Efficient vs. Opportunistic Choice of Accounting Procedures: Corporate Control Contests

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Abstract

Corporate takeovers are assumed to control the non-value-maximizing (opportunistic) actions of managers. We examine takeover targets prior to the initial control action for evidence of opportunistic, income-increasing accounting methods. These tests attempt to determine the relative importance of two non-mutually exclusive competing hypotheses for accounting method choice: opportunism and efficiency. We find evidence consistent with both the opportunism and efficiency hypotheses. Target managers choose income-increasing accounting depreciation, inventory and investment tax credit methods more frequently than the managers of non-target firms. This difference remains after controlling for differences attributable to efficiency.

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1.0 Introduction

Accounting numbers are hypothesized to be an integral part of the firm's formal and informal contracts involving managers, debtholders, shareholders and other factor owners, as well as the firm's customers (Watts, 1974, Jensen and Meckling, 1976, Watts and Zimmerman, 1986, and Ball, 1989). This contracting-based theory predicts (and the evidence supports) systematic cross-sectional and longitudinal regularities in managers' accounting procedure choices as a function of the incentives created by these contracts. (Holthausen and Leftwich, 1983, Watts and Zimmerman, 1986, and Christie, 1990).

The rationale underlying this theory of accounting choice is that in an unregulated world the contracting parties constrain the manager's discretion over accounting procedures to the "accepted set" (Watts and Zimmerman, 1990, pp. 135-137). The accepted set is chosen ex ante by the contracting parties to maximize the value of the firm. Then, ex post from within the accepted set, managers choose particular accounting procedures. Such choices can be made "efficiently" to maximize the value of the firm or "opportunistically" to make the manager better off at the expense of some other contracting party (Holthausen, 1990). If there are sufficient controls on managers' accounting discretion (e.g., monitoring by the board of directors, competition from the product markets and from within the firm by other managers, and the market for corporate control), then the managers will make ex
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Empirically, it is difficult to distinguish whether an accounting choice was made for efficiency (ex ante and ex post value-maximization) or opportunistic (ex ante but not ex post value-maximization) reasons. Most of the empirical tests are based on opportunism and usually reject the null hypothesis of no association between accounting choice and firm-specific variables such as leverage (Christie, 1990). They have not controlled,
however, for cross-sectional differences or longitudinal changes in the accepted set of accounting methods, which serves to confound the tests (Watts and Zimmerman, 1990). Moreover, many of the empirical regularities interpreted as opportunistic can also be interpreted as occurring for efficiency reasons (Watts and Zimmerman, 1986 and Sweeney, 1990). The few tests based on efficiency rationales also have rejected the null hypothesis of no association between the contracting variables and accounting choice (Zimmer, 1986; Whittred, 1987; Malmquist, 1990; and Mian and Smith, 1990).

This paper provides evidence that, in certain situations, managers make accounting choices opportunistically after controlling for efficient choice. We select a non-random sample of firms with non-value-maximizing managers and examine the time-series of their earlier accounting choices for evidence of opportunism. Economics and finance studies document that corporate control actions such as tender offers and proxy fights discipline non-value-maximizing managers. By focusing on these takeover targets, a sample is identified where a priori we expect managers are undertaking operating decisions that increase their wealth at the shareholders' expense. This sample is then examined for evidence of managerial opportunism in their choice of accounting procedures. If we are unable to document opportunistic accounting choices in this non-random sample, then it is less likely that opportunism is driving accounting choices in a random sample of firms.

The maintained hypothesis underlying our tests is: prior to the control action, firms that subsequently become corporate control targets contain more non-value-maximizing managers than a sample of surviving firms that were not targets of a corporate control action. Assuming that surviving, non-target firms contain fewer opportunistic managers than the takeover targets allows us to use surviving firms' accounting procedures as the benchmark for the efficient choice of accounting procedures.

The evidence is consistent with the existence of accounting opportunism. We find that, prior to the takeover, managers in these firms select more income-increasing accounting procedures than the sample of surviving non-target firms for depreciation, inventory and investment tax credit (ITC) accounting choices. We also find that even after selecting more income-increasing depreciation methods, control targets have lower

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2 The terms "non-value-maximizing managers" and "opportunistic managers" are used interchangeably. Non-value-maximization occurs either because managers are opportunistic or incompetent. But "incompetence" is a specific type of opportunism. "Incompetence" presumably means that the value of the firm is lower under the incumbent manager than under an alternative manager. In other words, "incompetent" managers are "over paid" relative to potential replacements and the firm lacks internal control mechanisms to remove these managers. Therefore, incompetence, like over-consuming perquisites, on-the-job leisure, and investing firm resources in further entrenching their positions are all forms of managerial "opportunism."
accounting rates of return on total assets. Targets have negative abnormal stock returns in 
the nine years preceding the initial control action relative to their industry peers, who also 
have significant negative abnormal returns over the same period.

An alternative hypothesis is that firms become takeover targets and choose income­
increasing accounting methods because of poor operating "performance" that is unrelated to 
managerial opportunism. The study continues to find takeover targets choose income­
increasing accounting methods after controlling for the performance of the firm. We 
elaborate on this poor-performance hypothesis in section 2.

In related studies, Groff and Wright (1989) report that 79 firms in 1975-79 receiving 
tender offers for more than 50% of their shares choose more income-increasing accounting 
methods than industry-size-leverage matched non-takeover targets in the year before the 
control action. DeAngelo (1988) finds that, during eighty-six proxy contests over board of 
director seats, incumbent managers exercise their discretion to increase accounting accruals. 
While she does not examine accounting procedures used prior to the contest, her 
examination of unexpected earnings and accounting accruals leads her to conclude that, 
during the contest, incumbent managers exercise their discretion to increase reported 
earnings (even though cash flows are not higher). If the dissidents are elected, they take an 
earnings "bath" which is blamed on their predecessors. The Groff and Wright (1989) and 
DeAngelo (1988) findings are consistent with incumbent managers acting opportunistically 
with respect to accounting choices. However, unlike this study, Groff and Wright and 
DeAngelo do not attempt to determine the relative importance of efficiency and opportunism 
in driving their findings. Nor do they control for the incentives of managers to choose 
income increasing accounting procedures to relax debt covenants when operating 
performance deteriorates.

The next section reviews the corporate control literature. This literature supports the 
maintained hypothesis that corporate control contests contain a higher frequency of 
opportunistic managers than a non-takeover sample. Then, the hypotheses tested later in 
the paper are discussed. Section three describes the sample selection procedures and our 
benchmarks for efficient choice. Descriptive statistics on the samples are presented in 
section four. The results of the tests are contained in section five and section six 
summarizes the paper, discusses its limitations and provides conclusions.

2.0 Hypotheses

Firms subjected to corporate control actions are hypothesized to contain more non­
value-maximizing managers than firms that have not been takeover targets. The corporate 
control literature supports this maintained hypothesis and is discussed in section 2.1.
Section 2.2 then develops the opportunistic and efficient accounting choice hypotheses tested in Section 5.

2.1 Corporate Control Literature

Managers, being self-interested, seek ways to raise their compensation above the value of their marginal product to the firm. Numerous devices exist to control the agency costs of self-interested managers, principally the board of directors, auditors, stock-based compensation plans, competition in the product markets, and competition from other managers within and without the firm. But all these devices are costly and therefore are limited in their ability to control managerial self dealing. If managers fail to maximize firm value given these control devices, corporate takeovers provide a mechanism whereby current managers are replaced with those who increase value. After reviewing the evidence, Shleifer and Vishny (1988) conclude, "In sum, internal control devices are not especially effective in forcing managers to abstain from non-value-maximizing conduct. ... In these circumstances, it is not surprising that external means of coercion such as hostile takeovers can come to play a role." (p. 11)

Corporate takeovers take different forms: mergers, tender offers, and proxy contests. Mergers entail a direct negotiation between the bidder and target which is then subject to shareholder approval. In tender offers, bidders offer directly to the shareholders to purchase their stock. With enough shares, the bidder gains control of the board of directors. Proxy contests involve a direct solicitation of the shareholders to elect a dissident slate of directors to the board. One aim of these corporate control contests is to replace non-value-maximizing managers.

We use the existence of a corporate takeover as a way to identify firms with managers who are likely not maximizing firm value. The prior evidence is consistent with takeover targets containing opportunistic managers. For example, Morck, et al. (1988 and 1989) and Bhid (1989) study hostile takeovers and conclude that these actions are likely to discipline non-value-maximizing managers. Dann and DeAngelo (1988) study firms engaged in defensive adjustments to takeover actions (e.g., target managers changing corporate asset or ownership structure by acquisitions, divestitures, and issuances and repurchases of voting securities). They conclude (p. 88): "...the predominant effect of takeover defenses is to entrench managers at stockholders' expense..." Ruback (1988) studies unsuccessful acquisitions of target firms. In the ten days preceding and including the initial tender offer announcement, target share abnormal return is 31%. At the announcement of the termination of the offer, target shareholder abnormal return is -10%. Moreover, no significant abnormal returns are observed in the three years following offer termination even though about one third of the firms are subsequently acquired in this
period. Ruback concludes that opposing takeovers is costly to shareholders. The corporate control evidence supports our maintained hypothesis that takeovers discipline non-value-maximizing managers.

2.2. Accounting Choice: Opportunism vs Efficiency

There are two non-mutually exclusive explanations underlying accounting choice: opportunism and efficiency. As described in section 1, managers can choose accounting methods from within the accepted set either to enhance their welfare at the expense of some other contracting party (opportunism) or to increase the value of the firm (efficiency). The opportunism motivation is described in section 2.2.1 and the efficiency motivation in section 2.2.2.

2.2.1 Opportunistic Accounting Choice. Our maintained hypothesis is that takeover targets have a higher incidence of non-value-maximizing managers than non-targets. We argue that prior to becoming control targets these managers are more likely to use a greater frequency of income-increasing accounting procedures than managers in firms that never become takeover targets.

Opportunistic managers are predicted to pursue income-increasing accounting methods for two reasons: (i) to increase compensation via formal and informal compensation schemes that base executive pay on reported earnings and (ii) to reduce the likelihood the CEO is forcibly removed for poor operating performance due to bad decisions. Each of these reasons is analyzed.

Compensation. Formal bonus plans create incentives for managers to choose income-increasing accounting methods to inflate earnings because pre-managed earnings are usually above the lower bound and below the upper bound in the majority of years (Healy, 1985). In firms without formal plans but where CEO pay is based on accounting earnings, executives have incentives to choose income-increasing accounting methods. If income-increasing methods are to increase CEO pay, the compensation committee of the board of directors cannot completely undo the effects of the accounting method choice. Abdel-Khalik (1985), Abdel-Khalik, et al. (1987), and Healy, et al. (1987) find that compensation committees do not nullify the effect of accounting changes.3

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3 Healy, et al. (1987) explain the absence of the compensation committee adjusting for accounting changes by the relatively small effect of the accounting change on compensation. They report that the potential effect on executive compensation of switching to straightline depreciation is 1.5% per year. However, if the accounting change was made for efficiency reasons (e.g., to better approximate opportunity costs for internal decision making), then one would not expect the board to undo the effect of the accounting change on compensation irrespective of the percentage effect on earnings.
If the mechanisms that control non-maximizing-managers have broken down in firms that subsequently become takeover targets, CEOs do not necessarily have to inflate earnings by accounting methods to raise their pay. The lax controls allow CEOs to receive pay in excess of their marginal product. One possible reason to inflate accounting income in these firms is to reduce the legal exposure of outside directors who can be sued by shareholders for setting "excessive" compensation. Outside directors, then, are not "fooled" by the income-increasing methods but, on the contrary, prefer them to lower their expected legal liability.

CEO termination CEOs can be replaced either directly by the board firing them or by takeovers that lead to replacement of the existing board and senior managers. Weisbach (1988) reports that CEO turnover is higher when accounting earnings are lower than last year's earnings after controlling for stock performance. He concludes that boards of directors use accounting earnings performance perhaps more than stock returns in their decision to replace the CEO. Sloan (1991) shows that accounting earnings are less confounded by non-firm specific events such as changes in interest rates than are stock returns and thus are more accurate measures of manager-specific performance. If boards of directors use accounting earnings in their decision to fire CEOs, CEOs have incentives to choose income-increasing methods. As in the compensation incentive discussed above, whether CEOs exercise their discretion over accounting numbers depends on the extent boards of directors can (or have incentives to) undo accounting manipulations. And, as in the compensation case, boards with entrenched managers might prefer income-increasing methods as a legal defense to deflect shareholder suits claiming the board should have fired the CEO for poor performance.

CEOs can also lose their jobs if outsiders buy the firm and replace them. Shleifer and Vishny (1989) argue that managers engage in a variety of schemes to entrench themselves, including pursuing information disclosure policies that make it more difficult for insiders and outsiders to estimate the gains from replacing incumbent managers. If opportunistic managers invest free cash flows (Jensen, 1986) in entrenching negative net present value projects (Shleifer and Vishny, 1989) or consume them as perquisites (Jensen and Meckling, 1976), the value of the firm is reduced. Potential replacement managers would want to know the magnitude of the potential cost savings from eliminating these expenditures.

Accounting procedure choice is one way to mask the non-value-maximizing expenditures. Because they do not have access to all the parameters involved in the accounting calculations, it is difficult for outsiders to determine what the value-maximizing accounting method is for the firm. If the outsiders conclude that managers have not made
the value-maximizing choice, it is difficult for them to produce pro forma statements using alternative accounting methods. For example, while outsiders know that straightline depreciation is being used, they do not know the assumed asset lives nor the estimated salvage values necessary to convert from straightline to accelerated depreciation.

Use of an income-increasing method does not necessarily mean the manager is trying to hide poor performance. The income-increasing method can be the value-maximizing method. Because income-increasing accounting methods do not imply a non-value-maximizing manager, outsiders trying to value the firm can not assume that all managers using income-increasing methods are hiding opportunistic actions.

We assume that income-increasing methods are chosen by opportunistic managers to hide the extent of their non-value-maximizing behavior. DeAngelo (1988) makes a similar assumption. She argues that incumbent managers choose income-increasing accounting methods to help defeat proxy contests. We predict that opportunistic managers choose income-increasing procedures prior to control actions to reduce the likelihood of such actions.

The "opportunistic accounting choice hypothesis" predicts that managers subsequently engaged in takeovers use income-increasing accounting methods more frequently than their industry peers that have not been the target of control actions prior to the initial corporate control bid. This study seeks to document the extent of accounting choice opportunism.

2.2.2 Efficient Accounting Choice. The efficiency (value-maximization) "hypothesis" is really several hypotheses that need not be mutually exclusive. First, internal decision making and internal control mechanisms are affected by choice of accounting method. Examples are make versus buy decisions, transfer pricing, capital budgeting, budgets, standard costs, pricing decisions, performance evaluation and compensation. These decisions and control mechanisms are inter-related, so value-maximization requires picking accounting methods (including allocation bases) that jointly

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4 Even with bidders forming unbiased estimates of the earnings mis-statement, accounting manipulation can increase the risk they bear in making the takeover. The higher this risk, the higher the expected bankruptcy costs of a leveraged takeover and the higher the cost of replacing the incumbents. Thus, entrenched managers have the further incentive to choose disclosure policies that increase the bidder's standard error of the estimated cash flows.

5 Two situations mitigate opportunistic managers' incentives to choose income-inflating methods to thwart outside control actions. First, if opportunistic managers believe outsiders will overestimate the savings from replacing them when they use income-increasing methods, they will choose income-decreasing methods. Second, opportunistic managers might choose income-deflating methods to increase outsiders' expectations that they are in fact non-opportunistic. In this way opportunistic managers try to "hide" among non-opportunistic managers.
optimize these decisions (Ball, 1989). In many cases this leads to the accounting method that best measures opportunity costs. Such an efficient (optimal) method could be either income-increasing or income-decreasing and so dichotomizing firms on an income/decreasing dimension might not capture important aspects of accounting choice. Further, one should expect the efficient method to vary across industries and through time as circumstances change. Under this hypothesis, external reporting is not an end in itself, but merely reflects accounting choices that are made for internal purposes.

Second, the efficient choice is affected by tax considerations. For example, one aspect of efficient choice of inventory method is minimization of the present value of taxes. Typically efficiency involves choosing the income-decreasing method. However, if a firm has a tax loss carry forward that is about to expire, efficiency leads to choosing the income-increasing inventory method. Even if tax loss carry forwards are not about to expire, their existence ensures at least that there is no incentive to choose an income-decreasing inventory method. The tax motivated efficient inventory choice is usually income-decreasing but can be income-increasing if the firm has tax loss carry forwards.

Third, Jensen (1988, p. 24) argues that in many industries with overcapacity and slowing growth, exit is often less costly via merger and orderly liquidation than by disorderly, expensive bankruptcy. Jensen's analysis suggests firms become takeover targets because of poor operating performance, independent of managers' opportunism. For example, shifts in the industry supply or demand curves cause the industry to contain too many firms. Eventually, takeovers eliminate the excess capacity, but in the short run some firms in the industry face financial distress. Ceteris paribus, declining (poorly performing) firms move closer to constraints in short or long-term debt covenants. Faced with a contracting industry and in financial distress, income-increasing accounting methods are the firm-value-maximizing decision to reduce recontracting costs with debt holders. Therefore, the third version of the efficiency hypothesis predicts that declining firms that eventually are taken over switch to income-increasing methods prior to the merger to reduce the costs of financial distress. Under this version of the efficiency hypothesis, income-increasing accounting methods that minimize the costs of financial distress are firm value-maximizing and not per se evidence of managerial opportunism, independent of the cause of financial distress.

In summary, efficient accounting choice involves consideration of internal decisions and control, taxes, and financial distress. At least the first two of these are poorly characterized by an income-increasing/decreasing dichotomy. We return to these issues in sections four and five.
3.0 Sample Selection, the Benchmark for Efficient Accounting Choice and Measurement of Variables

This section describes the construction of the takeover sample (section 3.1), our measure of the benchmark for efficient accounting choice (section 3.2) and measurement of variables (section 3.3).

3.1 Takeover Sample

The takeover sample is drawn from those firms listed on the Comment/MERC Mergers and Acquisitions Database with monthly returns available on CRSP and financial data on Compustat. To be included in the sample, takeover targets must be on the Annual Industrial, Full Coverage and OTC, or Annual Research files of Compustat, which allows both surviving and non-surviving firms to be in the sample. Compustat footnote disclosures provide data on three accounting methods (depreciation, inventory, and the investment tax credit).

Our analysis is in event time and covers the twelve years from -11 to 0. Year "0" is defined as the year of the first control action for the target in the Comment/MERC file. We use all data available in each period, so the number of observations changes over time. We base the stock return analysis on month zero rather than year zero.

The 1990 version of the Comment/MERC Database contains 4638 merger and acquisition actions covering all NYSE and AMEX firms between 1975 and 1989. These actions include all "initial" and "subsequent" control actions pertaining to each target. We focus only on the initial control action in selecting our sample of targets. A firm subject to a control action is included in our sample if the initial control action is coded:

- Merger proposal
- Targeted repurchase of over 5% of outstanding shares
- Unnegotiated tender offer to be followed by merger
- Unnegotiated partial tender offer
- Negotiated tender offer to be followed by merger
- Negotiated partial tender offer (no merger planned)
- Proxy fight over board seats.

Including these seven control actions yields a sample of 597 firms with frequencies in each category listed in Table 1.

Merger proposals, at 42% of the sample, are the largest single category. These are announcements the company has received a proposal and the board has not agreed to accept

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6 The Comment/MERC data base is maintained by the University of Rochester Managerial Research Economics Research Center (MERC) and updated through 1989 by Robert Comment.
or reject the proposal. Targeted share repurchases (commonly referred to as "greenmail") account for the next largest group of observations, 22% of the sample. In a targeted share repurchase, management repurchases a large block of stock usually at a substantial premium from a single shareholder. Often this repurchase is accompanied by an agreement that the outsider not purchase the target's stock in the future and/or engage in a takeover attempt. Greenmail actions are included in our sample because prior research finds these transactions further entrench incumbent management (Dann and DeAngelo, 1983 and Bradley and Wakeman, 1983). The repurchasing companies' abnormal returns are statistically significantly negative upon announcement of the repurchase. Moreover, Klein and Rosenfeld (1988) find top management turnover to be greater following the repurchase than before the repurchase and greater than a randomly selected sample of firms. The remaining categories in Table 1 are various types of tender offers and proxy fights. None of these other categories accounts for more than 13% of the sample.

Not all takeovers are directed at replacing non-value-maximizing managers. Using the existence of a takeover to identify opportunistic managers mis-classifies some firms. Value-maximizing CEOs approaching retirement or with large equity stakes in their firms have an incentive to arrange value-increasing mergers. Managers in firms where internal control devices are sufficient to cause value-maximization will accept synergistic takeovers. Likewise, not all non-value-maximizing managers become takeover targets. The most entrenched and hence presumably most opportunistic managers will not become targets because potential acquirers perceive the probability of success as too low to justify the costs to mount the action. Therefore, the non-takeover sample contains some firms for which it is too costly to displace entrenched, opportunistic managers and some firms with non-value-maximizing managers whose extent of opportunism is unknown.

These mis-classifications reduce the power of our tests thereby making it more difficult to document the presence of managerial opportunism in the takeover sample. To reduce the likelihood of including value-maximizing managers in the takeover sample, we exclude the following six hundred and sixty-six initial control actions that are on the Comment/MERC file from our sample:

- Merger talks or company seeks buyer: 266 firms
- Merger agreement, no tender offer: 220 firms
- Plans to or may seek control: 93 firms
- Cleanup merger or tender offer by parent owning 50%+: 66 firms
- Sale of assets and voluntary liquidation: 21 firms

"Merger talks or company seeks buyer" contains 266 firms and there are 220 "Merger agreements, no tender offer". These two categories are usually friendly, synergistic deals
not directed at replacing non-value-maximizing managers. Cleanup mergers occur after a
takeover for which the date of the initial merger is not on the file. The last two categories,
"Sale of assets and voluntary liquidations" and "Plans to or may seek control" again are not
likely to be control actions aimed at non-value-maximizing managers. While the categories
chosen to include/exclude from the takeover sample are somewhat arbitrary, the results are
not sensitive to the sample selection criteria; this is discussed further in section 5.3.

We limit the sample period to 1981-1988. Compustat files begin reporting
accounting method choices in 1972. Therefore, 1981 is the first year that provides ten
years of accounting method disclosures prior to and including the initial control action. The
requirement that the target be on Compustat reduces the sample size from 597 to 543
targets.

3.2 Benchmarks for Efficient
Accounting Choice

To focus on opportunism in accounting choice, we must control for efficient choices. Yet we do not have a fully developed theory of efficient choice. As discussed in section
2.2.2, we do not know which accounting methods best facilitate the internal decision
making and internal control. Nor do we know how such efficient choices vary across
industries.

We assume that the fraction of firms in the target's industry using a given accounting
method reflects the efficient accounting choice in the absence of opportunistic managers.
That is, the benchmark for efficient choice is the surviving, non-takeover-target firms in the
target's industry. As we point out in section 3.1, the set of surviving firms might include
firms with opportunistic managers who are too entrenched to remove. Therefore,
surviving firms' accounting choices might also reflect some opportunism. These
possibilities reduce the power of our tests by reducing differences between our target firms
and their surviving industry peers.

An "industry index" of accounting choice is constructed. All firms in the target's
three-digit SIC industry on the Annual Industrial Compustat file are included in the index if:
(i) the firm's accounting method choice is disclosed and (ii) the firm is not listed in the
Comment/MERC file. Restricting the index to Annual Industrial Compustat firms insures
that they are surviving firms. Surviving firms are used because the maintained hypothesis
is that these firms use more value-maximizing accounting methods than non-surviving
firms. This procedure of calculating an industry equally-weighted index increases the
power of the tests over choosing a single control firm in the target's industry by reducing
the sampling variation in the benchmark portfolio.

In summary, we have two related maintained hypotheses. First, the set of target
firms contains more managerial opportunism than the set of surviving non-target firms.
Second, the target firm's three digit SIC code is an appropriate measure of cross-sectional variation in efficient accounting choices. Our results are not sensitive to use of two-digit rather than three-digit SIC codes.

3.3 Measurement of Accounting Variables

For each of the three accounting methods studied (depreciation, inventory, and investment tax credit), each target and surviving firm's accounting method choice in year $t$ is coded "1" if the income-increasing method is selected (straightline depreciation, FIFO, and flow through for ITC) or "0" if the income-decreasing method is chosen (accelerated depreciation, LIFO, and deferral for ITC). This coding misclassifies some firms as income-increasing when in fact they are not. For example, Dechow et al. (1990) show that straightline depreciation is income-decreasing if the firm's asset base is declining. Similarly, FIFO is income-decreasing if the firm is in a declining-cost industry. These misclassifications reduce the power of the tests and, if they are associated with being a target, bias the tests. The "industry index" accounting method is the percentage of the surviving non-target firms in the target firm's industry using the income-increasing accounting method (e.g., straightline depreciation).

Besides accounting method choice, other industry index variables are computed. For example, if return on assets (ROA) is being calculated for target firms, then an industry average ROA is computed by taking all the surviving non-target firms in the target's industry and computing mean industry ROA in event time. We provide detailed definitions of these other variables as needed.

4.0 Descriptive Statistics

Before presenting the main findings on accounting method choice, this section presents descriptive statistics on the takeover sample and firm performance. These descriptive statistics are presented to support the assertion in section two that managers of takeover targets have been undertaking firm-value-reducing actions or have been performing poorly for other reasons. We cover calendar-year distribution, industry composition, sales growth, accounting rates of return and abnormal stock returns. The results are that takeover targets are smaller and growing slower than the average non-target firm in their industry. Moreover, their accounting return on assets is lower than their industry cohorts. Finally, section 4.2 presents evidence that takeover target abnormal stock returns are negative in the nine years preceding the first control action, as is their industry peers' abnormal return.
4.1 Sample Composition

The frequency of calendar years of initial takeover bids (year 0 in "event" time) is presented in Table 2. Takeover actions are almost uniformly distributed over the sample period with 1986 exhibiting the largest concentration of the observations (16%). Table 3 reports the frequencies of takeover targets by one digit SIC code. The takeover sample is concentrated in industries 2 (food, textiles, paper printing chemicals, petroleum) and 3 (rubber, leather, stone, metals, machinery, and instruments) with 56% of the sample. The last column of Table 3 is the percentage of all firms common to both CRSP and Compustat in each one digit SIC industry. The one-digit industry composition of the takeover sample resembles the industry composition of the population of CRSP-Compustat firms.

4.2 Firm Performance Measures

In Section 2.2, takeover targets are predicted to have worse performance than their industry peers. Two reasons are postulated for this below industry norm performance. First, opportunistic managers invest in negative net present value projects to further entrench themselves or consume higher levels of perquisites than their industry peers. Second, exogenous industry-wide contraction causes the worst performing firms to become takeover targets. Accounting data and abnormal stock returns are presented that are consistent with both these possibilities.

4.2.1 Accounting Performance Measures

Targets are smaller than their industry cohorts. Figure 1 Panel A is the time series of mean sales for the takeover targets and their corresponding industry mean sales. In all twelve years, targets have statistically significantly smaller mean sales than their three-digit SIC industry peers. In years -6 to 0, the size differences become more pronounced. The t statistics on the difference in mean sales (not reported) range from -2.26 (in year -7) to -4.44 (in year -2).7

Figure 1 Panel B plots the mean annual sales growth rates of the targets and their corresponding industry index. Sales growth in year t is the ratio of year t sales to year t-1 sales minus 1. For both targets and their industry peers, growth rates are generally declining prior to the control action. In all twelve years, the targets have smaller sales growth rates than surviving non-target firms in the same industry. All twelve of the differences are reliably different from zero at the 0.05 level with t statistics (not reported) ranging from -5.05 (in year -1) to -9.23 (in year -9). This is consistent with all targets

7 The qualitative conclusions from comparing sales remain when total assets is used instead. Takeover targets have less total assets than their industry cohorts.
being poor performers relative to their industry peers as documented in other studies (e.g., Bhide, 1989).

Accounting rates of return are calculated as net income before interest divided by total assets. Income-increasing accounting methods increase net income and either increase total assets or do not affect total assets. As long as the firm's ROA is less than one, then income-increasing methods that increase the numerator and denominator of ROA by the same amount raise ROA. The calculated ROAs are based on earnings and total assets after the manager has selected accounting income-increasing methods. We find that takeover-target managers both choose more income-increasing accounting methods (see section 5 below) and have lower ROAs than their industry. Thus, we conclude that these managers are not able to completely offset their below industry average performance by choosing income-increasing accounting methods.

Figure 2 plots the accounting rates of return on assets (ROA) of the targets and their industry counterparts. Takeover target ROAs are smaller than their industry peers. In year -7 the difference in ROA between the targets and their industries' is -1.2% (not reported). By year -1 the difference in ROA between the targets and their industries is -1.9%. In all years -10 to 0 the difference between target and industry ROAs are reliably different from zero at the 0.05 level (one-tail test) with t statistics ranging from -2.06 (in year -10) to -4.75 (in year -1). These findings are consistent with the maintained hypothesis that takeover targets are performing worse than surviving firms in their industry.

4.2.2 Abnormal Stock Returns

The preceding results indicate that takeover targets have below industry accounting performance. This finding carries over to stock performance measures. Abnormal stock market performance for three, non-overlapping three-year periods ending six months before the first control action is estimated using the Sharpe-Lintner Capital Asset Pricing Model (CAPM). Excess returns are computed by subtracting the monthly risk free rate of return (T-Bill rate) from monthly CRSP returns of individual firms and an equally-weighted market index. For each firm in the takeover sample, a market-model regression is estimated using these excess returns. The intercepts from the excess returns form of the

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8 Net income before interest is computed by adding back to net income interest expense grossed up by the highest marginal Federal corporate tax rate in that calendar year.

9 In general, the relation between accounting choice and ROA differs across accounting methods. But, under most circumstances choice of an income-increasing method increases ROA. Increasing income by using flow through for the ITC unambiguously increases ROA, since moving from deferral to flow through increases current income and leaves total assets unchanged. Changing to income-increasing choices for depreciation and inventory increases ROA if the pre-switch ROA is less than one.
market model are an estimate of the abnormal stock performance for each firm over the estimation period (Jensen, 1968).

We also examine industry abnormal performance using an industry portfolio index. The cross-sectional equally-weighted mean return for all surviving, non-target firms on the CRSP file in the target's three-digit SIC industry is computed. A market model regression is estimated using the excess mean industry portfolio returns as the dependent variable over the same calendar months as the target firm. The intercepts from these market models estimate the mean abnormal monthly returns in each targets' industry.

Panels A and B of Table 4 present the cross-sectional means of the estimated intercepts and the number of observations in each mean for the targets and their industries. In each of the three non-overlapping three year periods, the takeover sample's mean abnormal return is reliably less than zero at the 0.05 level. For example, the takeover target's estimated mean abnormal return over the months -41 to -6 preceding the initial control action is about -8.5% per year (-0.0071 per month). The negative performance persists back 113 months and is present (to a lesser extent) in the industry index as well.²

Panel C of Table 4 reports the differences in mean monthly abnormal returns between the targets and their industry index. Relative to the surviving firms in their industries on CRSP, takeover targets exhibit statistically significant negative abnormal stock returns in the nine years preceding the first control action. The mean estimated betas for the targets and their industry cohorts (not reported) are slightly above one. The betas of the targets are slightly larger than the betas of their industry and statistically significantly larger in estimation months -77 to -42 (t statistic of the difference between a beta of 1.05 for the targets and a beta of 1.01 for their industries is 2.80).

Finding negative abnormal returns for the targets (and to a lesser extent their industry cohorts) is consistent with the previous findings of declining sales growth rates in takeover targets and to a lesser extent their industry (Figure 2). These findings, which are similar to Palepu's (1986) results, are also consistent with the prediction that firms that have poor performance and/or that are in declining industries subsequently become takeover targets.

5.0 Empirical Tests

This section presents both univariate and multivariate tests of the opportunistic accounting choice hypothesis. These two sets of test differ in the degree to which they control for efficient choices. The univariate tests assume that all efficient choices are

² The results are not sensitive to using size-adjusted industry portfolios.
captured by the industry index choices. All deviations from the industry indices then result from opportunistic behavior. The multivariate tests include additional controls for the efficient choices discussed in section 2.2.2. In sections 5.1 and 5.2 we present evidence consistent with both opportunistic and efficient accounting choices. Section 5.3 provides checks of the robustness of the findings to alternative sample selection criteria.

5.1 Univariate Tests of Opportunistic and Efficient Choice Hypotheses

As discussed in section 3, for each of the three accounting methods studied (depreciation, inventory, and investment tax credit) the firm's accounting method choice in year $t$ is coded "1" if the income-increasing method is selected (straightline depreciation, FIFO and flow through for ITC) or "0" if the income-decreasing method is chosen (accelerated depreciation, LIFO and deferral for ITC).

An annual industry index is created for each target. This is the percentage of surviving non-target firms in the industry using the income-increasing method in the same calendar year as the target. This industry index is subtracted from the target's choice (i.e., zero/one) in each year in event time. The $t$ statistic of the cross-sectional mean of these differences tests whether the targets' accounting choices are systematically more income-increasing than their industry cohorts' accounting choices in year $t$, which ranges from -11 to 0. Year 0 is the year of the first control action. Calculating a $t$-statistic of the mean differences in this manner (as opposed to the $t$ statistic of the difference in means between the target and the industry index) controls for cross-sectional dependence between firm and industry accounting choices.11

For each of twelve years from -11 to 0, Table 5 reports the average depreciation, inventory and ITC choices for the target firms, the corresponding industry indices and the differences between the two. Figure 3 contains time-series plots of the $t$ statistics of the differences between targets and their industries' accounting methods for the twelve years. We always report year zero, but for two reasons tend to discount it in our analysis. First, the number of observations tends to drop in year zero as targets are acquired. Second,

11 We also calculate, but do not report, tests using standardized differences. The difference between each firm's choice and the industry mean choice is divided by the standard deviation of the industry choice. Corporate control actions in industries with high consensus of choice (low standard deviations) receive a larger weight than observations from industries with low consensus. None of the inferences change when standardized differences are used.

12 Throughout the paper only Students $t$ or $Z$ (normal) test statistics are reported. No attempt is made to account for the fact that our variables reflect dichotomous choices and hence are Bernoulli variables. We rely on the fact that the means we report are transforms of binomial variables, hence are asymptotically normally distributed, and that we have large degrees of freedom.
even when we have data for year zero, we have no way of determining whether the data are affected by the offer itself or whether they reflect the decisions of new management.

The annual t statistics plotted in Figure 3 are not independent because of time-series dependence in accounting choices (Sweeney, 1991). For each method choice we report three asymptotic normal (Z) test statistics that aggregate the annual t statistics for years -11 to -1. One test statistic ("dependent") assumes the annual t statistics are perfectly positively correlated, the second makes an AR(2) correction for autocorrelation, and the third assumes the annual t statistics are independent. Given the relevant assumption about time-series dependence, each aggregate test statistic is an asymptotically normally distributed Z statistic. As long as the t statistics are not negatively autocorrelated, the two extreme test statistics (dependent and independent) bound the true test statistic (Christie, 1990, p. 23).13

**Depreciation Method** In Figure 3, takeover targets choose straightline depreciation statistically significantly (p value less than 0.05) more frequently than non-target surviving firms in their industries in all twelve years (-11 to 0). The t statistics range from 1.74 (in year -11) to 3.27 (in year -2).

The aggregate test statistics (Z) for depreciation over years -11 to 0 range from 2.40 assuming the annual t statistics are perfectly autocorrelated to 8.31 assuming the annual t statistics are independent. Making the AR(2) correction gives a Z of 4.46. The data, therefore, reject the null hypothesis of no difference in depreciation method between the target firms and their industry peers.

From Table 5, both the takeover sample and their industry peers increase their use of straightline depreciation over event time. In year -11, 80.4% of the takeover targets choose straightline depreciation compared to 77% of their industry peers. By year -1 another 2.8% of the takeover targets are using straightline (or 83.2% of the sample). The industry sample increases its frequency on straightline by 2.9% to 79.9% over the eleven years. Under our maintained hypothesis, the change in the industry index reflects changes in efficient choices over time.

**Inventory Method** The inventory data also are consistent with the opportunistic hypothesis. In Table 5, the targets choose FIFO more frequently than their industries in all years except year -1. While these differences are not statistically significant in any one year (see Figure 3), they are significant in aggregate. The aggregate Z statistic with the AR(2)

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13 We are using asymptotic theory with twelve observations. However, each of the t statistics being aggregated has large degrees of freedom and hence is approximately normally distributed. Thus for practical purposes we are adding up normal random variables.
correction is 2.06 and that assuming independence 2.30. Assuming perfect autocorrelation gives a Z of 0.66.

In Table 5, both the target firms and their industry peers switch to LIFO over time (the income-decreasing choice for an increasing-cost industry). Eleven years before the initial control action, 82.8% of the takeover targets are using FIFO. This falls 19.5% to 61.7% in year -1. Firms in the same industry as the takeover targets decrease their use of FIFO by 18.4% over the same eleven years from 80.4% to 62.0%. One interpretation of these findings is that, on average, the tax savings of LIFO are largely driving the inventory choice. However, the target firms lag their industries in this switch to LIFO. This lag is consistent with opportunism.

**ITC Method** For the ITC choice, the differences between the targets and their industries in Table 5 and Figure 3 are smaller in magnitude than, but similar in spirit to, those for depreciation and inventory. There is a long term trend from deferral to flow through for both targets and their industries and nine of the twelve annual differences are positive. The time-series pattern in the t statistics is similar to that for depreciation and inventory. In Table 5 the target sample's frequency of flow through use (the income-increasing method) increases from 85.4% in year -11 to 92.8% in year -1. Over the eleven years this parallels the change in the industry usage of flow through. However, starting in about year -7, the targets tend to lead their industries in the switch to flow through. However, none of the annual t statistics on the ITC differences are larger than 1.14 and they are not significant in aggregate. We are unable to reject the null of no difference for the takeover targets even assuming that the annual t statistics are independent.

There are two possible reasons for the lack of more frequent use of income-increasing ITC methods in the takeover firms. First, we conjecture that for the average firm the choice of ITC method has a small effect on reported earnings. If this is the case, then managers have little to gain from choosing flow through versus deferral of the ITC. Without detailed, manual collection of data from the tax footnote in the annual report, this explanation of the lack of difference in ITC choice remains speculative.

A second possibility is that there is not much "room" for difference between the target firms and their industry peers for the ITC. Note from Table 5 that more than 90% of the

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14 LIFO is the income-increasing choice for firms in declining-cost industries such as electronics. These firms are mis-classified and their existence reduces the power of the tests.

15 Consistent with this possibility, mostly utilities lobbied for deferral which would smooth earnings for rate making (Watts and Zimmerman, 1986, p. 232). Industrial firms' lack of lobbying suggests the ITC was relatively unimportant to them. Also, Hagerman and Zmijewski (1979) report substantially lower R²s for ITC choice than for depreciation choice.
firms in the industry use flow through for ITC in the later years. This makes it difficult (and in the limit impossible) for the targets to be more income-increasing than their industries.

The preceding evidence is consistent with the opportunistic choice hypothesis. Consistent with opportunism, depreciation, inventory and ITC methods of takeover targets are more income-increasing than surviving non-target firms in their industries. These differences are statistically significant for depreciation and inventory. However, the data also reflect a trend towards straight line depreciation, LIFO and flow through for ITC for the surviving non-target firms. Given our maintained hypothesis that surviving industry peers make efficient accounting choices, these trends are due to changes in efficient choices. The next sub-section relaxes the assumption that all efficient choices are captured by the industry indices.

5.2 Multivariate Tests of Opportunistic and Efficient Choice Hypotheses

In section 5.1 we assume that all efficient choices are contained in the industry indices. We now relax that assumption and incorporate variables to capture two of the efficiency arguments for accounting choice we make in section 2.2.2. We continue to assume that all differences in accounting choices across firms that are made to optimize internal decision making and internal control are reflected in differences in the industry indices.

In section 2.2.2, we argue that value-maximizing managers choose income-increasing accounting methods to reduce the costs of financial distress (e.g., violating debt covenants and bankruptcy). We predict also that tax loss carry forwards provide the incentive to choose an income-increasing inventory method. Thus, for efficiency reasons, takeover targets, which are more likely to be in financial distress and have tax loss carry forwards, choose income-increasing methods. We, therefore, present cross-sectional regressions that control for the existence of tax losses and for operating performance.\(^\text{16}\)

The following cross-sectional regressions are estimated:

\[
M_{jt}^{i} = \alpha_{jt} + \beta_{jt} \text{DEP}_{t} + \gamma_{jt} \text{CARRY}_{t} + \delta_{jt} \text{COV}_{t} + \epsilon_{jt} \text{RET}_{t} + \zeta_{jt} \text{RISK}_{t} + \theta_{jt} \text{LEV}_{t} + \theta_{jt} \text{SIZE}_{t}
\]

\[t = -11, -10, ..., 0\]

\[j = 1 \text{ (depreciation choice), } 2 \text{ (inventory choice), } 3 \text{ (ITC choice)}\]

\(^{16}\) Accumulated tax losses and financial distress are related, but the tax losses affect only the inventory method choice, not depreciation or ITC
$M^j_{it} = \begin{cases} \text{jth accounting method choice by firm } i \ (1 = \text{income-increasing,} \\ 0 \text{ otherwise) less the industry average of the jth accounting method choice} \end{cases}$

$D_i = 1 \text{ if the } i\text{th firm is a corporate control target, 0 otherwise}$

$\text{CARRY}_{it} = 1 \text{ if tax-loss carry forward, 0 otherwise less industry mean CARRY}$

$\text{COV}_{it} = (\text{Net income } + \text{ after tax interest } ) + \text{ interest less industry mean COV}$

$\text{RET}_{it} = \text{Firm i's stock return less industry mean RET}^{17}$

$\text{RISK}_{it} = \text{Standard deviation of firm i’s stock return less industry mean RISK}^{18}$

$\text{LEV}_{it} = (\text{Book value of debt } + \text{ book value of total assets}) \text{ less industry mean LEV}$

$\text{SIZE}_{it} = \log(\text{sales}) \text{ less log(industry mean sales)}$

All the variables in equation (1) are differenced from the corresponding industry mean of that variable. Surviving non-target firms in the industry are assumed on average to use accounting methods that maximize firm-value (i.e., efficient choice is the maintained hypothesis). Efficient accounting choices are predicted to vary systematically with tax rates (CARRY) and, through bond covenants, with variables related to performance. We include one variable (COV) that measures current performance and four (RET, RISK, LEV and SIZE) that measure past or cumulative firm performance (Christie, 1990; Holthausen and Leftwich, 1983; and Watts and Zimmerman, 1986). For example, firms with tax-loss carryforwards (CARRY) are more likely to choose FIFO if product costs are increasing. Firms with more variable cash flows and earnings (RISK) are more likely to have been in financial distress earlier and switched to an income-increasing method (Sweeney, 1991). Ceteris paribus, poorly performing firms will have lower income to interest exposure (COV), lower stock returns (RET) and higher leverage (LEV). These firms are more likely to use income-increasing accounting methods. Also, firm size (sales) will vary with performance. Ceteris paribus, larger firms will tend to be better performers than smaller

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17 RET is the continuously compounded thirty-six month raw stock return for firm i ending in the last month of calendar year t. The corresponding industry return is the continuously compounded return on the industry portfolio over thirty-six months ending in the same calendar month as the target’s return.

18 RISK is measured as the standard deviation of the twelve monthly raw stock returns for firm i in calendar year t.
firms because to become large, they were an above average performer earlier. And thus, it is less likely these firms switched to an income-increasing method earlier.

An alternative explanation for the negative predicted sign on SIZE is larger firms, being subjected to greater political scrutiny, are more likely to choose income-decreasing accounting methods (Watts and Zimmerman, 1986). While, political exposure may explain the choices of large firms, it is unlikely to explain the choices of the target firms, since the evidence in section 4 is that these firms are on average smaller than their industries.

A dummy variable, D, is included in equation (1) to capture the difference in accounting choice for being a takeover target. To enable use of this dummy, the regressions are estimated using the takeover targets and two industry-size matched non-targets for each target. Two non-target firms with sales just less than the target and just more than the target in the same industry, but which never were targets, are selected if they have data on the CRSP and the annual industrial Compustat files. The matching is based on sales in the year prior to the initial control action. The two industry-size matched firms are assigned the target's first takeover bid date as year zero. Cross-sectional regressions are estimated annually for years -11 to 0.

To summarize, we predict that for all three accounting methods the coefficient on the target dummy variable (D) is positive, the coefficients on COV, RET and SIZE are negative and those on RISK and LEV are positive. We predict a positive relation between CARRY and FIFO choice, but make no prediction about the sign of the relation between CARRY and choice of either depreciation or ITC method.

Table 6 reports the regression results of the three accounting methods in separate panels. The columns labeled "Mean Coefficient & Z statistic -11 to 0" and "-6 to -1" contain the mean coefficient and asymptotic normal test statistics from the twelve annual regressions (-11 to 0) and the six annual regressions (-6 to -1). These Z statistics reflect an AR(2) correction for autocorrelation as used in the univariate tests. Six annual cross-sectional regressions are reported (years -6 to -1) in the remaining columns of Table 6.19

Depreciation Method Panel A of Table 6 reports the results for the depreciation regressions. The mean coefficient on the takeover dummy variable over the 12 years is .030 and over the six years -6 to -1 is .032. Both coefficients are statistically significant at at least the 0.01 level (one-tail test). The annual coefficients on the takeover dummy variable, D, are statistically different from zero at the 0.05 level (one-tail test) in years -6 to -1. Thus, the pattern of the univariate t statistics in Figure 3 is repeated in the multivariate

19 It is possible that the regression residuals are correlated across accounting methods in a given year. However, since the RHS (explanatory) variables are identical across accounting methods, seemingly unrelated regression collapses to applying ordinary least squares to each equation; see Theil, 1971, ch. 7.
regression, but the magnitude of the t statistics is generally lower in Table 6 than in Figure 3.

The variables, CARRY, COV, RET and RISK, individually have little incremental explanatory power beyond the other variables in the depreciation model and often alternate signs across years. Under the efficiency hypothesis, the coefficient on RET is predicted to be negative; lower returns indicate greater financial distress and thus a greater likelihood of income-increasing accounting methods. Inconsistent with the efficiency hypothesis, RET tends to have a positive coefficient that is marginally statistically significant. In the year before the initial control action, the coefficient on RET is statistically significantly positive (t statistic of 2.08). RISK has the predicted positive sign; it is significant at the 0.05 over the twelve years using an AR(2) adjustment but not over the six years. Leverage (LEV) and size have the signs predicted by the efficiency hypothesis and are statistically significant at at least the 0.01 level both in aggregate and in individual years.

We conclude that after controlling for accumulated tax losses and poor performance, takeover targets are more likely to select straightline depreciation method as predicted by the opportunistic accounting choice hypothesis. To the extent that leverage and size capture financial distress, the findings are also consistent with efficient choice of accounting methods.

**Inventory Method** Panel B of Table 6 reports the regressions for the inventory models. The Z statistics on the dummy variables from aggregating the twelve and six annual t statistics are both statistically significantly positive (3.02 and 2.74). Even though the takeover dummy variable is significant only in two of the six cross-sectional regression (years -3 and -4), after taking account of the time-series dependence in the annual t statistics the aggregate test statistics on the dummy variable allow us to reject the null hypothesis. Tax-loss carry forward (CARRY) has the predicted sign (+) and is statistically significant at the 0.05 level (one-tail test) in five of the six years -1 to -6. The aggregate Z statistics for both the twelve year (5.35) and six year (4.34) periods reject the null hypothesis of no association at the 0.01 level. LEV and SIZE have the predicted signs and are statistically significant. As in the depreciation model, the COV and RET coefficients are insignificant; the risk variable once again has the predicted sign and in this case is statistically significant using the AR(2) adjusted Z statistic. As with depreciation, the inventory results are consistent with both opportunism and efficiency.

**ITC Method** The takeover dummy variable is not statistically significant in any of the annual cross-sectional ITC models (Panel C). However, using the AR(2) adjusted Z statistics, the probability of observing the aggregate test statistics on the twelve years and
six years is about 0.06. RISK, LEV and SIZE again have statistically significant coefficients with the predicted signs.

Other results to note for all three panels of Table 6 are:

1. The size variable is always negative and significant, notwithstanding the non-target firms included in the regression are matched to the targets on the basis of size. We attribute the results with size to the fact that it is a measure of cumulative performance, not to political exposure.

2. The total amount of variation explained by the model (R²) is generally small, never exceeding 5%. This is in part due to the model specification where the dependent variable is the difference between the firm's and its industry mean accounting choice.

Model Specification Since some of the explanatory variables in these regressions (e.g. COV and LEV) depend on the choice of accounting method (the dependent variable), there are endogenous variables on the right hand side of equation (1). Therefore, the regressions are misspecified. Using the White (1980) specification test rejects the null hypothesis that the depreciation regressions are well specified (at the 5% level) in four of the twelve years. The situation is worse for the inventory and ITC regressions for which the White statistic rejects in ten and twelve of the twelve years. The White statistics from (unreported) undifferenced regressions are three to ten times those we find here. That is, the 'levels' regressions that appear in Hagerman and Zmijewski (1979) are likely badly misspecified. Differencing all the variables from the industry means dramatically improves the situation but obviously does not solve the specification question. This problem is probably serious in other cross-sectional regressions of accounting choice, but has not previously been discussed. We treat this as a specification issue, not heteroscedasticity, since unreported tests using weighted least squares produce similar White statistics to those we discuss here.

Summary The evidence is consistent with opportunistic managers choosing depreciation, inventory accounting and ITC methods to increase income, even after including tax and performance-related variables. Since, CARRY, RISK, LEV and SIZE have the predicted signs and are generally significant, the evidence is also consistent with efficiency. These conclusions must be tempered by the usual caveat that some unspecified omitted variable that is correlated with being a target might be responsible for the findings of opportunistic behavior.

5.3 Sensitivity Analysis - Takeover Subsample Results

Section 3 describes selection of the sample. This section reports the effect of imposing additional restrictions on the sample. These restrictions are designed to increase
the power of our tests and to ensure the findings of earlier sections are robust to alternative sample selection criteria.

In particular, we construct a "nonsynergistic" takeover portfolio. The nonsynergistic portfolio is hypothesized to contain a greater frequency of control actions aimed at disciplining non-value-maximizing managers. The nonsynergistic portfolio contains only initial control actions of the following types:

- unnegotiated tender offer to be followed by merger
- unnegotiated partial tender offer
- proxy fight over board seats
- targeted repurchase of over 5% of the outstanding shares

In addition, the first unnegotiated tender offer cannot be made by another corporation. This constraint is added to eliminate takeovers that might occur for synergistic reasons. This sampling procedure produces 200 "non-synergistic" takeovers. Of these 200 targets, 184 have data on both the Compustat and CRSP files.

All the takeover firms in the original sample not included in the "nonsynergistic" portfolio are included in the "other" takeover portfolio. Thus, we partition the original sample into two, mutually exclusive and exhaustive portfolios: a nonsynergistic portfolio and an "other" portfolio. The "other" portfolio contains 397 firms of which 359 have data on both CRSP and Compustat. In the multivariate tests, separate dummy variables are included for the nonsynergistic and "other" portfolios.

The results from the nonsynergistic and "other" portfolio are similar to those reported above. In the depreciation model, the dummy variable on nonsynergistic takeovers is statistically significantly positive in years -5 to -2 and larger in magnitude than the dummy variable on "other" takeovers. The remaining coefficients and t statistics do not change. The dummy variables on nonsynergistic takeovers are statistically significant in the inventory model in years -4 to -1 and the dummy variable on "other" takeovers is significant in year -3. In the ITC cross-sectional regression the only statistically significant dummy variable is on the "other" takeovers in year -4.

The qualitative nature of the results reported in Table 6 are robust to even finer partitioning of the sample. Table 1 reports 22% of the takeover sample is firms whose first control action is a "Targeted share repurchase of over 5% of outstanding shares." The question arises whether these greenmail transactions are representative of the remaining control actions. When the tests reported in Figure 3 and Table 6 are repeated after deleting targeted share repurchase transactions, the qualitative conclusions of the earlier tests are unchanged.
6.0. Summary, Limitations, and Conclusions

6.1 Summary

Based on the maintained hypothesis from the corporate control literature that takeover targets contain a higher fraction of opportunistic managers than surviving non-target firms in the same industry, this paper tests whether these managers are choosing more income-increasing accounting procedures than their industry peers. It is hypothesized that income-increasing procedures enhance the welfare of non-value-maximizing managers at the expense of other claim holders.

The findings for depreciation, inventory and the investment tax credit choices are consistent with accounting opportunism. They are also consistent with target managers choosing accounting methods efficiently to reduce the costs of taxes and of financial distress. Multivariate tests are conducted that include proxy variables for both accounting opportunism and efficiency.

6.2 Limitations

Six caveats limit the study's conclusions. First, not all takeovers are directed at removing non-value-maximizing managers. Furthermore, not all opportunistic managers are eventually the target of corporate control actions. Either the corporate control market has yet to learn of the non-value-maximizing behavior or the cost of mounting the control action is greater than the expected gains. The maintained hypothesis underlying the tests in this paper is that the takeover target sample has a greater proportion of opportunistic managers than the "benchmark" sample of surviving non-takeover targets. Including (i) value-maximizing managers in the takeover sample and (ii) opportunistic managers in the "benchmark" sample reduce the power of the tests. Because we expect there to be substantial mis-classifications, we have adopted a research strategy that generates a large sample size. However, this strategy assumes the mis-classifications are not systematically associated with accounting choice. Lacking a more precise theory of what causes takeover actions, there is nothing we can do about this limitation.

Second, further assumptions are required to generate the prediction that opportunistic managers have incentives to choose income-increasing accounting procedures. Income-increasing accounting methods increase executive compensation and reduce the likelihood the CEO is replaced. These assumptions are based on the simplistic view (adopted in this and most other studies) that accounting procedures can be categorized unambiguously as income-increasing or income-decreasing. But the switch from accelerated to straightline depreciation can cause future earnings to fall in the later years of an asset's life, when accelerated depreciation is less than straightline. FIFO is only income-increasing if costs are increasing.
Third, a change in accounting method (such as depreciation) that requires retrospective restatement has an equal and opposite effect on cumulative future income and current retained earnings. It is unclear that the emphasis should be on future income statements rather than the current balance sheet in characterizing the effect of the change in method. Some accounting choices such as consolidation policy do not affect income, yet do affect contracts (Mian and Smith, 1990 and 1991).

Fourth, the ordinal ranking of accounting measures according to their income effects while useful for making operational the opportunistic accounting choice hypothesis might be undermining the tests. For example, we assume that non-value-maximizing managers are trying to hide the "true" value of their firms from potential acquirers by choosing income-increasing methods. However, an accounting income-reducing method that also increases the acquirer's standard error of the non-value-maximizing cash flows might be more entrenching than an income-increasing method that has a lower standard error.

Fifth, if one wants to study the efficient choice hypothesis, dichotomizing accounting procedures into income-increasing and decreasing is unlikely the right categorization. For example, suppose managers seeking to maximize the value of the firm choose accounting methods that most closely approximate the opportunity cost of the resources consumed; accounting methods facilitate repetitive contracting for internal production (Ball, 1989). Then, value-maximizing managers will not rank accounting procedures based on their affect on earnings but rather on their correlation with opportunity costs.

Finally, a sixth limitation stems from the assumption that non-target surviving firms in the same industry can be used to benchmark the efficient accounting choice set. SIC codes, which classify firms by production technology, misclassify firms by product markets (Benston, 1975). However, if a major determinant of the firm's contracts (including accounting procedures) is the underlying production technology, then SIC codes are likely associated with contracting methods.

6.3 Conclusions

Based on our findings, we conclude that managerial opportunism is a determinant of accounting choice decisions in firms subsequently targeted by a corporate control action. Opportunistic behavior has an incremental effect on depreciation, inventory and investment tax credit accounting choices. If one's priors were that accounting methods are chosen solely for efficiency reasons (i.e., are firm-value-maximizing), then the results reported in this paper should cause one to consider the possibility that within the set of firms containing non-value-maximizing managers, some accounting choices are being made for opportunistic reasons.
If one's priors are that opportunism drives accounting choice, these results again should again cause prior probability revisions. The sample selection procedure identifies a sample ex post with non-value-maximizing managers (takeover targets). At the margin, these managers are choosing depreciation, inventory and ITC methods consistent with the opportunistic choice theory. However, this incremental effect is small relative to the average choice of surviving firms. Further, opportunism is unlikely to explain the time-series changes towards straightline depreciation, LIFO and the flow through method of accounting for the ITC we observe for surviving firms. Nor is opportunism likely to explain the variation in average choice across industries for surviving firms. We can think of no reason why opportunism should vary systematically by industry. These time-series changes and cross-sectional differences appear to require efficiency explanations.

It appears unlikely that either efficiency or opportunism separately is able to explain the rich panorama of observed accounting choices. Future studies should adopt research strategies that incorporate both opportunistic and efficiency rationales to explain accounting method choices. Our priors are that efficiency is the more important of the two.
TABLE 1

Description of Takeover Sample According to Type of First Control Action
1981-1988

<table>
<thead>
<tr>
<th>Action</th>
<th>No. of Firms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merger proposal</td>
<td>246</td>
<td>42%</td>
</tr>
<tr>
<td>Targeted repurchase of over 5% of outstanding shares</td>
<td>132</td>
<td>22%</td>
</tr>
<tr>
<td>Unnegotiated tender offer to be followed by merger</td>
<td>81</td>
<td>13%</td>
</tr>
<tr>
<td>Negotiated tender offer to be followed by merger</td>
<td>71</td>
<td>12%</td>
</tr>
<tr>
<td>Proxy fight over board seats</td>
<td>37</td>
<td>6%</td>
</tr>
<tr>
<td>Unnegotiated partial tender offer</td>
<td>22</td>
<td>4%</td>
</tr>
<tr>
<td>Negotiated partial tender offer (no merger planned)</td>
<td>8</td>
<td>1%</td>
</tr>
<tr>
<td>Total number of firms</td>
<td>597</td>
<td>100%</td>
</tr>
</tbody>
</table>

The sample consists of all firms on the Comment/MERC database. The first control action is defined as the first chronological control action for a given firm as listed on the Comment/MERC database.
TABLE 2
Frequency of Takeover Sample by Year of First Takeover Bid

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Firms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>49</td>
<td>9%</td>
</tr>
<tr>
<td>1982</td>
<td>67</td>
<td>12%</td>
</tr>
<tr>
<td>1983</td>
<td>42</td>
<td>8%</td>
</tr>
<tr>
<td>1984</td>
<td>67</td>
<td>12%</td>
</tr>
<tr>
<td>1985</td>
<td>61</td>
<td>11%</td>
</tr>
<tr>
<td>1986</td>
<td>86</td>
<td>16%</td>
</tr>
<tr>
<td>1987</td>
<td>57</td>
<td>11%</td>
</tr>
<tr>
<td>1988</td>
<td>71</td>
<td>13%</td>
</tr>
<tr>
<td>1989</td>
<td>43</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Total number of firms</td>
<td>543</td>
</tr>
</tbody>
</table>

The sample consists of all firms on the Comment/MERC database that also are on the CRSP and Compustat files. The first control action is defined as the first chronological control action for a given firm as listed on the Comment/MERC database.
TABLE 3

Frequency of Takeover Sample by One Digit SIC Industry Classification

<table>
<thead>
<tr>
<th>Industry Classification</th>
<th>Takeover Sample</th>
<th>% of Firms on CRSP-Compustat</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Firms</td>
<td>Percentage of Firms</td>
</tr>
<tr>
<td>0 Agriculture</td>
<td>2</td>
<td>0%</td>
</tr>
<tr>
<td>1 Mining &amp; Construction</td>
<td>35</td>
<td>6%</td>
</tr>
<tr>
<td>2 Food, textiles, paper</td>
<td>120</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>printing,</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>chemicals,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>petroleum</td>
<td></td>
</tr>
<tr>
<td>3 Rubber, leather,</td>
<td>182</td>
<td>34%</td>
</tr>
<tr>
<td></td>
<td>stone, metals,</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>machinery,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>instruments</td>
<td></td>
</tr>
<tr>
<td>4 Transportation,</td>
<td>40</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>communications,</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td>public utilities</td>
<td></td>
</tr>
<tr>
<td>5 Wholesale and retail</td>
<td>67</td>
<td>12%</td>
</tr>
<tr>
<td>trade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Finance and insurance</td>
<td>52</td>
<td>10%</td>
</tr>
<tr>
<td>7 Services</td>
<td>31</td>
<td>6%</td>
</tr>
<tr>
<td>8 Health care and</td>
<td>14</td>
<td>3%</td>
</tr>
<tr>
<td>education</td>
<td></td>
<td>2%</td>
</tr>
<tr>
<td>Total number of firms</td>
<td>543</td>
<td>100%</td>
</tr>
</tbody>
</table>

The sample consists of all firms on the Comment/MERC database that also are on the CRSP and Compustat files. The first control action is defined as the first chronological control action for a given firm as listed on the Comment/MERC database.
TABLE 4
Mean Monthly Abnormal Stock Returns Preceding Takeover Bid by Sample

Panel A: Mean Monthly Abnormal Returns

<table>
<thead>
<tr>
<th>Estimation Months†</th>
<th>Control Actions</th>
<th>Industry Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>-113,-78</td>
<td>-0.0074*</td>
<td>-0.0023*</td>
</tr>
<tr>
<td>-77,-42</td>
<td>-0.0073*</td>
<td>-0.0005</td>
</tr>
<tr>
<td>-41,-6</td>
<td>-0.0071*</td>
<td>-0.0004</td>
</tr>
</tbody>
</table>

Panel B: Number of Observations in Mean Monthly Abnormal Returns

<table>
<thead>
<tr>
<th>Estimation Months†</th>
<th>Control Actions</th>
<th>Industry Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>-113,-78</td>
<td>406</td>
<td>515</td>
</tr>
<tr>
<td>-77,-42</td>
<td>447</td>
<td>522</td>
</tr>
<tr>
<td>-41,-6</td>
<td>508</td>
<td>528</td>
</tr>
</tbody>
</table>

Panel C: Difference in Mean Monthly Abnormal Returns between Target and Control Portfolios

<table>
<thead>
<tr>
<th>Estimation Months†</th>
<th>Difference between Control Sample and Industry</th>
<th>Number of Paired Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>-113,-78</td>
<td>-0.0048*</td>
<td>385</td>
</tr>
<tr>
<td>-77,-42</td>
<td>-0.0064*</td>
<td>429</td>
</tr>
<tr>
<td>-41,-6</td>
<td>-0.0070*</td>
<td>494</td>
</tr>
</tbody>
</table>

† Estimation months are relative to month 0, the month of the first control action

* statistically different from zero at the .05 level or greater (one-tail test)
TABLE 5
Fraction of Corporate Control Actions and their Corresponding Industry Cohorts Using Income-increasing Accounting Methods for Depreciation, Investment Tax Credit, and Inventory

<table>
<thead>
<tr>
<th>Year</th>
<th>Accounting Depreciation</th>
<th>Inventory Accounting</th>
<th>Investment Tax Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control Action Sample</td>
<td>Industry Diff</td>
<td>Control Action Sample</td>
</tr>
<tr>
<td>-11</td>
<td>0.804 0.770 0.034</td>
<td>0.828 0.804 0.024</td>
<td>0.854 0.858 -0.004</td>
</tr>
<tr>
<td>-10</td>
<td>0.816 0.774 0.042</td>
<td>0.774 0.773 0.001</td>
<td>0.861 0.868 -0.007</td>
</tr>
<tr>
<td>-9</td>
<td>0.803 0.769 0.034</td>
<td>0.749 0.745 0.004</td>
<td>0.877 0.877 0.000</td>
</tr>
<tr>
<td>-8</td>
<td>0.804 0.776 0.028</td>
<td>0.720 0.713 0.007</td>
<td>0.887 0.887 0.000</td>
</tr>
<tr>
<td>-7</td>
<td>0.807 0.777 0.030</td>
<td>0.683 0.668 0.015</td>
<td>0.897 0.890 0.007</td>
</tr>
<tr>
<td>-6</td>
<td>0.815 0.776 0.039</td>
<td>0.686 0.656 0.030</td>
<td>0.903 0.895 0.008</td>
</tr>
<tr>
<td>-5</td>
<td>0.821 0.781 0.040</td>
<td>0.660 0.646 0.014</td>
<td>0.914 0.899 0.015</td>
</tr>
<tr>
<td>-4</td>
<td>0.828 0.785 0.043</td>
<td>0.660 0.624 0.036</td>
<td>0.925 0.908 0.017</td>
</tr>
<tr>
<td>-3</td>
<td>0.824 0.788 0.036</td>
<td>0.650 0.614 0.036</td>
<td>0.930 0.917 0.013</td>
</tr>
<tr>
<td>-2</td>
<td>0.833 0.791 0.042</td>
<td>0.628 0.617 0.011</td>
<td>0.924 0.921 0.003</td>
</tr>
<tr>
<td>-1</td>
<td>0.832 0.799 0.033</td>
<td>0.617 0.620 -0.003</td>
<td>0.928 0.924 0.004</td>
</tr>
<tr>
<td>0</td>
<td>0.836 0.803 0.033</td>
<td>0.633 0.620 0.013</td>
<td>0.922 0.922 0.000</td>
</tr>
</tbody>
</table>
TABLE 6
Cross Sectional Regressions of Accounting Choice

\[ M_{it} = a_{0t} + a_{1t} D_i + a_{2t} \text{CARRY}_{it} + a_{3t} \text{COV}_{it} + a_{4t} \text{RET}_{it} + a_{5t} \text{RISK}_{it} + a_{6t} \text{LEV}_{it} + a_{7t} \text{SIZE}_{it} \]

Panel A: Depreciation

<table>
<thead>
<tr>
<th>Predicted Sign</th>
<th>Mean Coefficient &amp; Z statistic*</th>
<th>Annual Regressions Coefficients and t statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[Predicted Sign]</td>
<td>[Mean Coefficient]</td>
</tr>
<tr>
<td></td>
<td>[&amp; Z statistic]</td>
<td>[Annual Regressions Coefficients and t statistics]</td>
</tr>
<tr>
<td></td>
<td>[-11 to 0]</td>
<td>[-6 to -1]</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.009 (-1.30)</td>
<td>-0.007 (-0.64)</td>
</tr>
<tr>
<td></td>
<td>-0.100 (0.78)</td>
<td>-0.000 (-0.02)</td>
</tr>
<tr>
<td></td>
<td>-0.009 (-0.58)</td>
<td>-0.004 (-0.25)</td>
</tr>
<tr>
<td></td>
<td>-0.016 (-0.117)</td>
<td>-0.021 (-1.27)</td>
</tr>
<tr>
<td></td>
<td>-0.020 (-1.27)</td>
<td></td>
</tr>
<tr>
<td>(D)</td>
<td>+0.030 (5.60)</td>
<td>+0.032 (3.79)</td>
</tr>
<tr>
<td></td>
<td>+0.024 (1.66)</td>
<td>+0.035 (2.27)</td>
</tr>
<tr>
<td></td>
<td>+0.016 (2.11)</td>
<td>+0.031 (2.08)</td>
</tr>
<tr>
<td></td>
<td>-0.009 (1.79)</td>
<td></td>
</tr>
<tr>
<td>(\text{CARRY})</td>
<td>-0.003 (-0.31)</td>
<td>-0.006 (-0.61)</td>
</tr>
<tr>
<td></td>
<td>-0.012 (-0.59)</td>
<td>-0.012 (-0.59)</td>
</tr>
<tr>
<td></td>
<td>-0.000 (-0.14)</td>
<td>+0.000 (0.64)</td>
</tr>
<tr>
<td></td>
<td>-0.000 (-0.01)</td>
<td>-0.000 (0.42)</td>
</tr>
<tr>
<td></td>
<td>-0.000 (-0.01)</td>
<td>-0.000 (0.49)</td>
</tr>
<tr>
<td></td>
<td>-0.000 (-0.01)</td>
<td>-0.000 (0.49)</td>
</tr>
<tr>
<td>(\text{COV})</td>
<td>-0.006 (1.68)</td>
<td>-0.006 (1.02)</td>
</tr>
<tr>
<td></td>
<td>-0.036 (2.08)</td>
<td>-0.015 (0.33)</td>
</tr>
<tr>
<td></td>
<td>-0.007 (0.34)</td>
<td>-0.008 (0.40)</td>
</tr>
<tr>
<td></td>
<td>-0.000 (0.84)</td>
<td>-0.019 (0.84)</td>
</tr>
<tr>
<td>(\text{RET})</td>
<td>-0.006 (1.68)</td>
<td>-0.060 (1.02)</td>
</tr>
<tr>
<td></td>
<td>-0.015 (1.72)</td>
<td>-0.111 (0.34)</td>
</tr>
<tr>
<td></td>
<td>-0.122 (0.40)</td>
<td>+0.083 (0.87)</td>
</tr>
<tr>
<td></td>
<td>-0.083 (0.87)</td>
<td>+0.209 (0.87)</td>
</tr>
<tr>
<td>(\text{RISK})</td>
<td>+0.081 (2.14)</td>
<td>+0.060 (1.16)</td>
</tr>
<tr>
<td></td>
<td>+0.172 (1.48)</td>
<td>+0.111 (0.08)</td>
</tr>
<tr>
<td></td>
<td>-0.122 (0.75)</td>
<td>+0.083 (0.75)</td>
</tr>
<tr>
<td></td>
<td>+0.010 (0.50)</td>
<td>-0.209 (0.50)</td>
</tr>
<tr>
<td>(\text{LEV})</td>
<td>+0.257 (11.80)</td>
<td>+0.204 (7.56)</td>
</tr>
<tr>
<td></td>
<td>+0.175 (3.56)</td>
<td>+0.253 (3.85)</td>
</tr>
<tr>
<td></td>
<td>+0.253 (3.56)</td>
<td>+0.101 (5.10)</td>
</tr>
<tr>
<td></td>
<td>+0.253 (3.56)</td>
<td>+0.243 (5.10)</td>
</tr>
<tr>
<td></td>
<td>+0.196 (5.10)</td>
<td>+0.255 (5.10)</td>
</tr>
<tr>
<td>(\text{SIZE})</td>
<td>-0.015 (-6.54)</td>
<td>-0.014 (-4.96)</td>
</tr>
<tr>
<td></td>
<td>-0.011 (-2.45)</td>
<td>-0.014 (-2.45)</td>
</tr>
<tr>
<td></td>
<td>-0.014 (-2.95)</td>
<td>-0.014 (-2.95)</td>
</tr>
<tr>
<td></td>
<td>-0.014 (-2.95)</td>
<td>-0.014 (-2.95)</td>
</tr>
<tr>
<td></td>
<td>-0.014 (-2.95)</td>
<td>-0.019 (-2.95)</td>
</tr>
<tr>
<td>(\text{R}^2)</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td>(N)</td>
<td>1265</td>
<td>1223</td>
</tr>
</tbody>
</table>

*Z statistic adjusted for time-series dependence in the t statistics from the annual cross-sectional regressions using an AR(2) process.
### Panel B: Inventory

<table>
<thead>
<tr>
<th>Predicted Sign</th>
<th>Mean Coefficient &amp; Z statistic*</th>
<th>Annual Regressions Coefficients and t statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-11 to 0</td>
<td>-6 to -1</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.044 (-3.73)</td>
<td>-0.047 (-2.41)</td>
</tr>
<tr>
<td>D</td>
<td>+</td>
<td>0.031 (3.02)</td>
</tr>
<tr>
<td>CARRY</td>
<td>+</td>
<td>0.075 (5.35)</td>
</tr>
<tr>
<td>COV</td>
<td>-</td>
<td>0.000 (-0.19)</td>
</tr>
<tr>
<td>RET</td>
<td>-</td>
<td>-0.004 (-0.56)</td>
</tr>
<tr>
<td>RISK</td>
<td>+</td>
<td>0.388 (5.42)</td>
</tr>
<tr>
<td>LEV</td>
<td>+</td>
<td>0.211 (7.18)</td>
</tr>
<tr>
<td>SIZE</td>
<td>-</td>
<td>-0.037 (-8.26)</td>
</tr>
<tr>
<td>R²</td>
<td>.04</td>
<td>.04</td>
</tr>
<tr>
<td>N</td>
<td>1064</td>
<td>1032</td>
</tr>
</tbody>
</table>

*Z statistic adjusted for time-series dependence in the t statistics from the annual cross-sectional regressions using an AR(2) process.
### Panel C: Investment Tax Credit

<table>
<thead>
<tr>
<th>Predicted Sign</th>
<th>Mean Coefficient &amp; Z statistic*</th>
<th>Annual Regressions Coefficients and t statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-11 to 0</td>
<td>-6 to -1</td>
</tr>
<tr>
<td>Constant</td>
<td>-.024</td>
<td>-.015</td>
</tr>
<tr>
<td>COV</td>
<td>- .000</td>
<td>-.000</td>
</tr>
<tr>
<td>SIZE</td>
<td>- -.20</td>
<td>-.018</td>
</tr>
<tr>
<td>R²</td>
<td>.02</td>
<td>.02</td>
</tr>
<tr>
<td>N</td>
<td>990</td>
<td>1057</td>
</tr>
</tbody>
</table>

*Z statistic adjusted for time-series dependence in the t statistics from the annual cross-sectional regressions using an AR(2) process.

### Definitions

- \( M_{it}^j \) = \( j \)th accounting method choice by firm \( i \) (1 = income-increasing, 0 otherwise) less the industry average of the \( j \)th accounting method choice
- \( D_i \) = 1 if the \( i \)th firm is a corporate control target, 0 otherwise
- \( \text{CARRY}_{it} \) = 1 if tax-loss carry forward, 0 otherwise less industry mean \( \text{CARRY} \)
- \( \text{COV}_{it} \) = (Net income + after tax interest) / interest less industry mean \( \text{COV} \)
- \( \text{RISK}_{it} \) = Standard deviation of firm \( i \)'s stock return less industry mean \( \text{RISK} \)
- \( \text{RET}_{it} \) = Firm \( i \)'s thirty-six month stock return less industry mean \( \text{RET} \)
- \( \text{LEV}_{it} \) = (Book value of debt / book value of total assets) less industry mean \( \text{LEV} \)
- \( \text{SIZE}_{it} \) = \( \log(\text{sales}) \) less \( \log(\text{industry mean sales}) \)
FIGURE 1
Sales and Growth Rates of Takeover Targets and their Industries

Panel A  Sales: Takeover targets versus Industry Mean

Each observation is calculated as follows: Firm sales in year t is divided by firm sales in year t-1 for each target and industry firm. The industry firms' growth rates are averaged and subtracted from their corresponding target's growth rate. Then, the cross-sectional averages in these differenced growth rates in sales for takeover targets are calculated. The difference in means is plotted.

Panel B  Sales Growth Rates: Takeover targets versus Industry Mean†

†Each observation is calculated as follows: Firm sales in year t is divided by firm sales in year t-1 for each target and industry firm. The industry firms' growth rates are averaged and subtracted from their corresponding target's growth rate. Then, the cross-sectional averages in these differenced growth rates in sales for takeover targets are calculated. The difference in means is plotted.
FIGURE 2
Mean Accounting Rates of Return* of Takeover Targets and their Industry

*Accounting rates of return are calculated as net income before interest divided by total assets. Net income before interest is computed by adding back to net income interest expense grossed up by the highest marginal Federal corporate tax rate in that calendar year.
FIGURE 3

$t$ statistics$^\dagger$ of Differences in Income-Increasing Accounting Methods Between Targets and their Industry

<table>
<thead>
<tr>
<th></th>
<th>Dependent</th>
<th>AR(2) Process</th>
<th>Independent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depreciation</td>
<td>2.42</td>
<td>4.09</td>
<td>8.03</td>
</tr>
<tr>
<td>Inventory</td>
<td>.68</td>
<td>2.10</td>
<td>2.27</td>
</tr>
<tr>
<td>ITC</td>
<td>.34</td>
<td>.71</td>
<td>1.12</td>
</tr>
</tbody>
</table>

$^\dagger$ The $t$ statistic in year $t$ is computed as the cross-sectional mean difference between the target's accounting choice (i.e., zero/one) and the percentage of firms in the target's three-digit SIC industry in the same fiscal year using income-increasing methods divided by the cross-sectional standard deviation of these differences.

"Dependent" is the mean of the twelve annual $t$ statistics and is an unbiased estimate of the aggregate normal $Z$ statistic if the annual $t$'s are perfectly positively correlated. AR(2) is an asymptotic normal $Z$ statistic assuming the annual $t$ statistics follow an AR(2) process. "Independent" is $\text{Dependent} \times \sqrt{12}$ and is an unbiased estimate of the aggregate normal $Z$ statistic if the annual $t$'s are independent.
References


Ball, R., 1989, The Firm as a Specialist Contracting Intermediary: Application to Accounting and Auditing, unpublished working paper, William E. Simon Graduate School of Business Administration University of Rochester.


Benston, G., 1975, The Baffling New Numbers Game at the FTC, Fortune 92 (October).


Roll, R., 1988, Empirical Evidence on Takeover Activity and Shareholder Wealth, in J. Coffee, Jr., L. Lowenstein, and S Rose-Ackerman, eds., Knights, Raiders &


