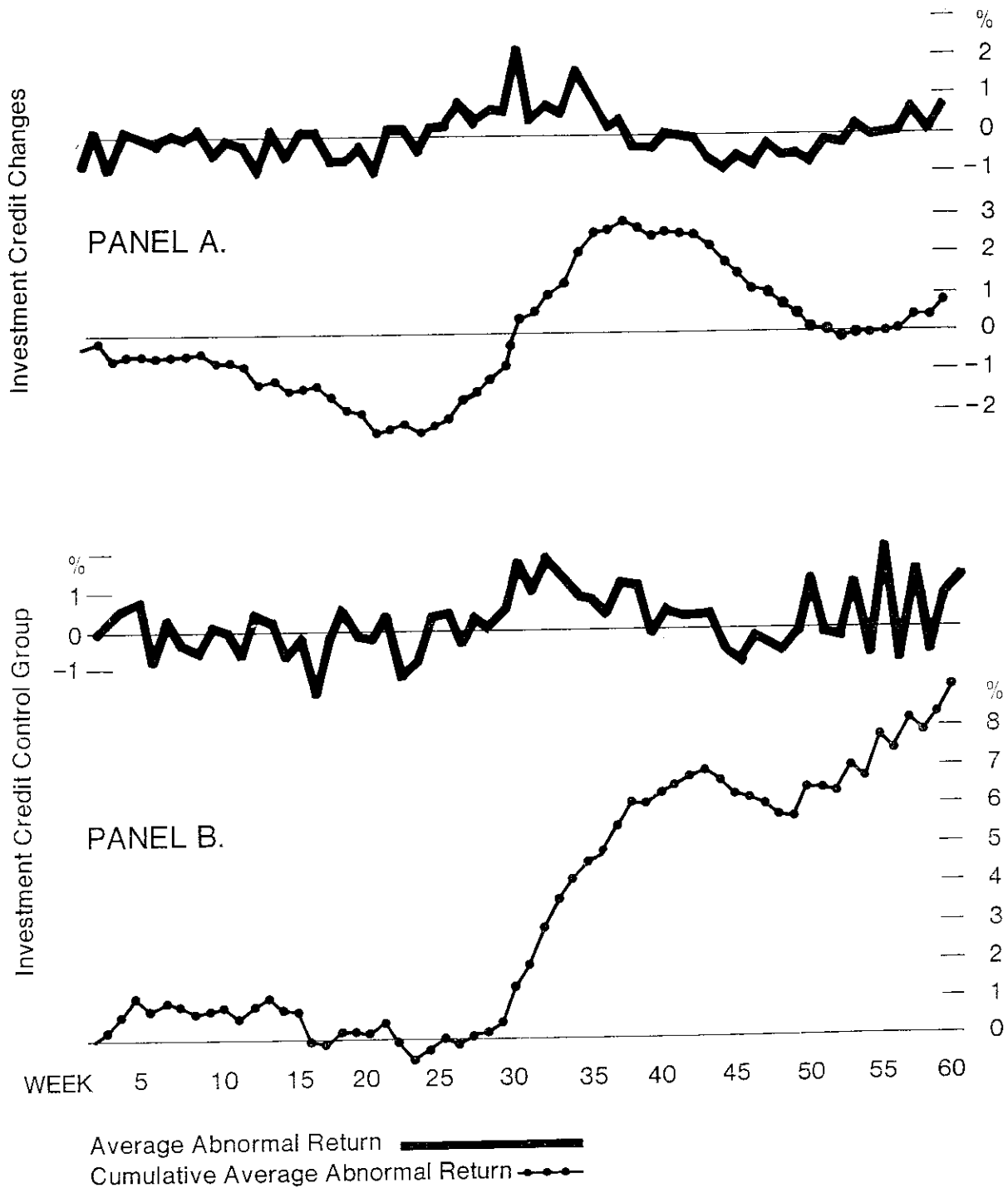
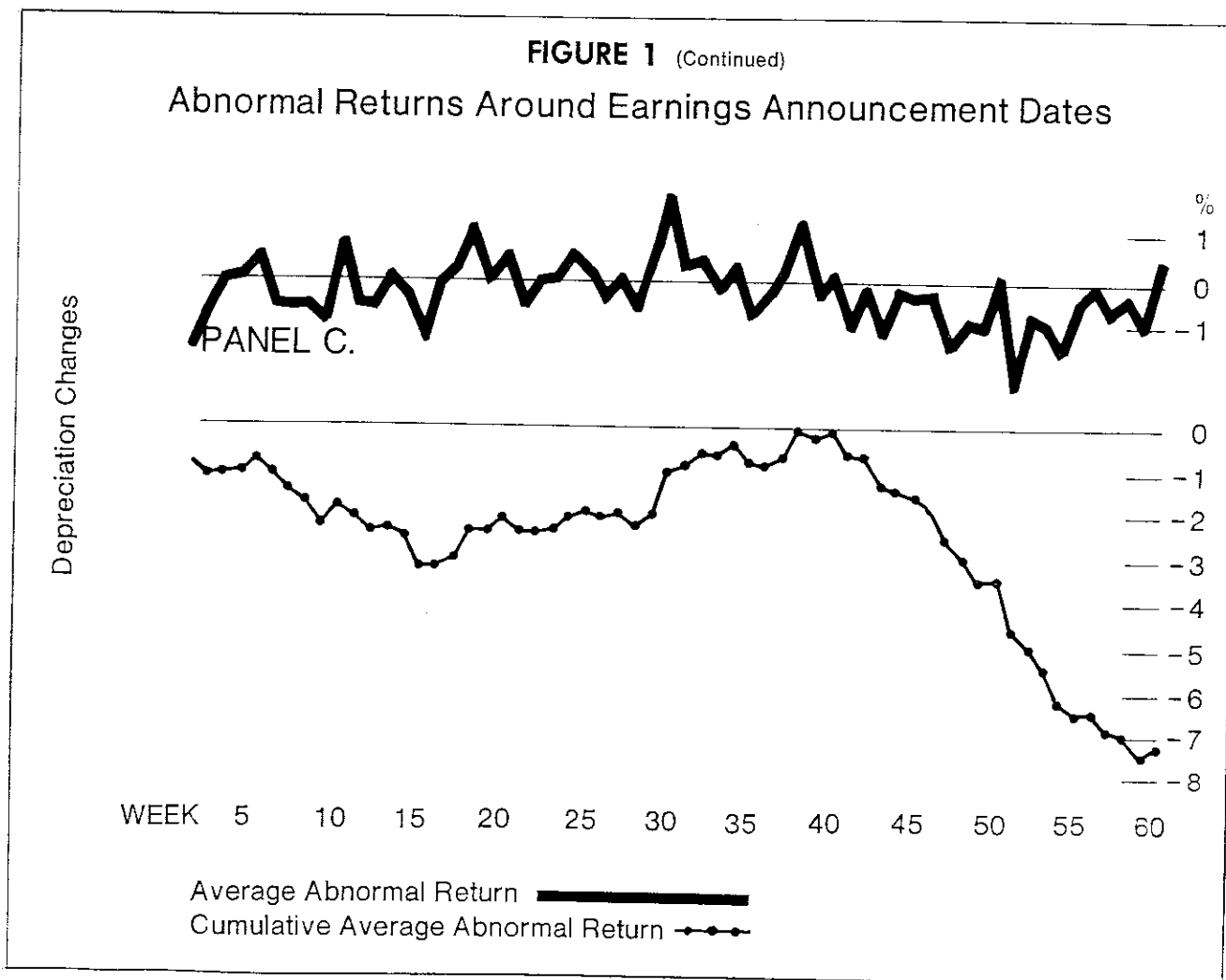


Figure 1 contains all the major results. Both the average abnormal return and the cumulative average abnormal return are plotted against time for three classes of firms, (a) those that increased earnings by adopting the full flow-through of investment credit accounting, (b) those specifically mentioned in the 1965 *Accounting Trends and Techniques* as continuing to reflect the investment credit over their assets' productive lives, (c) those that increased earnings by switching from accelerated to straight-line depreciation for financial reporting. Firms in group (b) voluntarily reported earnings below what was possible within "accepted accounting practice." For this reason we call them the "Investment Credit Control Group." In Figure 1, the time axis is centered on week 31 when the announcement of increased earnings was made

(as mentioned previously, this is not the same calendar week for all firms in the average).

Securities of firms that increased reported earnings by adopting the flow-through method of accounting for the investment credit demonstrated abnormally good returns in the ten weeks surrounding their earnings announcement. This is indicated in Panel A by the uniformly positive average abnormal returns from weeks 25 to 36. These positive returns are responsible for the rapid rise in the cumulative abnormal return during the same weeks. The proportion of securities with individually positive cumulative returns rose more than 14 percentage points from week 25 to week 36—a significant movement in security prices. Its relation to increased accounting earnings is clear. Unfortunately for stockholders, market prices did



not remain high. In weeks 39-53, these securities demonstrated abnormally *bad* returns on average, the proportion of securities with positive cumulative abnormal returns declining to 0.471 in week 53.

It seems prudent to emphasize again that patterns in Figure 1 are averages and need bear no resemblance to the patterns of individual prices. Indeed, movements in averages, both up and down, reflect non-synchronous movements of individual components. For example, in Panel A, the movement down in weeks 39 to 53 could be due to a trickling of information about the true reason for previously reported high earnings. One possible source of such information is the annual report. Its publication occurs some time after the earnings announcement in the financial press and part of the downtrend after week 39 could be attributed to investor actions accompanying its receipt at different times from different firms. We have no precise estimate of the normal lag in the publication of annual reports, but it seems unlikely to be delayed until week 53, 21 weeks after earnings are announced. This fact, plus the sharp downward movement in prices beginning in week 44, suggests another possibility: a reaction to subsequent quarterly reports that began to appear about 13 weeks after the original earnings announcement date. These later quarterly reports may have indicated that the increased rate of earnings growth anticipated because of the previous investment credit switch could not be sustained (i.e., no additional earnings manipulations were available).

Panel B of Figure 1 portrays the "control group" of firms that continued to reflect the investment credit over their assets' productive lives. Although these firms reported earnings below the potential permitted by accepted accounting practice, stockholders must not have been too upset. Their shares not only increased in value around the earnings announcement date, but, in contrast to the companies that switched accounting methods, they remained at the higher level. On average, holders of these shares from weeks 1 to 52 earned 6.42 per cent per annum in addition to the normal return associated with interest rates and stock market averages.

You can now appreciate why we enclosed "control group" in quotes. The performance reported in Panel B strongly suggests the presence of pre-selection bias in this group of companies, since a random selection should show no abnormal return over an extended time period. A possible explana-

tion is this: managers of these firms knew that their earnings were going to be higher than anticipated even without the help of an accounting change; so they didn't bother; the change to flow-through of the investment credit could be postponed until a later date when earnings might not be so favorable. (This interpretation is consistent with the hypothesis that firms schedule accounting changes to smooth reported earnings over time.)<sup>4</sup>

Firms that switched from accelerated to straight-line depreciation between 1962 and 1968 were, on average, dismal performers. Panel C shows that from week 1 to week 52 their shareholders gained five per cent less than they would have anticipated given interest rate and general stock price movements. In week 60, fewer than 40 per cent of these firms had positive cumulative abnormal returns. These results are only suggestive, however, because neither performance measure significantly rejects, in the statistical sense, the hypothesis that firms were unaffected by the accounting change and earnings announcement.<sup>5</sup>

But relying on the average patterns, the data suggest two conclusions about firms that increase earnings by switching from accelerated to straight-line depreciation: first, there is a temporary positive effect around the earnings announcement date. This may be due to unexpectedly higher reported earnings which investors accept as valid, not suspecting they resulted from an accounting change. Second, the patterns suggest that firms who increase earnings by changing depreciation reporting are likely to be performing poorly. This is indicated by the general downtrend in cumulative abnormal average return which is ameliorated only in the weeks adjacent to earnings announcement.

Earnings manipulation may be fun, but its profitability is doubtful. We have had difficulty discerning any statistically significant long-term effect on security prices. However, we can conclude that, on average, security prices increase around the date when a firm announces earnings inflated by an accounting change. But the effect appears to be temporary, and certainly by the subsequent quarterly report, the price resumes a level appropriate to the true economic status of the firm. In our sample, firms that manipulated earnings seem to have been performing poorly. If this were generally true, one would predict that earnings manipulation, once discovered, is likely to have a depressing effect on market price because it conveys an unfavorable management view of the firm's economic condition. ♦

#### FOOTNOTES

1. Stabler, Charles, "Heard on the Street," *Wall Street Journal*, September 12, 1969.
2. The economic theory behind these models was formulated by Sharpe [1964] and Lintner [1965]. Basic concepts were present in the early work of Treynor [1965], and the models have recently been applied in many empirical contexts, Douglas [1969], Fama, Fisher, Jensen, and Roll [1969], Jensen [1969], Blume [1970]. Fama [1970] reviews part of this work.
3. Stock price data for each firm were taken from the ISL Daily Historical Stock Price Tapes which cover the period 1962-1969. The maximum number of observations available were used in the computations. More than 70 per cent of the securities had over 300 weekly observations. Less than ½ per cent had fewer than 100 observations.
4. See Hepworth [1953], Gordon [1964], Gordon, Horwitz, and Meyers [1966], Copeland and Licastro [1968], and Cushing [1969] for development of the income-smoothing hypothesis.
5. Cf. Kaplan and Roll [1970], for precise quantitative justification of this sentence.

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