ABSTRACT

Title of Dissertation: THE IMPACT OF EARNINGS MANIPULATION ON THE SCIENCE AND PRACTICE OF STRATEGIC MANAGEMENT

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Strategic management research frequently seeks to explain variation in organizational performance using metrics such as accounting profits scaled by firm assets (ROA). Essay 1 addresses a concern with such accrual-based accounting methods—perhaps best illustrated by a large discontinuity in the distribution of ROA around zero for U.S. public firms—that operational and accounting practices will artificially inflate/deflate accounting profit. The essay establishes that such earnings management is common, introduces non-classical noise, and distorts our understanding of broad drivers of firm performance. It concludes with an analysis showing that an alternative performance measure, Cash Flows from Operations on Assets (OCFOA), offers a robust vehicle for checking results using accounting profits.

Essay 2 addresses a core prediction of the behavioral theory of the firm—that a firm is more likely to engage in strategic change when its performance falls short of its aspirations. If a firm manipulates income to report above aspirations when otherwise it would have fallen short, this creates a theoretical tension—does the firm engage in strategic change or not? This study utilizes two instrumental variables for a firm's capability to smooth earnings to analyze the linkage between earnings smoothing and strategic change. The results suggest that public firms actively smoothing earnings have a lower propensity to subsequently change the firm's major resource allocations, and that avoiding reporting performance below aspirations is a mechanism through which this may occur.

THE IMPACT OF EARNINGS MANIPULATION ON THE SCIENCE AND PRACTICE OF STRATEGIC MANAGEMENT

by

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Chapter 1: Introduction

This dissertation explores the phenomenon of firms inflating or deflating profits to strategically report accounting profit, known as earnings management. I study the effect of earnings management on how scholars understand the drivers of firm performance as well as on the firms' downstream resource allocation decisions. The essays in this document are intended to address two broad research questions: First, does the firm's endogenous choice to manipulate reported earnings introduce bias in econometric models designed to understand, predict, or control for firm performance? Second, does a firm engaging in the choice to manipulate earnings to smooth out reported profits dampen the performance feedback process, and thus engage in less subsequent strategic change? Both questions address calls to further knowledge of how firm performance is measured, interpreted, and manipulated (Richard et al., 2009; Lieberman, 2021).

THE CENTRALITY OF FIRM PERFORMANCE

Perhaps the most central question of strategic management research is how firms gain and sustain competitive advantage (Porter, 1985). Firms create and capture value by managing a stock of resources and successful firms are thought to have either superior resources and/or a superior way of organizing and deploying their resources compared to their less successful competitors (Barney, 1991). Competition between firms seeking to create and capture value "acts to direct resources towards uses offering the highest returns" (Rumelt, 1991) and through the freedom of market exchange provide increased prosperity more broadly for society (Smith, 1776).

The mechanism of relative firm performance guiding resources toward their most productive use is particularly important in capital markets for publicly traded corporations. Firms with publicly offered common stock are required to report financial accounting data quarterly and annually according to generally accepted accounting principles (GAAP) for companies listed in the U.S.[1], and to the international financial reporting standards (IFRS) for those listed in most other jurisdictions[2]. Many entities rely on these public financial reports to decide whether to infuse or withdraw resources to the firm, including equity investors, corporate bondholders, and potential mergers and acquisitions (M&A) counterparties. These stakeholders use information on the firm's performance as presented in the accounting statements as a key input in decision-making on whether or not to invest in, divest from, lend to, acquire, merge, or be acquired by the firm; given this, it is no wonder that stock prices (Bartov, Givoly, and Hayn, 2002) and the cost of debt (Jiang, 2008) are sensitive to accounting measures of performance, particularly earnings relative to salient benchmarks.

In addition to the participants in capital markets, the public more broadly relies on financial accounting data to gauge the relative performance of competing

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[1] https://www.investor.gov/introduction-investing/investing-basics/role-sec/laws-govern-securities-industry
[2] https://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/

firms. As Lieberman (2021) points out, the notion of competitive advantage implies that a given firm has better performance than another, and he suggests that the study of superior performance is a cornerstone of strategic management scholarship. He proceeds to note the myriad ways that firm performance has been defined in the literature, most of the which involve a form of accounting profit.[3] As competitive advantage through superior performance is the most central topic of study in strategic management, so accounting profit is the most common way that firm performance is operationalized.

Accounting Profits as Performance Measure

It is sensible that accounting profit is used to judge firm performance. Profit is simply revenue (a measure of the value customers place on the final product or service) minus cost (a measure of the value of resources consumed in creating the product or service), which represents the most basic calculation of value created and captured by a firm's economic activity. By comparing the value of the various inputs before business activity to the total price paid by customers for the outputs of that business activity, the value created by the activity is thus measured in accounting profit (on a balance sheet, this value is represented by net income).

When comparing firms within and across industries, it is common to scale the raw earnings number by some measure of the size of the firm. An annual net income

[3] For example, Lieberman mentions economic profit, which is derived from accounting profit by also applying the opportunity cost of capital. As described earlier, even the cost of capital is affected by relative levels of accounting profit.

of 10 million USD may be quite impressive for a small growth firm but seen as wholly inadequate for Apple, Inc. The particular scalar used for firm size varies with the particular aim of the observer. For example, scaling by the firm's revenues (return on sales) may be informative if an observer is trying to predict the potential profit of expanding the size of operations. Scaling by the total value of common stock (return on equity) or on the number of shares outstanding (earnings per share) is of interest to equity investors to gauge the residual profits generated by the various components of their portfolio, but this measure is more sensitive to the debt/equity structure of a company than is return on invested capital. As is discussed in Chapter 2, a ubiquitous performance measure for strategic management research is return on assets (ROA), which scales the accounting profit of a firm by the total of the assets listed on its balance sheet. This has the advantage of being insensitive to financial leverage and being comparable across industries engaged in very different work (e.g., one can compare a software development firm to an oil drilling firm even though the type of assets owned by each are quite different).

Earnings Management

Managers recognize the importance of earnings as a metric (Graham, Harvey, and Rajgopal, 2005) and are incentivized to report earnings at or above key thresholds such as previous performance, gains vs. losses (zero profit), financial analyst consensus expectations, or the earnings of industry peers (Burgstahler and Dichev, 1997; Du and Shen, 2018). There are both individual-level incentives (including maintaining or building reputation, retaining their position, increasing compensation through salary/bonus, increasing the value of stock-based compensation by boosting the share price, or the psychological satisfaction of attaining goals) as well as firm-level incentives (lowering the cost of capital, avoiding breach of debt covenants, building a reputation for trustworthiness or consistency with shareholders and financial analysts, increase the stock price in anticipation for a merger or stock-based acquisition, etc.) for reporting above thresholds (Ronen and Yaari, 2008).

When these incentives guide managers to seek profitable projects and investments, to make processes efficient, and to give and inspire additional marginal effort from employees, these incentives should be generally aligned with value creation. However, there are techniques to temporarily inflate or deflate reported accounting profit that decouple the reported value with the actual underlying financial position of the business. Earnings management occurs when managers use such discretion over accounting or operational decisions to strategically report profit (Phillips et al., 2003).

The specific techniques managers use to adjust profits strategically are well summarized by Ronen and Yaari (2015, p. 258; 2008, p. 42-55), but in general concept, they rely on two types of discretion managers can exert: 1) the timing of events, for example, when revenues or expenses are recognized, when write-offs, impairments, or adjustments are made, when new accounting standards are implemented, or when assets are liquidated; and 2) when the manager must make a judgment call on quantifying an uncertain future event, such as how many current credit customers are unlikely to pay, how many years a new piece of equipment is expected to last, or what potential financial penalty may be incurred due to a pending lawsuit or regulatory breach. A certain amount of discretion in timing or valuation of uncertainty is necessary within accounting standards, as managers are arguably in the best position to make such calls; restricting regulations within GAAP and IFRS to try to eliminate all such discretion would be counterproductive (if even possible). Additionally, it is difficult to know *a priori* whether a particular judgment call is manipulative or truly the manager's best estimate in good faith. Even *post hoc* detection is imperfect, as despite public firms being required to undergo annual external audits, a substantial portion still are subject to enforced penalties and restatement (Harris and Bromiley, 2007) and as the share price increase to meeting earnings thresholds persists even when there is suspected earnings or expectations management (Bartov, Givoly, and Hayn, 2002).

The factors driving earnings management can roughly be categorized into 'motive' or 'opportunity' factors. First order factors that motivate earnings management include events or conditions where there is direct benefit conditional on earnings being either inflated or deflated. For example, a firm at risk of violating debt covenants may manipulate the timing of accruals to increase earnings (DeFond and Jiambolvo, 1994). Firm managers themselves may have a direct benefit from earnings higher than salient thresholds due to the triggering of targets for bonus compensation (Healy, 1985; Guidry, Leone, and Rock, 1999; Tahir, Ibrahim, and

Nurullah, 2019). These first order factors can be identified by the direct incentive to the firm or the relevant top management team members.

There are also second order effects that motivate earnings management by anticipation that posting earnings above certain thresholds will elicit a positive reaction in the stock market or will increase the status or reputation of the firm or its top managers. There is evidence that top management teams manipulate earnings more to drive up the stock price when executive compensation has a large proportion of stock-based compensation (Bergstresser and Philippon, 2006). Additionally, firms anticipating mergers or acquisitions with a stock component seem to use earnings manipulation to boost their own share price before the transaction (e.g., Ardekani, Younesi, and Hashemijoo, 2012; Meisel, 2007; Zhu and Lu, 2013). While these are motives of tangible benefits from driving a share price higher, there is also a reputational motive for both the firm and its executives. Graham, Harvey, and Rajgopal (2005) found that major motivations for CFOs to meet earnings benchmarks was to “build credibility with [the] capital market” and to enhance the “external reputation of management”.

In addition to the factors that motivate earnings management behavior, there are also conditions that constrain or enable the flexibility and discretion used for such manipulation. This includes broad statutory or regulatory changes impacting accounting standards and practice, for example, the Sarbanes-Oxley Act of 2002 (SOX), but also includes industry or firm-specific factors. A firm’s governance structure (Davidson, Goodwin-Stewart, and Kent, 2005), the power of top executives vis à vis outside directors (Baker et al., 2019), and the composition and activities of shareholders such as the relative proportion of institutional investors, the presence of shareholder activism, etc. (Hadani, Goranova, and Khan, 2011) can also enable or constrain management's ability to manage earnings in addition to their incentives to do so.

Research Agenda

Many of the factors that drive or mitigate earnings management behavior relate to core questions of value creation and thus to strategic decisions made by the firm. It is at these intersections that issues about the accuracy of reported earnings and the quality of a firm's earnings (i.e., the likelihood that they will endure) cross over to core strategic decisions, such as how firms position for, execute, and integrate after mergers and acquisitions; how senior management is compensated to best align stakeholder interests; or what organizational and governance structure provides effective oversight of activities most efficiently. This poses interesting questions about whether firms make such strategic decisions, in part, to later facilitate more flexibility to manage earnings, or if the decision to manage earnings now has effects on subsequent strategic decisions of the firm. It also calls into question whether the disconnect between reported performance and the underlying truth for a given period could lead us astray as scholars studying the antecedents of such performance.

The two essays presented in this dissertation are part of an overall research agenda in which I plan to study the impact of earnings management on the science and practice of strategic management. The research will fall into three categories. The first category is to examine the effect of earnings manipulation on econometric models of interest to strategy scholars. The second and third category are to look at strategic decisions downstream and upstream, respectively, of a firm engaging in earnings manipulation.

Measurement / Econometric Effects

Essay 1 of this dissertation provides quantitative estimates of the extent of earnings management among public firms and estimates the non-classical measurement error present in publicly reported income numbers. By using an algorithmic bunching estimator pioneered by scholars in economics (Chetty, 2012; Kleven and Waseem, 2013; Diamond and Persson, 2016), discontinuities in the distribution of annual firm ROA are compared against iterative counterfactual functional forms to estimate 1) the range of probable earnings management, and 2) how much mass has shifted from one part of the distribution to the other. Operational cash flows over assets (OCFOA) is used as an alternative measure to serve as a counterfactual for the distribution of ROA to account for endogenous firm effort near aspirational thresholds. An updated study in the decomposition of variance of profitability is conducted in the spirit of McGahan and Porter (1997; 2002) and Mackey (2008) to revisit how much variance in profit can be explained through various components. The results suggest that earnings management reduces the overall amount of variance explained by approximately 10 percentage points, as well as shifting our understanding of how much variance each individual component explains.

I plan to extend this work to apply the findings to previous empirical work in strategy, particularly on studies of top management team (TMT) effects. As earnings management behavior is driven substantially by the CEO, the CFO, and the governance structures within which they operate (Ronen and Yaari, 2015), the non-classical measurement error caused by should be particularly salient for studies attempting to equate TMT or governance characteristics to subsequent performance or strategic change. Rather than focus on one constructive replication of a well-known finding, this work would take a comprehensive look at the literature stream to look for common patterns of bias—e.g., CEO narcissism (Chatterjee and Hambrick, 2007; Ham et al., 2017) may have an overstated effect on performance, as earnings management may lead to the identification of CEOs who are more aggressively manipulating rather than more effectively managing. This is the primary concern that earnings management could threaten inference; if we as scholars misinterpret being more aggressive in earnings management as being good at creating value because we take reported earnings at face value, this could lead us astray in our efforts to understand and explain superior performance.

The other planned addition to this work is to create a guide of which factors important to management and organizational theory are most strongly correlated with earnings management, along with tangible examples of econometric models with and without controls for this bias. The intention is to not only enhance previous work but provide sensemaking of the existing knowledge as a guide for future work in this area.

Downstream Effects of Earnings Management

Essay 2 of this dissertation examines the causal relationship between a firm's earnings smoothing activity and subsequent propensity for strategic change. This essay explores the implication of the core prediction of the behavioral theory of the firm—that a firm is more likely to engage in strategic change when its performance falls short of its aspirations. If by engaging in earnings smoothing, managers are more likely to report earnings above aspirations, does this then suppress future change? The study includes two instrumental variables to aid causal identification: 1) the influence of earnings smoothing by industry peers and 2) variation in special items.

The results suggest that firms that smooth earnings are more likely to report earnings above organizational aspirations than firms who do not. This effect holds for four different types of organizational aspirations (previous year performance, average industry performance, positive vs. negative profit, and analyst consensus expectations), but the effect seems to be strongest for posting non-negative earnings. Furthermore, earnings smoothing leads to a lower propensity to change major resource allocations (R&D spending, SG&A spending, debt/equity ratio, etc.) in subsequent periods. Approximately 40 percent of the effect of earnings smoothing to lower subsequent strategic change is accounted for by whether or not the firms reported earnings above aspirations.

Thinking about mechanism by which aspiration attainment mediates the effect of earnings smoothing on strategic change raises interesting implications for performance feedback theory. While it is widely accepted in this literature that performance below aspirations engenders organizational search and change (Gavetti et al., 2012) in this case, earnings smoothing is decoupling the performance that is reported publicly from the underlying actual performance for any given time period. If one takes the perspective that managers actively manipulating earnings have private information on what the counterfactual unmanipulated earnings would be (and thus that they would have fallen short of the salient aspiration save for the manipulation), then this would imply that part of the classic performance feedback findings around performance shortfalls and change is due to pressures or expectations external to the firm management. These external pressures come from users of reported financial data, including shareholders, analysts, bondholders, and counterparties for future transactions.

If one relaxes the assumption that managers smoothing earnings have a clear understanding of what their counterfactual unmanipulated earnings would have been, this opens up other interesting mechanisms. For example, scholars from a sociological lens studying the budgeting process of a firm as ritual describe a process of negotiation and “reification” resulting in the formal budget (Mazmanian and Beckman, 2018). In practice, once the process of creating financial statements concludes, the reported figures may hold similar salience inside the firm as they do outside the firm, even to the point of reducing or eliminating the salience of 'how the sausage was made' in the first place.

I plan to extend this work by exploring whether the negative relationship between earnings smoothing and strategic change described above is a mechanism by which firms go down the slippery slope to outright financial fraud. Chu et al. (2019) present results suggesting that firms that consistently meet or beat earnings estimates are more likely to engage in outside-of-GAAP fraud. And in their work on firm financial restatements prompted by SEC sanction, Harris and Bromiley (2007) propose an extension of the traditional performance feedback model that when firms fall short of their aspirations, they can choose to lie about their financial position (i.e., engage in financial manipulation outside of discretion allowed under GAAP) rather than engage in search and change. This substitution effect could happen earlier in the process, and earnings management suppressing strategic change through aspiration attainment could be the causal mechanism underlying the results seen by both Chu et al. and Harris and Bromiley. By applying a similar instrumental variable approach as in Essay 2 for identification, the work could then be extended to look at the likelihood for subsequent SEC enforcement actions on smoothing firms and test whether low strategic change precedes this effect.

Upstream Effects of Earnings Management

Just as there are downstream strategic decisions that are enabled or constrained by engaging in earnings management, there are many questions to explore regarding strategic decisions made that give managers the flexibility to manage earnings later. A TMT that sees earnings management as part of "playing the game" and that is willing to sacrifice some long-term value for the short-term benefit of smooth or reliable earnings (see Graham, Harvey, and Rajgopal, 2005) may make resource gathering or allocation decisions on the front end to give themselves such flexibility or to reduce the cost (or chance of detection) of manipulation.

There are two projects I intend to explore on precursors to earnings management. The first is whether firms that subsequently engage in manipulation choose certain types of projects to greenlight or assets to acquire that give them ample discretion in timing or valuation of financial events. This could include internal R&D or external business development opportunities (e.g., M&A targets). This study could look at either a process level (such as the different hurdles applied during project evaluation) or by examining the characteristics actual projects funded or companies acquired.

The second project is to examine the organizational structure of a firm that enable subsequent earnings management. There are plausible treatment and selection effects that could be operating here. A possible treatment effect would be a new CEO or CFO that wants to engage in more manipulation implementing organizational changes to centralize authority regarding key levers of earnings management. The selection effect could occur on either side of the two-sided market to place top executives in the role. A CEO or CFO who was willing to engage in more aggressive earnings management may find more opportunity in a firm structured to enable this as an option. On the other side of the market, scholars have explored how firms seeing the need for earnings management may recruit top executives with 'morally flexible' personality traits proactively (Harris et al., 2021). If this is true, it stands to reason that the organization would also adopt or maintain a structure giving those recruited managers the tools to accomplish the earnings management sought.

Chapter 2: Does Earnings Management Matter for Strategy Research?[4]

INTRODUCTION

Investors, managers, and scholars all rely on accounting-based measures of public firm performance. A cursory search on Google Scholar, for example, yields over 22,000 papers, distributed over multiple fields, containing the terms "Compustat" and "Return on Assets." This prevalence partly reflects a long tradition of using accounting data to study both the drivers of profitability (McGahan and Porter, 1997, 2002), and the persistence of performance (Rumelt et al., 1991; D'Aveni et al., 2010). Moreover, reporting of accounting measures is mandated for publicly traded firms, providing scholars with metrics that are comparable, convenient, and broadly accepted as important.

At the same time, there is a substantial accounting literature on earnings management, defined as reporting that aims to "mislead some stakeholders about the underlying economic performance of the company or influence contractual outcomes that depend on reported accounting numbers" (Healy and Wahlen, 1999).[5] Although our impression is that scholars studying firm performance are generally aware that accounting adjustments can obscure the link between real and

[4] This chapter is co-authored with Dr. Timothy Simcoe and Dr. David Waguespack.
[5] We use the term "earnings manipulation" to describe discretionary reporting decisions permitted under Generally Accepted Accounting Principles (GAAP) that strategically inflate or deflate accounting profits. The term does not imply fraud.

reported performance, we find very few citations to the relevant accounting research in fields such as strategy, finance, and economics.[6] We speculate that this omission reflects the fact that manipulation, an activity that is by definition hidden, is hard to systematically assess. Moreover, scholars may implicitly assume that any "noise" in accrual accounting will balance out within the firm over time, and that the market will detect non-trivial misreporting.

In this manuscript we first establish that earnings management is common, introduces non-classical noise, and distorts our understanding of broad drivers of firm performance. We begin with a simple model of incentives to manipulate earnings that predicts bunching in reported earnings just above the zero returns threshold. We then turn to data from Compustat and Execucomp and document a discontinuity in the distribution of Return on Assets (ROA) at zero profits, and employ a bunching estimator (Chetty, 2012; Kleven and Waseem, 2013) to estimate that approximately 15 percent of firm-year observations are shifted from negative to positive profitability. While striking, this shift in the distribution of ROA could reflect endogenous effort (i.e., striving harder when within striking distance of a goal) as well as accounting tricks. Therefore, we next demonstrate that for Cash Flows from Operations on Assets (OCFOA), an alternative accounting measure that is arguably less subject to manipulation, only approximately four percent of observations shift

[6] For example, at the time of this writing, the seminal study of earnings management by Burgstahler and Dichev (1997) had been cited over 5,000 times. It received one citation in *Strategic Management Journal*, three in the *Academy of Management Journal*, five in the *Journal of Finance*, and none in the *Quarterly Journal of Economics*.

from the negative to positive region. Finally, we conduct a decomposition of variance, in the spirit of canonical analyses found in Schmalensee (1985), Rumelt et al. (1991), and McGahan and Porter (1997, 2002), comparing results based on ROA versus OCFOA. We find that earnings management may obfuscate 10 percent or more of the variance in earnings that scholars can predict using these factors; and moreover, the manipulation changes the relative importance of industry-, firm-, and CEO-level factors.

The issues of performance measurement and the match to theoretical constructs are of long-standing concern in management scholarship (Winter, 1995; Lieberman, 2021). An emerging stream of recent work has addressed deficiencies in accounting measures, such as the distinction between average and marginal profit maximization (Levinthal and Wu, 2010; Shapira and Shaver, 2014), short- versus long-term value creation (Wibbens and Siggelkow, 2020), cleavages between value creation and capture (Lieberman et al., 2017), and the ability of firms to leverage non-owned assets (Barney, 2019). We contribute to this line of work by documenting how accrual accounting may systematically obscure understanding of the relationship between firm policies and outcomes, and by offering the relatively simple solution of checking results with an alternative accounting measure. While we embed our variance decomposition analysis within a broad line of empirical inquiry, we believe there is much potential for strategy scholars to examine whether and how more specific firm actions are influenced by earnings manipulation.

THEORY: EARNINGS MANIPULATION AND BUNCHING

This section presents a simplified model of earning management, based on the more general treatment in Kleven (2016). Our model includes a single firm whose true performance is a random variable denoted by π. The CEO observes her firm's performance and makes a report $R = \pi + a$, where a represents accounting adjustments. In our empirical context, R corresponds to publicly reported accounting-based performance measures.

We assume that adjustments incur a quadratic cost $c(a) = \frac{\gamma a^2}{2}$, so unbiased reporting is free, and reporting costs increase (at an increasing rate) with the size of any adjustments. In practice, the costs of earnings management may show up in a wide variety of ways, such as a loss in credibility, managerial distraction, the direct costs of an audit, increased financial constraint, or the cost of "unwinding" an adjustment by under-stating future profits. By adopting a reduced-form quadratic cost function, we are emphasizing expositional clarity and convenience over realism.

The CEO chooses adjustments, a, to maximize her payoff, which takes the following form:

$$\max_a U(a;\pi) = \underbrace{(\pi + a)}_{R} + B \cdot \mathbf{1}_{\{R\geq 0\}} - c(a) \tag{1}$$

where $\mathbf{1}_{\{R\geq 0\}}$ is an indicator function that equals one if and only if the report, R, is non-negative. The CEO's payoff increases linearly with R, to capture the idea that she would generally like to report better performance. Because she also pays a quadratic adjustment cost, $c(a)$, however, there is a limit to the size of any distortions. The parameter B is a “bonus” paid to the CEO for a non-negative report. This bonus could represent an actual payout, a reduced probability of termination, or simply a psychological benefit associated with “not losing money.” Regardless of the underlying cause, the bonus produces a discontinuous jump in the marginal benefits of earnings management when $R = 0$. This jump is called a “notch” in the public finance literature.

As a baseline model of earnings manipulation, consider the CEO’s report in the absence of a notch (i.e., when $B = 0$). Given the linear quadratic structure of equation (1), the CEO’s first-order condition reveals that $a^* = \frac{1}{\gamma}$. The CEO will always make optimistic reports, and the size of her adjustments will naturally decline as the cost of misreporting, γ, grows larger.

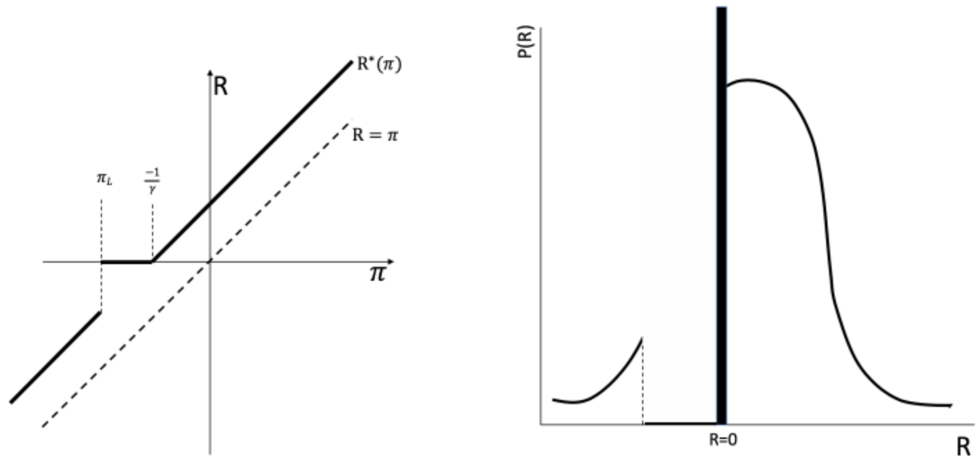
Before considering how a notch affects the CEO’s report, it is useful to pause and consider the implications of this baseline model for empirical strategy research. Because the CEO always makes adjustments, a researcher never actually observes “true” performance. On the other hand, this may not matter very much. In particular, variation in underlying performance, π, maps directly into variation in the optimal report, $R = \pi + \frac{1}{\gamma}$. For example, in a statistical analysis that seeks to explain how some factor or decision X impacts observed performance R, all reporting distortions can be swept away simply by including a constant term in the regression. Unfortunately, this argument only goes so far. In our model, $a^*$is constant only because the marginal costs and benefits of adjustments are uncorrelated with π. In general, as we now illustrate for the case of a notch, misreporting might be correlated with π, X, or both, leading to well-known problems of omitted variables or simultaneity.

To see how this can happen, consider our baseline model with a notch induced by $B > 0$. The CEO now has an incentive to "reach" for the bonus by reporting $R = 0$ (or equivalently, $a = -\pi$), as long as the firm's true performance is close enough to the reporting threshold. In the Appendix, we show that this happens when $\pi > \pi_L \equiv -\left(\frac{1}{\gamma} + \sqrt{\frac{2B}{\gamma}}\right)$. This implies that the CEO's optimal reporting strategy is:

$$R^*(\pi) = \begin{cases} \pi + \dfrac{1}{\gamma} & if\ \pi \notin \left[\pi_L, -\dfrac{1}{\gamma}\right] \\ 0 & if\ \pi \in \left[\pi_L, -\dfrac{1}{\gamma}\right] \end{cases}$$

Figure 2-1 graphs this optimal reporting strategy and illustrates the distribution of R when true performance is normally distributed. As illustrated in right panel, there is a "hole" in the distribution of reports just below $R = 0$, and a spike or mass-point at zero, because all of the firms with true performance in the interval $\left[\pi_{L,} - \frac{1}{\gamma}\right]$ shift their reports upwards to zero. This is the key feature of the model that we will examine in our data.

Figure 2-1: Optimal Reporting (left) and the Distribution of Reports (right)



Although the predictions of this simple model are very stark, they can be relaxed. For example, if we allow the marginal cost of adjustment, γ, to vary across firms or introduce an idiosyncratic fixed cost of earnings manipulation, then some CEO's may choose to make slightly negative reports. We do not pursue those extensions here because the purpose of the simple model is not to capture every feature of the data set described below. Rather, our aim is to illustrate a set of incentives that can generate bunching in reported profits. We then use the actual bunching observed in our data to illustrate how earnings management can distort empirical strategy research.

A final point about the model that merits some discussion is the interpretation of the CEO's choice. Up to this point, we have labeled the variable a "adjustments" and assumed that it represents earnings manipulation. Although we find that interpretation plausible, one could easily re-label a "managerial effort" and argue that a better interpretation of any observed bunching is a try-harder effect induced by the same notch in the CEO's payoff function. To address that concern, we introduce a second performance measure that is harder to manipulate and show that there is a systematic difference in the amount of bunching across these two outcomes. Because that approach is fundamentally empirical, we now turn to a description of the data.

Context: Public Firm Performance Data

Return on Assets (ROA) features prominently in strategy research on the drivers of organizational performance. For example, out of approximately 860 empirical articles published in the *Strategic Management Journal* between 2011 and 2020, we found that 238 articles (27%) reference ROA. The popularity of ROA as an outcome variable in the empirical strategy literature is due to at least three factors. First, ROA is comparable across firms of different sizes, and in theory represents the capability of managers to generate value from a stock of resources (Barney, 1991, for example). Second, ROA is a key outcome variable used by investors, making it reasonable to assume that managers also focus on that outcome. Third, and perhaps most importantly, the underlying components of ROA — Net or Operating Income and Total Assets — are part of the mandated reporting requirements for publicly traded U.S. firms, and are therefore readily available to scholars through the Compustat database.

Because our aim in this paper is to illustrate the potential importance of earnings management for Strategy research that takes ROA as an outcome, we also use Compustat data. Table 2-1 below reports descriptive statistics, and Table 2-2 correlations, for selected variables from the Compustat database using data from

1992-2018. Each table considers two samples. The first sample comprises all firms publicly traded in the United States (N=210,797). The second sample (N=171,328) excludes firms in the financial sector (standard industrial classification [SIC] codes in the 6000s) or public administration (SIC codes in the 9000s) as is common in many academic studies that utilize ROA. Both samples are unbalanced panels, with firms entering in 1992 or the year they became public and exiting in 2018 or the year they ceased being public.

Table 2-1: Summary Statistics

All Industries

Variables	Observations	Mean	Std. Dev.	Min	Max
Fiscal Year	210,797	2005	7.670	1992	2019
Total Assets	210,797	9,127.191	82,896.37	0	3,771,200
Net Income	210,797	161.497	1,306.279	-99,289	99,806.04
ROA	210,797	-0.034	0.224	-1	1
OCF	210,797	369.056	2,570.763	-110,560	166,671.5
OCFOA	210,797	0.031	0.193	-1	0.999
Earnings Smoothing	145,479	2.692	6.311	0	520.836

SICs in 6000s and 9000s Omitted

Variables	Observations	Mean	Std. Dev.	Min	Max
Fiscal Year	171,328	2005	7.670	1992	2019
Total Assets	171,328	3,688.508	16,842.77	0	551,669
Net Income	171,328	145.215	1,211.2	-98,696	98,806.04
OCF	171,328	352.571	1,853.95	-16,856	81,266
ROA	171,328	-0.042	0.236	-1	1
OCFOA	171,328	0.032	0.202	-1	0.999
Earnings Smoothing	117,585	2.109	2.243	0.090	20.544

Table 2-2: Cross-Correlation Table

All Industries

Variables	Fiscal Year	Total Assets	Net Income	ROA	OCF	OCFOA	Earnings Smoothing
Fiscal Year	1.000						
Total Assets	0.068	1.000					
Net Income	0.071	0.357	1.000				
ROA	-0.046	0.027	0.106	1.000			
OCF	0.075	0.379	0.546	0.062	1.000		
OCFOA	-0.036	0.007	0.072	0.697	0.079	1.000	
Earnings Smoothing	-0.021	0.109	0.046	0.101	0.010	0.043	1.000

SICs in 6000s and 9000s Omitted

Variables	Fiscal Year	Total Assets	Net Income	ROA	OCF	OCFOA	Earnings Smoothing
Fiscal Year	1.000						
Total Assets	0.115	1.000					
Net Income	0.071	0.605	1.000				
ROA	-0.068	0.082	0.123	1.000			
OCF	0.100	0.875	0.748	0.095	1.000		
OCFOA	-0.040	0.080	0.090	0.718	0.112	1.000	
Earnings Smoothing	-0.097	-0.002	0.021	0.246	-0.002	0.174	1.000

Most of the variables used in our analysis are quite standard. Net Income, Total Assets, and OCF (Net cash flows from operating activities) are incorporated into Compustat from the firm's annual 10-K filings with the SEC. OCF "...is the cash profit the company would have reported had it constructed its income statement on a cash basis rather than an accrual basis" (Easton et al., 2013, p. 2-17).

OCF plays an important role in our analysis, and it can be calculated in two ways: the direct method (i.e., noting the cash received or cash paid for all operating transactions), and the indirect method of starting from Net Income and removing all non-cash gains or losses.[7] At a conceptual level, Net Income – the numerator of ROA – represents the profit or loss of a business using accrual-based accounting, while OCF represents the profit or loss from operations using a cash basis.[8] Specifically, using OCF as a measure of firm performance rather than income-based measures removes the effect of investing and financing effects, the effects of interest, taxes, and special items, and the effects of non-cash book transactions such as depreciation, amortization, or book-value changes in asset or liability valuation. In addition to these specific items that would appear as journal entries in the corporate accounts, OCF is also not sensitive to broad accounting policy decisions such as the choice of inventory valuation method (e.g., LIFO vs. FIFO), when revenue is recognized, or allowances for potential outcomes (such as anticipated customer returns). Because it is less sensitive to various discretionary choices that managers can use to influence reported profit, OCF should be less vulnerable to accounting-based earnings management than ROA.[9]

ROA in a given year for a given firm is calculated by the authors, following convention, by dividing Net Income by the Total Assets from the prior year. Similarly,

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[7] Specifically, the items that are removed are typically depreciation/amortization, changes to current non-cash assets (such as accounts receivable, inventory), and changes to current non-cash liabilities (such as accounts payable).

[8] Some scholars use Operating Income or adjusted income such as Earnings Before Interest, Taxes, Depreciation, or Amortization (EBITDA) to calculate ROA. These other income-based measures relieve some of the potential error from earnings management, as they strip out certain sources of accounting-based discretion, but OCF excludes more potential sources for accounting-based manipulation by restricting fully to a cash basis.

[9] There is evidence that firms also use methods in addition to accruals to engage in earnings management (Zang, 2012; Roychowdhury, 2006; Graham et al., 2005). Mismeasurement caused by these other types of activities may not be detected by our analysis. Thus, our estimates are likely to represent a conservative lower bound on the potential impact earnings-management-induced measurement error have on ROA.

OCFOA is calculated by dividing OCF by the Total Assets of the prior year.[10] By construction, OCF and Net Income are strongly correlated, as are the two performance measures ROA and OCFOA.[11] Although OCFOA is not widely used as a performance measure in the strategy literature, we found only six instances in our corpus of SMJ articles, it is clearly linked to operational performance, and for the reasons described above, less subject to accounting manipulation than ROA.

Earnings Smoothing, the final variable listed in Tables 2-1 and 2-2, is well known to accounting scholars (Leuz et al., 2003; Dechow et al., 2010) but less common in strategy research. It is defined as standard deviation of OCFOA divided by the standard deviation of ROA, calculated over the trailing 12 quarters (and therefore computed from quarterly rather than annual data). Earnings Smoothing is constructed such that a higher ratio indicates smoother earnings relative to the underlying cash flows. Many managers prefer smooth earnings paths (Graham et al., 2005), and the intuition behind this variable is that a large discrepancy between variation in operating cash flows and variation in accounting earnings may signal that a firm is intentionally smoothing earnings by boosting profit during poorer quarters and stashing away profits during good ones.[12] It is important to note that

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[10] Total Assets from the prior year is used in order to avoid time reversal, for instance such that declines in Net Income or OCF early in the year prompt asset depreciation later in the year.
[11] See Figure C.1 in Appendix C.
[12] Although there are other measures for earnings management/earnings manipulation that hold value (for example, the Modified Jones method (Dechow et al., 1995)), comparing variation of earnings to variation in cash flows has helpful features for our purpose. Unlike methods that rely on identifying and isolating discretionary accruals, this method covers both “real” income smoothing and “artificial” income smoothing (Ronen and Yaari, 2008). Additionally, this method does not require the existence of a “non-manipulated” period for each firm from which to derive their non-discretionary accrual

while Earnings Smoothing provides some evidence that earnings are being intentionally managed from period-to-period, it does not provide information on whether any specific period's earnings have been shifted, nor what the "true" counterfactual earnings should have been.

Before turning to the analysis, we briefly review the rationale for accrual accounting which, when used properly, can add useful information to reported earnings. For example, suppose a firm incurs a monthly rental expense of $X that is paid in cash 30 days after the 1st of each month. Under cash-based accounting, the firm would show monthly expenses of $X, $0, and $2X for January, February, and March, respectively. In contrast, because of the matching principle, accrual accounting would show an expense of $X in all three months. Because the company incurred the liability when it used the facility, the accrual accounting method shows a truer picture of the financial impact of this use than the cash-based method. In econometric models that use monthly panel data, we might therefore expect ROA to produce a better fit than OCFOA. Similar arguments can be applied to a wide variety of investment and financing activities.

On the other hand, accrual accounting implies a degree of managerial discretion that can be used to obfuscate underlying performance. Suppose, for example, that a firm generates a cash-based loss of $Y in one month by selling product A, and a cash profit of $Y the next month selling product B. If the firm makes

patterns. Finally, the ratio of standard deviations is more intuitive for a non-accounting audience than detecting anomalies in specific accrual accounts would be.

an accrual to inflate profits in the first month (e.g., by making a more aggressive prediction about its receivables), and then unwinds that accrual in the next month, the pattern of returns would be \$0, \$0 under accrual accounting and -\$Y, \$Y based on cash. Consequently, a regression of "product sold" on profitability would produce no clear result if ROA is used as the outcome variable, but would show that product B is associated with greater profit when using OCFOA. This latter example also illustrates why the intuition that earnings manipulation simply "averages out" is not correct. Even if all adjustments are eventually reversed, earnings management can generate bias in statistical analyses when it is correlated with other variables, such as a particular manager or strategy.[13]

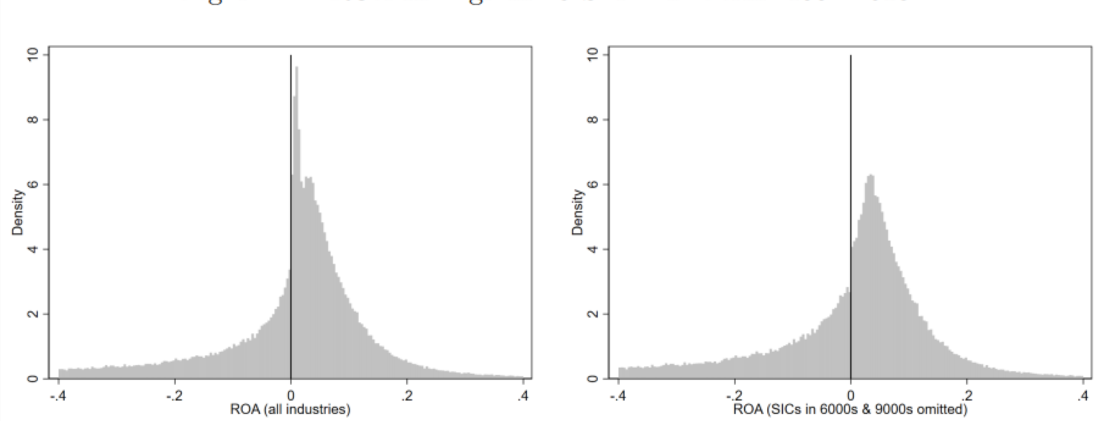
The preceding discussion suggests that accrual-based accounting can provide a better picture of performance over time by matching operational decisions to their financial consequences and smoothing out idiosyncratic and "lumpy" cash flows. At the same time, accruals may obscure true performance, at least for a while. Ultimately, the information content of ROA relative to OCFOA is therefore an empirical question whose answer will depend, among other factors, on the amount of earnings manipulation and its causes.

[13] When firms exit a data set (e.g., through bankruptcy, acquisition, or going private) we also may not observe the "unwinding" of all accounting adjustments.

THE AMOUNT OF EARNINGS MANAGEMENT

Accounting scholars are well aware that there is a discontinuity in reported earnings at the zero-profit threshold, and that this “kink” also appears when earnings are scaled by share-price (Hayn, 1995) or shareholders’ equity (Burgstahler and Dichev, 1997). Figure 2-2 illustrates this discontinuity using an ROA histogram.

Figure 2-2: ROA Histogram: U.S. Public Firms 1992-2018



The left panel of Figure 2-2 is based on the full sample of all U.S. Public Firms from 1992 through 2018. There is a clear spike in the reported ROA distribution at zero (the vertical solid line). The right panel omits firms with a primary SIC code in the financial, insurance, or public administration industries (SICs in the 6000s and the 9000s). Although the large spike at zero becomes less pronounced in the right panel, there is still a sharp increase in the probability distribution just above zero. Many empirical studies choose to omit firms in the financial sector, and this graph suggests there is a logic to that decision, although (as we show below) it does not eliminate the measurement problem.

In the accounting literature, earnings management is generally accepted as the explanation for the discontinuous jump in the distribution of reported earnings just above zero (e.g., Burgstahler and Chuk, 2017).[14] We are aware of no prior study, however, that estimates how much earnings management occurs around that threshold. To address this gap, and to provide some sense of the overall the size of the potential measurement problem for empirical strategy research, we use a set of methods developed to analyze economic behavior around discontinuities in incentives (Chetty, 2012; Kleven and Waseem, 2013; Kleven, 2016). In particular, Diamond and Persson (2016) suggest a methodology for assessing how much probability mass is shifted across a threshold where there is a "notch" in incentives (as in the simple model presented above). We apply their method to the ROA distribution in Figure 2-2.

At the core of this methodology is a model of the probability distribution of ROA (denoted by x) that takes the following form:

$$P = \sum_{m=1}^{K} \beta_m x^m + \sum_{x=L}^{-1} \alpha_x + \sum_{x=0}^{U} \gamma_x + \epsilon \tag{2}$$

where P is a count of observations at $ROA = x$; the β_m are coefficients of a K^{th} order polynomial in x; the parameters $\alpha_x(\gamma_x)$ measure the missing (excess) mass due to earnings manipulation below (above) the zero-profit threshold; and ϵ is an econometric error term. Intuitively, this regression uses a flexible polynomial to estimate the un-manipulated counterfactual ROA distribution on the interval [*L*, *U*],

[14] Based on citations, this fact does not appear to be widely known to strategic management scholars. For example, Hayn (1995) has not been cited and Burgstahler and Dichev (1997) is cited by only one article in *Strategic Management Journal*.

and the dummies α_x and γ_x provide a flexible fit to the actual data in that manipulated region. This model assumes that (1) there is a "manipulation zone" around zero – specifically inside the interval [*L*, *U*] — where the ROA measure is distorted, (2) outside of that interval we observe an accurate measure of ROA, and (3) the counter-factual (unmanipulated) distribution of ROA is continuous on the interval [*L*, *U*], so we can extrapolate from a polynomial estimated on data outside of the manipulation zone to impute the counterfactual values within.

To complete this empirical model of earnings manipulation requires that we select values for the parameters *K*, *U*, and *L*. To do so, we use the cross-validation algorithm proposed in Diamond and Persson (2016), which consists of the following steps:

1. Discretize the underlying ROA data. In practice, we use 200 bins of equal width between ROA values of -1 and 1 (i.e., each bin covers .01 units of ROA).
2. Construct five random samples, by selecting *N* observations (with replacement) from the actual ROA data. In each random sample, we treat 80% of the observations as a training data set, and 20% as a holdout sample.
3. Perform a grid search, looping over feasible values of (*K*, *L*, *U*), and for each triple
    a. Estimate equation (2) for given values (*K*, *L*, *U*) on the full dataset. Test the hypothesis that $\sum_{x=L}^{-1} \alpha_x = \sum_{x=0}^{U} \gamma_x$ (i.e., the "missing"

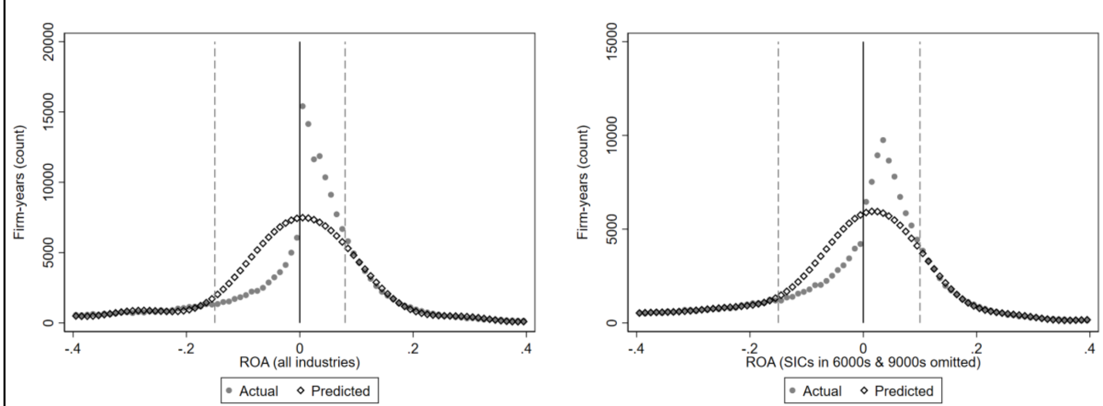
mass below zero equals the "excess" mass above). If that test rejects at the 10% level or better, move to the next triple.

b. If we cannot reject the hypothesis that missing mass equals excess mass, then estimate equation (2) using the values (*K*, *L*, *U*) on each of the five training samples, and compute the mean squared prediction error (MSE) for the associated holdout sample. Store the sum of the MSE across all five test samples.

4. Choose the values (*K*, *L*, *U*) that produced the lowest aggregate MSE at Step 3, and re-estimate that model on the full data set.

The results of this five-fold cross-validation procedure are displayed in Figure 2-3. The upper (*U*) and lower (*L*) bounds of the region of ROA manipulation are indicated by dashed lines. Gray circles indicate the number of firm-year observations in each ROA bin. Black diamonds represent the counterfactual estimate for that bin imputed from our model.

Figure 2-3: Imputed Vs. Actual ROA



The left panel in Figure 2-3 plots the actual versus predicted distribution of ROA for the full sample, where the cross-validation procedure selected a 12th degree polynomial with $L = -0.15$ and $U = 0.08$. For that sample, our model implies that 15.5 percent of all firm-year observations were shifted from negative to positive ROA.

The right panel in Figure 2-3 shows results if we exclude financial and public-sector firms from our sample. For this sample, the best-fit model was a 15-degree polynomial, with $L = -0.15$ and $U = 0.10$. The model implies that 10.5 percent of all non-financial firm-year observations were shifted from negative to positive ROA. This is almost 30 percent less earnings manipulation than we estimate for the full sample, which suggests that manipulation among financial firms, which only comprise about 20 percent of the full sample, could be quite substantial. Nevertheless, our baseline estimates suggest that around 1 in 10 observations in a paper that employs Compustat ROA is prone to systematic measurement error, even when excluding the financial sector. In Appendix B we show that an alternative methodology that replaces the polynomial in equation (2) with a function of the density of OCFOA (under the assumption that OCFOA is not manipulated), yields similar results, at least for the non-financials.

Earnings Management vs. Endogenous Effort

Earlier in this chapter we noted that there are at least two explanations for the discontinuity in ROA at the zero-profit threshold: earnings manipulation and a "try-harder" effect.[15] Up to this point, we have focused on measuring the scale of the discontinuity (i.e., what share of all reporting is moved from negative to positive) and discussed those results in terms of earnings manipulation. We now consider two complementary approaches that help to rule out explanations other than earnings manipulation. The first method uses the Earnings Smoothing measure described above, and the second exploits the idea that OCFOA is harder to manipulate than ROA.

Figure 2-4 shows a binned scatterplot of the mean of Earnings Smoothing conditional on ROA. We have overlaid on this graph a fitted regression line with confidence intervals and indicated the manipulation region identified as described above using dashed vertical lines. For both the full sample and the sample excluding financial-sector firms, we observe a sharp (discontinuous) increase in earnings smoothing when ROA is just above zero. This indicates that when firms report small positive values of ROA, they also tend to exhibit a sudden increase in the ratio of the variance in accounting earnings to the variance in OCF. Moreover, because these variances are computed *within-firm* (over the trailing 12 quarters), the evidence of earnings manipulation in Figure 2-4 is not simply an implication of the baseline discontinuity illustrated in Figure 2-3. Put simply, the firms bunching just above zero

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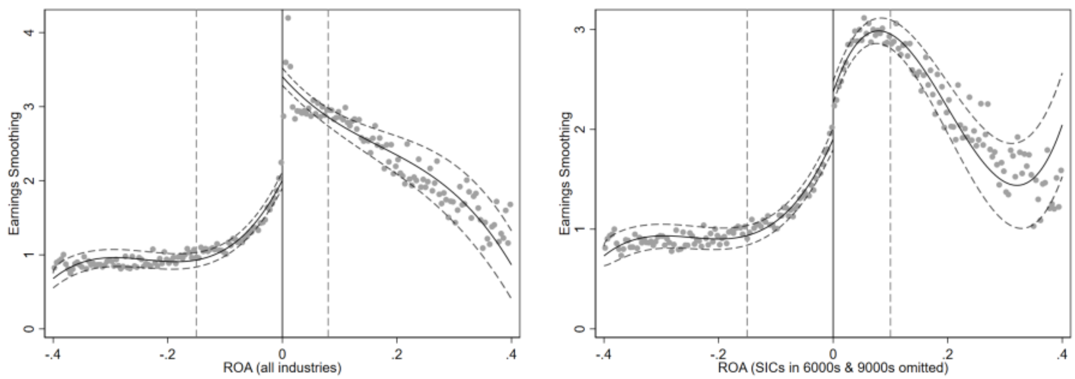
[15] In the literature on bunching, round numbers and psychologically important thresholds are called *focal points*. The effort-based explanation for bunching near focal points has been advanced in other contexts, such as the distribution of marathon finishing times (Allen et al., 2017).

in the ROA distribution are *also* characterized by an unusually low level of earnings volatility relative to their cash flows.

Figure 2-4: Earnings Smoothing Vs. Reported ROA



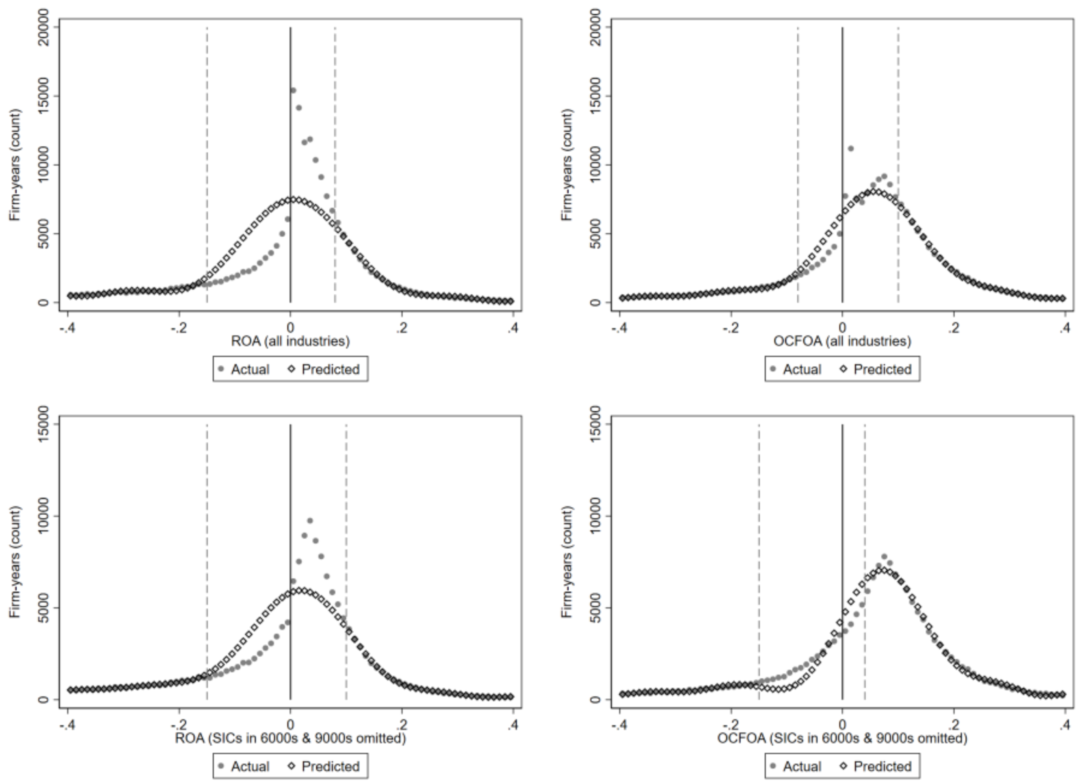
If we expand our gaze, moving away from the discontinuity at zero ROA to consider the entire manipulated region of the ROA distribution, it becomes clear that Earnings Smoothing is lower at negative levels of ROA, and higher when ROA is positive. This is a natural consequence of accounting conventions. Firms with higher underlying profitability are less constrained in their ability to smooth earnings, because some financial slack is required in order to reallocate resources. After peaking at an ROA of 5 to 10 percent, the relationship between ROA and Smoothing turns negative, perhaps because managers feel less pressure to manipulate earnings when the business is performing well.

To the extent that our measure of Earnings Smoothing captures what it purports to measure, Figure 2-4 provides direct evidence against the hypothesis that bunching in the ROA distribution at zero is caused by endogenous effort rather than earnings manipulation. As another test, however, we can apply our cross-validation approach directly to OCFOA to estimate the amount of “cash flow manipulation” at the same threshold. Under the maintained assumption that it is more difficult for CEOs to manipulate cash flow than accounting earnings, we would expect to find less evidence of OCFOA manipulation. Figure 2-5 shows the results of that exercise.

The top two panels in the Figure compare ROA to OCFOA manipulation for the full sample, and the bottom two panels compare ROA to OCFOA manipulation for the non-financials.[16] It is clear even from visual inspection that the size of the discontinuity around zero and the subsequent bunching above zero is dramatically reduced by using the cash-basis performance measure of OCFOA rather than the accrual-basis performance measure of ROA. For the full sample, our estimates imply that four percent of the observations are "shifted" from negative to positive OCF. In the non-financial sample, we estimate that the amount of earnings manipulation is *negative*. Instead of "missing" mass below zero, there are slightly more negative observations that were predicted. This evidence, we interpret as essentially no sign of left-to-right OCFOA manipulation.

[16] In the Appendix, we provide the histograms corresponding to each panel in Figure C.2

Figure 2-5: Comparison of Imputed Vs. Actual ROA and OCF



Robustness

The analyses in this section yield three basic facts. First, there is a substantial amount of earnings manipulation (on the order of 15% of all firm-year observations) around the zero-profit threshold. Second, manipulation is especially prevalent among firms in the financial sector. Third, there is much less manipulation of OCFOA, and essentially none for non-financial firms. We have considered a number of supplemental analyses and robustness checks that further support these findings.

First, we checked whether Earnings Smoothing was continuous at the zero-OCFOA threshold, and whether OCFOA was continuous at the zero-ROA threshold. In Appendix C, we show that for non-financial firms, there is no evidence of smoothing to achieve positive cash flow, and that real-earnings management (i.e., manipulation of OCF to achieve positive ROA) is confined to the financial sector.[17] Both results are consistent with our findings that accounting earnings are more prone to manipulation than cash flows.

Second, as an alternative to the specification in equation (2) that relies on functional form to estimate the counterfactual density of ROA in the interval [L, U], we developed a model that uses OCFOA to predict ROA. This approach rests on the maintained assumption that OCFOA is not manipulated, and as a result, works better for the sample that excludes financial-sector firms. The results, provided in Appendix B, indicate that around 6 percent of firm-year observations in our non-financial sample are manipulated.[18]

Finally, there is a concern that the missing mass in our figures might be caused by a liquidation option for struggling firms. In particular, if those firms most likely to post accounting losses leave the dataset due to bankruptcy, acquisition by another firm, or being taken private, that could produce a “hole” in the earnings distribution just below zero. This hypothesis does not explain the bunching of reported earnings just above zero. Nevertheless, we have replicated our main results on a dataset that excludes firms that exit the Compustat before the end of the sample period (regardless of whether the exit was due to bankruptcy, liquidation, leveraged buyout, etc.) with substantially similar results.

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[17] See Figure C.3.
[18] See Figure B.1.

EARNINGS MANAGEMENT AND EMPIRICAL STRATEGY RESEARCH

Having established that there is a large amount of earnings manipulation near the zero-profit threshold, the question remains whether this "matters" for empirical strategy research. To address this question, we return to an old but influential line of studies that seeks to attribute variation in performance to firm, industry, and macro-economic factors (e.g., Schmalensee, 1985; Rumelt et al., 1991; McGahan and Porter, 2002).[19] Our goal is not to replicate prior studies, or to address any of the methodological shortcomings of variance decomposition that are well-documented in previous studies. Rather, we aim to show how the results of this type of analysis change when we move from ROA to OCFOA as a measure of firm performance.

Our analysis will consider two ways in which earning manipulation might matter. First, it may add "classical" measurement error that reduces the overall explanatory power of a model. Second, and more importantly in our view, earnings management might be correlated with other variables (e.g., if it is more prevalent in specific industries, and linked to certain CEOs). To the extent that earnings manipulation is correlated with other factors, it has the potential to introduce bias into analyses that use ROA as an outcome.

The foundational studies in this literature estimated models that might include year, industry, firm, and/or business-unit fixed effects. By comparing the

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[19] One measure of the importance of these papers is common to find their results described in the early chapters of many strategy textbooks (see Rothaermel (2016)).

model R-squared for different combinations of variables, it is possible to compute how much total variance is explained by each of the observed factors. One limitation of using OCFOA in this context is that operating cash flows are not required to be reported at the business segment level, and therefore a direct replication of the classic studies is not possible. In particular, our "industry" effects are based on the primary SIC code assigned to the firm as a whole, rather than to an individual business unit. On the other hand, we can extend upon the early papers by using the Execucomp data set to include CEO fixed effects, following later scholars in this literature stream (e.g. Mackey, 2008)).

Our analysis is based on the following model for the generation of reported accounting profit:

$$r_{t,j,i,k} = \mu + \gamma_t + \alpha_i + \beta_j + \delta_k + \varepsilon_{t,i,j,k} \tag{3}$$

In this equation, $r_{t,j,i,k}$ is either the ROA or OCFOA reported in a given year t by a specific firm j operating within industry i and led by CEO k. μ is the average accounting profit over the entire sample (the constant in the regression models), and the other variables represent fixed effects for the year (γ_t), the industry (α_i), the firm (β_j), and the CEO (δ_k), as well as the error term ($\varepsilon_{t,i,j,k}$).

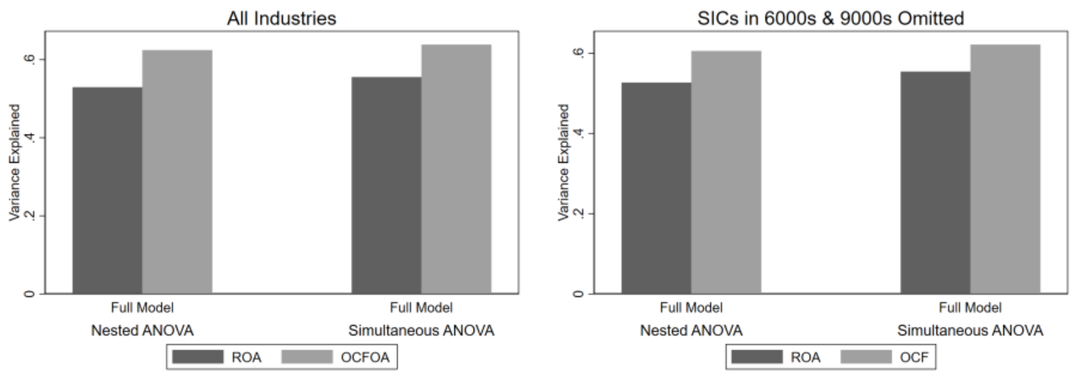
For the sequential ANOVA model, we incrementally added fixed effects for year, industry, firm, and CEO to gauge the marginal contribution of R-squared gained with the addition of each set of fixed effects. This approach was used by scholars earlier in this literature stream, but has a significant flaw of being sensitive to the order in which the fixed effects are added, as noted prominently by McGahan and

Porter (2002) and Mackey (2008). In sequential ANOVA, variance that could be explained by either of two nested levels of fixed effects will be attributed to the first one added to the model.

This drawback is alleviated by the second approach, a simultaneous ANOVA model. In the simultaneous model, variance that could be explained by more than one factor is not attributed to either of them. This has the benefit of avoiding misattribution of explained variance, while it also has the drawback of leading to lower estimates of variance explained for each category, as the ambiguous cases are not attributed at all. However, the total R-squared for the full model with all fixed effects is not understated even if the category breakdown may be (i.e., the total R-squared for the model exceeds that of the sum of the categories).

Figure 2-6 presents the results of the explanatory value of the full models for both ROA and OCFOA, sequential and simultaneous, for both all industry and non-financial industry samples. The key finding here is that our ability to predict/explain variance in OCFOA exceeds that of ROA by approximately 10 percentage points across all specifications. As the entire point of accrual accounting is to add salient information and remove noise from cash-basis performance, the 10 percentage points of explained variance should be considered a fairly conservative lower bound for how much obfuscation appears to be introduced by strategic accounting decisions. Not only are accruals not giving us a clearer picture of underlying financial performance (as they are supposed to do), they are actively worsening the signal-to-noise ratio in the most common measure of performance used in the strategy literature.

Figure 2-6: Total Variance of ROA Vs. OCF Explained

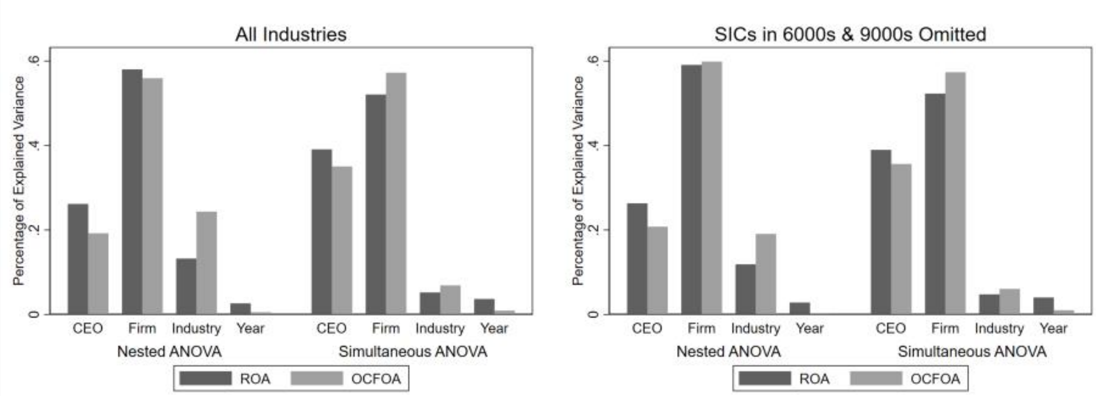


If earnings management introduces measurement error in ROA, under what conditions should we be concerned with bias rather than merely a loss of efficiency? If earnings management caused primarily classical measurement error in ROA, it would not cause us great concern when using ROA in our econometric models. When we used ROA as an outcome variable, this would simply reduce the efficiency and increase the standard errors around our coefficients. When ROA was used as an explanatory variable, it would attenuate the coefficient towards zero, which is often toward a more conservative interpretation, i.e., pulling our inference towards the null (Bound et al., 2001). But unfortunately, there is reason to believe that the measurement error caused by earnings management on ROA is non-classical.

The key assumption of classical measurement error is that the error itself is uncorrelated with values of the measure, but also that the error is uncorrelated with other variables in the econometric model (Hyslop and Imbens, 2001). We saw from the analysis in the previous sections that the prevalence/degree of manipulation was not evenly spread across all values of ROA. Indeed, it is concentrated enough in a region of ROA to cause visual discontinuities in the distribution.

In addition to the correlation with ROA itself, there is also reason to suspect that the measurement error from earnings management is correlated with other variables that may be in our econometric equations. An easy way to see this is in looking at the differential impact using OCFOA vs. ROA has on the amount of variance explained in each category of fixed effects in the ANOVA models. Figure 2-7 shows the breakdown of explained variance for each of the categories of the ANOVA—year, industry, firm, and CEO. Across the models, the relative explanatory power of firm and industry lowered when using ROA rather than OCFOA, while the relative explanatory power of CEO and year increased.[20] In the all-industries nested ANOVA model, this effect is large enough to change the rank order of CEO and industry effects by reversing their relative importance.

Figure 7: Decomposition of Variance of ROA Vs. OCF



[20] For tabular format, please see Table C.1 in Appendix C.

One interpretation of the results in Figure 2-7 is that certain CEOs are more likely to manipulate earnings, so that moving from ROA to OCFOA as the focal measure of firm performance causes the share of variance attributed to CEO effects to decline, and the share of variance explained by firm and industry-level factors to increase.

CONCLUSIONS

We make three contributions in this study. First, we provide new evidence on the prevalence of earnings management, a well-known problem that has resisted precise measurement or quantification. We find evidence that 10 to 15 percent of firm-year observations in Compustat exhibit earnings manipulation. Our estimates also indicate that earnings manipulation is more prevalent in the financial sector, thereby providing a firmer empirical foundation for the "folk wisdom" that one might want to exclude financials when analyzing firm performance with accounting data. These finding augment the literature using regression discontinuity designs (Burgstahler and Chuk, 2017), studies leveraging discretionary accruals (Dechow et al., 1995) or accrual reversals (Dechow et al., 2012), and survey designs targeting chief financial officers (Graham et al., 2005) by employing novel methods from the econometrics literature on bunching.

Second, these bunching methods are employed to evaluate alternative performance measures. We find that OCFOA exhibits less manipulation, and thus provides a method by which scholars can test the sensitivity of models including accounting profits for bias introduced by earnings manipulation. This study thus dovetails with current efforts to rethink and improve how we measure performance (Lieberman, 2021; Lieberman et al., 2017; Wibbens and Siggelkow, 2020).

Finally, we deploy our insight about OCFOA to re-evaluate a classic set of strategy papers that uses variance decomposition to understand the drivers of firm-performance (Schmalensee, 1985; Rumelt et al., 1991; McGahan and Porter, 1997, 2002). Our results suggest, counter-intuitively, that we can explain more of the total variance in cash-based rather than accrual-based accounting performance. Moving from ROA to OCFOA also reduces the amount of variance in firm-performance associated with CEO effects, which suggest that some CEOs are more likely to engage in manipulation than others.

Our findings have implications for empirical work where firm performance is measured using accounting profit. For many studies, restricting the sample to non-financial firms and utilizing OCFOA as a performance measure for accounting profitability offers a simple way to avoid potential econometric problems created by earnings management. More generally, researchers should carefully consider whether firms' unobserved propensity to inflate profits could be correlated with key outcomes or explanatory variables. In some cases, such as when ROA serves as an ancillary control variable, this will not be especially problematic. But when ROA is the outcome, and key explanatory variables might be correlated with the propensity to manipulate, researchers should explore sensitivity to using OCFOA. Our findings also suggest that these issues may be particularly salient when exploring the relationship between CEO attributes and firm performance.

Although the strategic management literature provides an extensive toolkit for analyzing firm performance and value creation, we often take accounting and the *measurement* of these constructs for granted. In our view, empirical scholars could be more attuned to "how the sausage gets made" when it comes to performance measurement, because it is fertile ground for future research on how earnings measurement affects strategic decision-making within the firm and value creation across a broad spectrum of stakeholders.

Chapter 3: When Performance Isn't Performance – Earnings Smoothing, Performance Feedback, and Strategic Change

INTRODUCTION

The behavioral theory of the firm (BToF) predicts that performance below aspirations leads to subsequent search and organizational change (Cyert and March, 1963; Gavetti et al., 2012). Firm performance and aspirations in the performance feedback literature based on BToF are commonly measured through financial outcomes (Posen et al., 2018), most often firm earnings scaled by a factor of firm size like sales or assets (Shinkle, 2012). But managers have some control over reported earnings, and in egregious examples, managers can choose to misrepresent financial data when performance falls well below aspirations (Harris and Bromiley, 2007).

Even when operating within regulatory constraints, such as generally accepted accounting principles (GAAP) for U.S. firms, managers have discretion with which they can inflate or deflate earnings in a given period. A common use of this discretion is to engage in earnings smoothing, which is a type of earnings management where profits are inflated during lean years and deflated during flush years to reduce the variability of earnings (Ronen and Yaari, 2008). Because it involves increasing reported profits during down years, earnings smoothing can thus decrease the frequency and magnitude of shortfalls below aspirations of reported performance. This creates a theoretical tension not addressed by the literature—if firms use earnings smoothing to increase reported performance above an aspiration when actual performance would have led to a shortfall, do managers base subsequent search and change activities on the privately observed performance or the publicly reported performance?

Firms choose whether to smooth earnings and whether to engage in strategic change, so drawing causal inference is difficult due to the possibility that these two actions are jointly determined as part of a cohesive plan or both affected by unobserved endogenous processes. This study isolates exogenous variation in a firm's ability to engage in earnings smoothing using two instrumental variables—variation in gains and losses from special items, and industry peer levels of earnings smoothing. This exogenous variation is used to explore 1) whether earnings smoothing increases the likelihood of reported performance at or above aspirations; 2) whether earnings smoothing leads to lower propensity for strategic change; and 3) whether having reported performance above aspirations accounts for the lower propensity for change.

This paper's primary contribution is presenting evidence that managers engaged in earnings smoothing are less likely to make substantive change in major resource allocations and that this effect is at least partially explained by the firm reporting profit at or above organizational aspirations. This finding suggests that for many firms, the financial performance they publicly report may have more salience than financial performance they privately observe in the performance feedback process. The implications of earnings smoothing on firm strategy have not been widely explored in the management literature, and this paper addresses this gap by analyzing how earnings smoothing and its effects on reported financials are related to downstream resource allocation decisions. Finally, post hoc analysis shows that the relationship seems to persist even after the implementation of the Sarbanes-Oxley Act of 2002 (SOX) even as managers shifted earnings smoothing behavior away from discretionary accruals toward operational smoothing.

THEORY AND HYPOTHESES

What is Earnings Smoothing and Why Does It Occur?

The accounting literature has identified the widespread practice of earnings management, defined as using managerial discretion over accounting and operating activities to strategically generate accounting earnings (Phillips et al., 2003). The phenomenon of earnings management has been studied in the accounting literature primarily from the focus of predicting how, when, why, and by whom earnings management happens. There is a wealth of research on detecting earnings management (Jones, 1991; Dechow et al., 1995), the motivations for engaging in earnings management (Burgstahler and Dichev, 1997; Ronen and Yaari, 2008; Degeorge et al., 1999), and different accounting, audit, and public policy changes that can curb earnings management behavior (Becker et al., 1998; Healy and Wahlen, 1999). However, there is relatively little attention in the literature on the firm's subsequent strategic choices.

Earnings smoothing is a particular type of earnings management in which managers lower profits in 'good' years and inflate profits in 'bad' years (Ronen and Yaari, 2008). The net effect is to reduce the volatility of earnings by smoothing out both the peaks and valleys. Managers can use discretion over accounting accruals to create profit or loss for an accounting period, such as by a change in inventory valuation methodology that changes the book value of the firm's inventory asset or by modifying allowances for the percent of customers on credit who will not pay in the long run. In addition to accounting accruals, managers can time operational decisions to shift earnings backwards or forwards in time. For example, if a firm is likely to miss a key earnings target for a fiscal period, it may contact a key customer and offer them an additional discount to encourage them to purchase sooner. This can create the appearance of a higher short-term performance while the effect on the future period will not be observed until later. There is evidence that firms use a combination of both accounting earnings management (AM) and operational earnings management (OM) as a joint strategy that depends on the relative costs/benefits of each (Zang, 2012).

Managers may have several motivations to engage in earnings management. They may have individual incentives to adjust earnings up or down, including compensation through bonuses or stock options, avoiding termination, or setting better pricing for a leveraged buyout offer by management. Additionally, there are several benefits to the firm that can accrue from inflating or deflating earnings, such as avoiding breaches of bond covenants, achieving better pricing on initial public offerings or seasoned equity offerings, or getting the most bang for the buck on stock-based mergers and acquisitions (Ronen and Yaari, 2008). The need for external capital and the need to maintain strong relationships with these financiers is a key motivation for earnings management (Anagnostopoulou and Tsekrekos, 2017) over and above the personal financial incentives of the managers as individuals.

There is evidence that suggests earnings smoothing is common among U.S. firms, that managers overwhelmingly prefer smooth earning paths to volatile ones, and that they are willing to forego long-term value to achieve smooth earning paths (Graham et al., 2005). Indeed, 78 percent of the chief financial executives interviewed by Graham et al. (2005) admitted to sacrificing long-term value to smooth earnings, which suggests that this practice is widespread and impactful. Additionally, there is evidence suggesting that within GAAP earnings smoothing to meet market expectations can lead down a "slippery slope" to fraudulent manipulation outside of GAAP for some firms (Chu et al., 2019). If, as the results presented below suggest, managers engaging in earnings smoothing are less likely to engage in subsequent strategic change, they may engage in more and more manipulation when faced with a string of poor performing periods in lieu of addressing underlying problems. This could be an interim mechanism explaining how firms come to find themselves choosing to engage in egregious financial misconduct when facing large performance shortfalls that Harris and Bromiley (2007) observe.

Behavioral Theory, Earnings Smoothing, and Aspirations

A core aspect of BToF is that organizations have target levels for their performance (aspirations) and at salient points of evaluation will gather feedback on such performance and compare it to the aspirations previously set (Cyert and

March, 1963). Aspirations are context-specific levels that form discontinuities or thresholds influencing firm decision-making; as originally conceived, a salient aspiration was a performance level deemed acceptable, and organizational behavior could be viewed as "satisficing," or trying to achieve this acceptable performance level by boundedly rational actors rather than attempting to fully optimize (Simon, 2013; March and Simon, 1958). Subsequent work has greatly fleshed out how organizations set aspirations, adjust aspirations, and reconcile multiple aspirations (see Shinkle (2012) for a review), but the core construct of what an aspiration is has remained quite stable from the initial framing.

Harris and Bromiley (2007) noted that in the original conception of BToF, managers were assumed to act within ethical bounds, and in their work proposed relaxing this assumption. For public firms, which must report performance periodically through the release of financial statements, Harris and Bromiley (2007) suggested that if the managers observe private feedback on performance indicating a likely shortfall below aspirations, one available option for search was to engage in financial misrepresentation to inflate the reported performance. This same logic could apply to more common earnings smoothing activities that fall short of the egregious financial misrepresentations studied by Harris and Bromiley (2007).

Earnings smoothing increases reported performance during bad years, which could in itself increase the likelihood that a firm reports above an aspirational threshold in a given year. But aspirations may also be important in terms of guiding managers on when to inflate poor performance and by how much. If one imagines that there is increasing marginal cost and risk to inflating earnings, then it would be sensible for managers to inflate earnings until they were over the most salient organizational aspiration but not substantially higher due to increasing costs. Likewise, if a firm is having unexpectedly high actual performance in a period and wants to stash some of those profits in a “cookie jar” from which they can inflate future periods, the firm presumably would not stash so many profits as to bring reported performance under a salient aspirational threshold. Therefore, aspirations would serve as the bar which earnings inflating firms would want to get above from one direction while also serving as the floor which earnings deflating firms would want to avoid breaching from the other. The net effect of this should be that firms engaging in the most earnings smoothing should be most likely to report earnings bunched just above the most salient organizational aspiration.

There are three types of organizational aspirations included in this analysis: historical aspirations, social aspirations, and natural aspirations. The firm’s own past performance level is referred to as a historical aspiration and has generally been measured as originally formulated by Cyert and March, as an exponentially weighted moving average of the firm’s performance in the most recent previous periods. Scholars have analyzed different speeds at which historical aspirations are updated from most recent performance (e.g., Greve (2002); Audia and Greve (2006); Harris and Bromiley (2007)), but in general it is common to theorize that the most recent periods are the most salient for comparison with historical performance.

In addition to this self-comparison, the BToF predicts that firms will set social aspirations based on social comparisons to firms that are similar or that compete with the focal firm (Cyert and March, 1963). In earlier research, this was conceived as a relation of a firm's performance to an aggregate of firms in its industry, but recently it has been refined to recognize that there may be multiple social aspirations that may be more or less salient to a firm and that a firm's competitive set does not necessarily correspond to an industry. For example, Moliterno et al. (2014) noted that rather than (or in addition to) the average performance of comparison firms, there may be other social thresholds that are more salient if they are closer to the firm's historical performance. They specifically study the possibility of a top performance aspiration, which is the threshold above which an organization can be considered among the elite of their class. Moliterno et al. (2014) also study survival thresholds—a level under which the organization is no longer thought of as in its previous class. Other scholars have also explored more nuanced definitions of what other firms comprise a focal firm's reference group for social comparison (Massini et al., 2005; Vissa et al., 2010). Kacperczyk et al. (2015) have suggested that there may be different effects of performance on risk and change from different levels of analysis (individual vs. organizational) and from inter-firm vs. intra-firm social comparison, and other scholars have noted that responses to performance relative to historical aspirations and social aspirations may be distinct, and that sometimes they are in conflict (e.g., Lucas et al. (2018); Kuusela et al. (2017)).

Finally, there is an argument that there are natural aspirations based off thresholds that are salient due to the nature of our base cognitive processes or context-specific incentives. Often, the threshold between gains and losses is drawn from prospect theory (Kahneman and Tversky, 1979) and then extrapolated to an organizational level as it may represent the status quo (Greve, 2003). There are two natural aspirations, positive vs. negative profits and earnings above or below financial analyst expectations, that seem to be salient in the minds of chief financial executives and their anticipation of how financial markets will react (Graham et al., 2005). Additionally, accounting scholars have documented a discontinuity or "kink" in the distribution of firm earnings at zero profits and relative to consensus analyst estimates that may be indicative of earnings management (Hayn, 1995; Burgstahler and Dichev, 1997; Degeorge et al., 1999; Burgstahler and Chuk, 2017), lending credence to the idea that simply avoiding posting a loss for the financial period and avoiding posting earnings below analyst estimates may be salient motivators for managers to smooth earnings.

The first hypothesis, below, translates the predictions from the accounting literature to harmonize with the notion of organizational aspirations from the BToF:

H1. Firms engaging in higher levels of earnings smoothing will be more likely to post reported earnings at or above organizational aspiration levels.

Behavioral Theory, Earnings Smoothing, and Strategic Change

Central to the BToF is the notion that when firm performance falls short of organizational aspirations, the firm is more likely to engage in subsequent search and change than had the firm met or exceeded aspirations (Cyert and March, 1963). While this core prediction is elegant, extrapolating how organizations change and how such change can be measured across industries, time periods, and firms can be daunting. The performance feedback literature has studied a range of organizational changes thought to be generated by this process up to and including strategic change, which generally denotes significant changes to core operations of a firm, for example, in the firm's product-market offerings (Greve, 2003).

While studies of individual industries have used appropriate context-specific measures to detect meaningful strategic change (such as Greve (1998) study of radio station programming format changes), several scholars conducting broad cross-industry studies within the strategic change literature have used a more generalized index of a firm's resource allocation changes (e.g., Finkelstein and Hambrick (1990); Carpenter (2000); Zhang and Rajagopalan (2010)). These studies draw from the core idea that a firm's strategy can be thought of as a mosaic of important decisions (Mintzberg, 1978) and that change in where a firm's resources are allocated reflects a change of that mosaic. Strategic change in this case can be thought of as actions that "move the needle" on key resource indicators and thus rise to a level of economic significance for the firm and its competitors.

Introducing earnings smoothing into the performance feedback process creates an interesting theoretical tension—namely that organizational performance is separated into actual performance (generally private information observed by management) and reported performance (what managers report on public financial statements). These two measures of performance can diverge to the extent that managers inflate or deflate a given period's return. When both actual and reported performance fall on one side of aspirations or another, the baseline predictions of BToF should govern. But when actual performance experiences a shortfall while through earnings smoothing the reported performance meets or exceeds the aspiration, subsequent strategic change could be based off actual performance, reported performance, or a combination of both. Let's explore each potential scenario before stating a formal hypothesis.

Earnings Smoothing Predicts Higher Strategic Change. There is a potential mechanical relationship between earnings smoothing in one period and some component measures of strategic change in following periods that could result in a positive relationship bias. Managers engaging in earnings smoothing to prop up a bad period do so by temporarily increasing gains (e.g., early recognition of revenues) or decreasing costs (e.g., by delaying expenses). Artificially inflating or deflating resource allocations for one period could cause the appearance of change in the next period when levels regress to the mean or even swing the other way as temporary accruals are reversed. Essentially, for firms to create artificial smoothness in earnings between periods, this often requires them to create variance in the components of earnings by changing various levers driving costs or revenue. This is the very premise underlying common accounting measures for earnings management that are based on odd or unexplained variation in accruals (such as the modified Jones model; Dechow et al. (1995)). Aside from this slight positive bias, there does not seem to be a compelling theoretical reason to expect earnings smoothing to cause substantial strategic change.

Earnings Smoothing Does Not Predict Strategic Change. There are many benefits to attaining certain benchmarks on a firm's financial statements that are independent to whether managers deem underlying actual performance as satisfactory. It is plausible that managers inflate during poor performing years to achieve various tactical objectives (e.g., maintaining a stable or increasing market price for stock shares, avoiding breach of debt covenants, decreasing cost of capital, attaining higher individual compensation, etc.) while basing strategic decisions on the private information they have on actual performance. In this case, earnings smoothing would serve principally as window dressing or audience management, and greater earnings smoothing in a given period would not predict strategic change in future periods. This case serves as the null hypothesis.

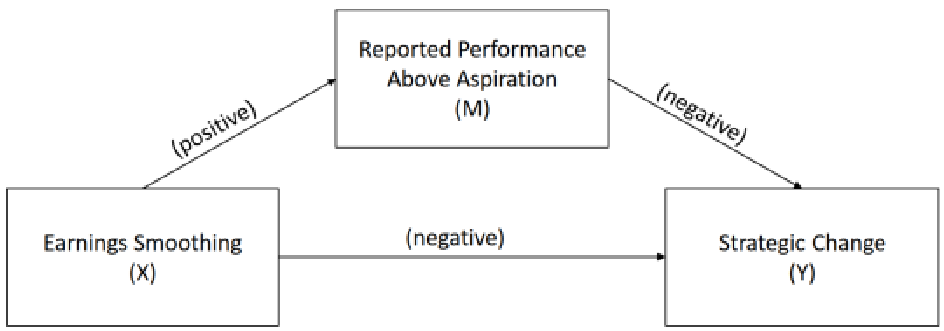
Earnings Smoothing Predicts Lower Strategic Change. Building on Hypothesis 1, if earnings smoothing increases a firm's likelihood of attaining aspirations with reported performance, this could explain why earnings smoothing in one period would predict lower strategic change in a subsequent period. If this were true, it would imply that the relationship between reported performance and aspirations is salient to strategic change at least partially independent of actual performance. There are multiple plausible mechanisms by which this could occur. Even if firm managers are aware that they had a performance shortfall in reality, reporting performance above aspirations may relieve pressure from external stakeholders, which could be a primary impetus for change. Additionally, if the assumption of firm managers perfect observation of underlying performance is relaxed, other potential mechanisms become plausible. If substantial earnings smoothing activity occurs below the level of corporate leadership (i.e., at the business unit level or below), then they may not clearly observe actual performance due to information asymmetry within the firm. Performance reporting may be a ritualized process of quantification similar to that for budgeting described by Mazmanian and Beckman (2018), where one set of "reified" numbers becomes the agreed upon performance communicated both internally and externally. In this case, the firm managers responsible for strategic change decisions may be relying on smoothed performance information somewhat regardless of the process of "making the sausage."

Hypothesis 2, below, also draws on Harris and Bromiley's (2007) proposed extension of BToF—managers facing a shortfall in actual performance below aspirations may choose to inflate reported performance as part of a menu of options for search. While Harris and Bromiley's context was that of egregious financial misrepresentation, the logic holds when extended to the ethically gray area of within-GAAP managerial discretion. Essentially, earnings smoothing to improve reported performance could serve as a substitute for other types of change that would be address the underlying shortfall of actual performance. Earnings smoothing represents temporary, artificial changes rather than permanent shifts of committed resources. In fact, if the earnings smoothing is done purely through accruals, resource commitments and operations may not even be affected at all. Thus, earnings smoothing within GAAP is generally less costly and less risky than many other types of organizational change and may therefore be judged by some managers as a palatable alternative to more meaningful change. Based upon these theoretical points, Hypothesis 2 predicts a negative relationship between earnings smoothing and subsequent strategic change, and Hypothesis 3 predicts that aspiration attainment (the proposed mechanism) mediates the relationship. Figure 3-1 provides a visual depiction of the theoretical mediation model with a summary of the hypotheses.

H2. Firms engaging in higher levels of earnings smoothing in preceding periods will have lower levels of overall strategic change in the subsequent period.

H3. Attainment of organizational aspirations mediates the relationship between earnings smoothing and strategic change.

Figure 3-1: Overview of Proposed Model



Summary of Hypotheses

Hypothesis 1	X → M
Hypothesis 2	X → Y
Hypothesis 3	X → M → Y

DATA AND METHODS

Data Sample

The data sample studied covers approximately 30 years (1988-2018) of accounting data from publicly traded U.S. firms. The data were accessed using a merged database from the Center for Research in Security Prices (CRSP) and Compustat. The sample is an unbalanced panel, with firms entering in 1988 or the first year they are listed in Compustat (typically around the time of their IPO) and exiting in 2018 or the year they ceased operations or being publicly traded. The primary data analysis includes all industries for the broadest coverage; for robustness, this analysis was repeated omitting firms with primary Standard

Industrial Classification (SIC) codes in the 6000s (financial sector) or 9000s (public administration and miscellaneous sectors), as is typical in such studies.

Summary statistics and cross-correlation coefficients can be found in Table 3-1 and Table 3-2. There are a total of 302,619 firm-year observations in the dataset, although there are substantially fewer observations for some measures. The lower number of observations corresponds primarily to missing values (for example, some firms do not have R&D or advertising expenses) or the need for an additional year of data per firm due to the use of lagged or forward values.

Identification Strategy

The primary threat to causal identification is the endogenous choices to smooth earnings and then to subsequently change resource allocations. Firms do

Table 3-1: Summary Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
1. Resource Change	219,321	.0330644	.7274059	-4.663742	6.235101
2. Advertising Change	67,333	-5.973915	1.890232	-18.79671	6.134588
3. R&D Change	79,611	-4.284161	2.791002	-17.06727	10.07603
4. PPE Change	205,004	-3.515658	2.058857	-15.47054	9.64115
5. SG&A Change	172,325	-3.841844	1.991302	-16.13173	9.052633
6. Inventory Change	160,197	-4.274306	1.895102	-19.04039	7.307641
7. Debt/Equity Change	184,260	-2.023085	2.28846	-15.23881	12.04047
8. Earnings Smoothing	187,508	.6295459	1.378213	-10.25312	7.761935
9. Firm Size	240,533	4.724564	2.808137	-6.907755	13.11591
10. Firm Age	302,619	2.133016	1.010967	0	4.043051
11. Altman's Z	160,557	-41.33577	2267.182	-618059.7	168307.8
12. Financial Slack	205,921	.4899251	1.20402	-10.94715	10.0903
13. Organizational Slack	250,951	-.634933	1.429084	-12.87573	10.09361
14. Return on Assets	227,552	-2.126449	120.4624	-26115	21095
15. Var. Special Items	100,351	-5.297817	2.083506	-17.37261	7.368777
16. Mean Ind. Smoothing	293,099	.6864462	.7649047	-5.099946	5.63187
17. Meet/Exceed Historical	203,260	.4915576	.49993	0	1
18. Meet/Exceed Social	227,552	.5109074	.4998821	0	1
19. Meet/Exceed Natural	227,552	.6234267	.4845275	0	1
20. Meet/Exceed Analyst	112,380	.407439	.49136	0	1

not randomly make these choices, but rather choose for an anticipated benefit or advantage. It’s plausible that both earnings smoothing and downstream resource change are jointly determined as one decision or are both caused by other variables, which would introduce omitted variable bias if we cannot adequately control for them with observables.

The ideal experiment to address this threat would be to exogenously restrict a firm’s capability or motive for engaging in earnings smoothing without otherwise affecting the firm’s likelihood to change resource allocations. Then, if we can accurately measure how much a firm smooths its earnings, whether it reports performance above or below a salient financial aspiration, and how much its major resource allocations change in the following periods, we could recover an average treatment effect. In this case, the firms that are randomly restricted from smoothing would give us an estimate of the counterfactual if firms did not smooth earnings.

Table 3-2: Cross-correlation table

Variable	1	2	3	4	5	6	7	8	9	10
1. Res. Change	1.000									
2. Adv. Change	0.681	1.000								
3. R&D Change	0.806	0.430	1.000							
4. PPE Change	0.707	0.262	0.516	1.000						
5. SG&A Change	0.757	0.449	0.720	0.368	1.000					
6. Inv. Change	0.649	0.210	0.450	0.197	0.367	1.000				
7. D/E Change	0.487	0.028	-0.028	0.102	0.019	0.022	1.000			
8. Earn. Smooth.	-0.264	-0.195	-0.336	-0.225	-0.303	-0.043	-0.080	1.000		
9. Firm Size	-0.530	-0.391	-0.667	-0.319	-0.585	-0.379	-0.017	0.266	1.000	
10. Firm Age	-0.235	-0.230	-0.334	-0.130	-0.231	-0.159	-0.092	0.105	0.357	1.000
11. Altman's Z	-0.017	-0.025	-0.039	-0.008	-0.054	-0.014	-0.003	0.049	0.035	-0.003
12. Fin. Slack	-0.062	-0.050	0.115	-0.084	-0.063	0.167	-0.207	0.178	0.043	0.016
13. Org. Slack	-0.091	0.104	-0.043	-0.204	0.020	-0.098	-0.032	-0.112	-0.069	0.012
14. ROA	-0.023	-0.029	-0.027	-0.014	-0.029	-0.010	-0.000	0.043	0.028	0.014
15. Spec. Items	0.258	0.246	0.359	0.116	0.318	0.123	0.049	-0.520	-0.410	-0.207
16. Ind. Smooth.	-0.163	-0.135	-0.321	-0.205	-0.167	0.063	-0.002	0.356	0.095	0.017
17. Meet Hist.	-0.040	-0.033	-0.035	-0.027	-0.039	-0.032	-0.010	0.094	0.015	0.010
18. Meet Soc.	-0.268	-0.158	-0.301	-0.151	-0.264	-0.149	-0.147	0.271	0.252	0.115
19. Meet Nat.	-0.386	-0.274	-0.478	-0.228	-0.408	-0.199	-0.140	0.451	0.407	0.187
20. Meet Analyst	-0.085	-0.055	-0.037	-0.063	-0.083	-0.047	-0.044	0.104	0.076	-0.003
Variable	11	12	13	14	15	16	17	18	19	20
11. Altman's Z	1.000									
12. Fin. Slack	0.140	1.000								
13. Org. Slack	-0.128	-0.274	1.000							
14. ROA	0.068	0.043	-0.037	1.000						
15. Special Items	-0.055	-0.207	0.441	-0.053	1.000					
16. Ind. Smooth.	0.027	0.019	-0.258	0.012	-0.236	1.000				
17. Meet Hist.	0.009	0.020	-0.022	0.018	-0.124	0.011	1.000			
18. Meet Soc.	0.017	0.175	-0.076	0.024	-0.253	-0.018	0.188	1.000		
19. Meet Nat.	0.022	0.128	-0.228	0.030	-0.437	0.281	0.193	0.606	1.000	
20. Meet Analyst	0.007	0.031	-0.057	0.001	-0.126	0.054	0.252	0.215	0.217	1.000

Variables 1-7 measured at time *t+1*. All other variables measured at time *t*

There are policy shocks that have affected a broad range of firms incentives to smooth earnings or the relative cost/benefit of earnings management of a particular type, but the policies with the most impact (e.g., the Sarbanes-Oxley Act of 2002; SOX) also have ripple effects that could substantially affect a firm's resource change decisions outside of this mechanism. Cohen et al. (2008) document a notable effect of SOX on the practice of earnings management (specifically a shift away from accrual-based earnings management to real earnings management) which for some studies could be exploited as exogenous variation. However, SOX was passed at the tail end of the 2001 recession, with other macro-level effects (collapse of the dot-com bubble, market crash following the terror attacks of 9-11) that present challenging confounds for the specific outcome variable—resource change.

We can, however, use a near-best approach of using two instrumental variables to isolate exogenous variation in earnings smoothing that have previously been utilized in the accounting literature. The first is to exploit the variance of income from special items as an instrument. Special items as an accounting category constitutes gains or losses that are outside normal day-to-day operational, investing, and financing activities. They are frequently short-term, one-off occurrences and hence by this nature hard to predict or forecast far in advance. The key assumption for the use of this instrument is that the more special items fluctuate, the more difficult it is to smooth earnings, as managers have less time to pull the levers needed. This makes these items a source of income variation that is hard for managers to foresee and to plan for far in advance, which in turn makes it difficult to smooth earnings. While it is the ideal of random assignment, this approach attempts to exploit quasi-random restrictions on a manager's ability to predict what earnings are likely to be and manipulate it higher or lower.

A concern about this instrument is whether managers use income from special items as a category for transactions with which to smooth earnings (which could create reverse causality in the first stage). Indeed, there has been significant scrutiny and guidance released by the Financial Accounting Standards Board (FASB) who promulgate GAAP standards regarding how special items are reported. The first reason for comfort is that one of the effects of required reporting on this category increases the visibility and scrutiny of gains/losses here. This increased visibility and scrutiny makes detection of earnings manipulation in this category (intentionally) more likely, and thus a less appealing place to smooth earnings. Secondly, if managers were using special items as a lever with which to smooth intertemporal variance, then we would see a positive correlation between the variance of special items and the earnings smoothing measure. In fact, there is a negative correlation in this first stage, which is more in alignment with variation in special items reflecting exogenous conditions making it more difficult to smooth earnings.

The second instrumental variable used in the study is the average level of earnings smoothing (excluding the focal firm) within the industry, defined as the firm's primary four digit North American Industry Classification System (NAICS) code. The anticipated relationship is that a firm in an industry where its peers/competitors have higher levels of earnings smoothing will also have higher levels of earnings smoothing, and therefore we should expect the first stage of this instrument to reflect this positive correlation. The idea of using this instrument is that by isolating variation in earnings smoothing to that predicted by how much smoothing industry peers are engaging in, we are approximating exogenous constraints on a firm's choice to smooth. An industry with low levels of earnings smoothing may indicate that firms within it have fewer transactions or balance sheet items that provide sufficient discretion to smooth; or perhaps the industry is under closer scrutiny by analysts or regulators which increases the costs/risk of detection for smoothing. A concern for the second instrument is that by nature of its construction has substantial correlation with industry effects or characteristics. Additionally, the strength of the first stage is not as strong as the special items instrument due to the coarse nature of using industry effects to predict constraints on firm behavior. However, while imperfect, using this instrument as a way to remove the effects of possible joint determination of earnings smoothing and strategic change (as managers are presumably limited in their control over industry peer behavior) helps us gauge sensitivity to that particular threat to inference.

The final concern to address with using these instruments is the possibility for violations of the exclusion restriction. It is plausible that the instruments could have direct effects on the outcome variables independent of those through the explanatory variable. This study uses econometric techniques from Conley et al. (2012) to relax the assumption of exclusion restriction and account for the direct effects in the second stage of the 2-stage-least-squares models (2SLS).

As pointed out by van Kippersluis and Rietveld (2018), ideally, we should select a non-parametric way to estimate the direct effect of the instruments in the absence of a strong theoretical reason to assume a certain value. One approach is to regress the outcome variable on both the variable of interest and the instrument for a sample of the population independent of the first-stage treatment. Put another way, for the first instrument, we want to partial out the effect of earnings smoothing using those firms for whom their level of smoothing is not determined by the instrument to recover the direct effect of variation in special items on attaining aspirations or changing resources. Likewise, we would need to do the same with industry peer smoothing to recover its direct effect on aspiration attainment or changing resources.

The good news is that the two instruments, when controlling for the explanatory variable, controls, and fixed effects *are orthogonal to each other*. Therefore, it is reasonable to assume that the predicted values of the explanatory variable from the first stage with one instrument will be independent of the endogenous first stage effects of the other. Therefore, by including the special items instrument in the 2SLS model instrumenting for peer smoothing, we can recover the direct effect of special items on aspiration attainment. Conversely, we can repeat this step by swapping the two instruments and recover the direct effect of industry peer smoothing. This of course must be repeated for each outcome variable, as the direct effects would be different for each one.

MEASURES

Outcome Variable: Resource Change

Consistent with previous literature on strategic change (Weng and Lin, 2014; Zhang and Rajagopalan, 2010; Haynes and Hillman, 2010; Finkelstein and Hambrick, 1990), this study operationalizes strategic change as variation in resource allocation. The general approach is to measure period-to-period absolute value change in the firm's major resource commitments as a proxy for change in the firm's overall strategy.

As in previous studies, six broad measures of resource allocations are standardized and integrated into a combined measure, titled *Resource Change* in this study. These are: advertising intensity (total advertising expense / total sales), research and development (R&D) intensity (total R&D expense / total sales), plant, property, and equipment (PPE) newness (net PPE / total sales), nonproduction overhead ratio (SG&A expense / total sales), inventory levels (total inventory / total sales), and financial leverage (total debt / common stockholders' equity). The component measures are labeled *Advertising Change*, *R&D Change*, *PPE Change*, *SG&A Change*, *Inventory Change*, and *Debt/Equity Change*, respectively. Because change is measured as an absolute value, either increases or decreases in any of these component measures will result in a higher value for Resource Change. Thus, the measure is agnostic about the directionality, but rather is intended to capture distance from one period's resource allocation to another. For example, developing capabilities in a new product category would tend to show up as an increase in R&D expense. Changing from traditional manufacturing to just-in-time production would show up as a decrease in inventory expense. Significantly upgrading and retooling production facilities would show up as in increase in relative PPE value. Each of these would register as an increase in Resource Change.

Resource Change as an index has a Cronbach's alpha of .64 for this data sample, which is slightly lower than the benchmark of .65 or .7 typically used to gauge how closely related the components of the index are. This cautions against overly strong claims of the measure as representative of a latent construct without other supportive evidence. Accordingly, in addition to the combined measure, the specifications for Hypothesis 2 will include each of the six components as the sole outcome variable to check whether results hold for each of these measures as well as the combined index. Natural log transformations are used for the individual components of Resource Change due to their exponential distribution to better fit a linear model. Additionally, while the main analysis measures Resource Change over the subsequent period from time t to time $t+1$, results for both two-year and three-year change are included in the supplemental analysis.

Explanatory Variable: Earnings Smoothing

Measuring earnings smoothing is challenging in that we do not directly observe the counterfactual of what the firm's earnings would have been without adjustment/manipulation. Additionally, firm managers have incentives to be covert about this behavior so that their efforts are not easily detected, unwound, and accounted for by financial analysts and markets. The more opaque that managers can make such adjustments, the less potential risk of detection and subsequent loss in terms of lost reputation/credibility or the increased chance of regulatory action from the SEC. While we cannot pinpoint and measure the delta or direction in which reported earnings are being manipulated, we can draw from the accounting literature a proxy that indicates a lower or higher likelihood that earnings smoothing is present.

There are two general approaches to detecting earnings management. The first is to attempt to derive the level of non-discretionary accruals a firm would be expected to have, given various observables about its industry and firm characteristics (revenue growth, normal ratio of accounts receivable to total sales, etc.). A scholar would then look for anomalies they could attribute to discretionary accruals deviating from this expectation. One challenge with this approach is that it requires a period in which the firm or its industry peers are presumed to be not manipulating, from which the appropriate level of non-discretionary accruals can be inferred. This works well in cases such as an event study measuring the effect of a public policy change or change within the firm (e.g., the appointment of a new CEO) where there is a strong theoretical reason for believing there will be more manipulation in one period than another. Unfortunately, this is not the case for this study. A second challenge is that techniques leveraging discretionary accruals would only measure "accounting" earnings smoothing, but not "real" earnings smoothing. So while this method would detect the use of accounting discretion used to manage earnings, the use of operational discretion to achieve this effect would be missed. Since scholars have found evidence suggesting that managers use a combination of accounting and real earnings smoothing to achieve their targets (Zang, 2012), this method would potentially miss out on a substantial portion of the phenomenon.

The second general approach to measuring earnings smoothing, and the one used in this study, is to look for a disparity in the quarterly variance of earnings compared to operating cash flows (OCF). OCF can be thought of as the "cash profit the company would have reported had it constructed its income statement on a cash basis rather than an accrual basis" (Easton et al., 2013, p. 2-17). Because OCF does not include accruals, it omits this source of accounting-based manipulation. Additionally, OCF is not commonly itself a targeted outcome by which firms are judged on their performance, and so presumably, OCF would pick up on changes in the levers driving real earnings smoothing without itself being a target for such smoothing. Put simply, if the variance of quarterly earnings is much lower than the variance of quarterly OCF, then it is more likely that a firm is either using accruals to remove volatility in operations (accounting-based earnings smoothing) or timing reversals in operating activities to achieve a similar effect (real earnings smoothing). While this doesn't give us an explicit direction of manipulation for any given period (as would the modified Jones method), it does give us a more comprehensive measure of when manipulation is more likely overall, which better suits the needs of this study. *Earnings Smoothing* is calculated as the ratio of standard deviation of OCF (scaled by total assets) over the standard deviation of net income (scaled by total assets) over the previous 4 quarters. A natural log transformation is used due to the variable's exponential distribution to better fit a linear model. Robustness checks using the previous 8 and 12 quarters are included in supplemental analysis.

Mediating Variable: Aspiration Attainment

Measuring aspirations for financial performance builds on a rich tradition within the performance feedback literature. Key predictions of the Behavioral Theory of the Firm surround the setting, attaining, or falling short of performance aspirations (Cyert and March, 1963). As Bromiley and Harris (2014) note, there are multiple potentially salient aspirations as well as numerous ways each can be measured, but financial performance aspirations have most commonly been operationalized by comparing firm return on assets (ROA) to the ROA from previous periods or that of peer firms (Audia and Greve, 2021). Audia and Greve make a compelling call for considering multiple organizational goals, and while this study considers the limited scope of earnings-based financial goals (as those are most relevant to the phenomenon of earnings management), four different potential types of aspirations are included that may be salient to organizations depending on context. Based on the findings of Bromiley and Harris (2014), the aspirations are not averaged or combined, but rather are assumed to have salience distinct and independently from one another.

There does not appear to be a strong theoretical prior for why one type of financial aspiration measure may hold more salience than others for driving earnings management behavior. Because this study is intended to be broad in scope (30 years across all industries), it is reasonable to expect that one aspiration may be more salient in a particular firm/industry/year context, while another more appropriate as the context changes. This study utilizes two types of aspirations that are the most commonly studied in the BToF tradition: the firm's recent historical performance and that of its referent peers. The specific operationalization of these measures match those most commonly found in the performance feedback literature: *Historical Aspiration* is a binary variable indicating whether the firm's ROA in the current period meets or exceeds the firm's ROA from the previous period; *Social*

Aspiration is a binary variable indicating whether the firm's ROA meets or exceeds the industry average ROA for the firm's four-digit NAICS code.

Additionally, the study utilizes two aspirations drawn from the accounting literature for which there is evidence of driving earnings management behavior. The first is the threshold between profit or loss, i.e., zero ROA. While not as common in the performance feedback literature, Greve (2003) refers to this aspiration as a type of "natural aspiration level" at which there is a discontinuity of incentives. This type of aspiration also traces back to Prospect Theory (Kahneman and Tversky, 1979), which, when extrapolated from individual-level behavior to the organizational level, has been referenced in the BToF tradition as a shift in firm behavior near the boundary between gains and losses. The variable *Zero Profit* is a binary variable indicating whether the firm reported ROA at or above zero for the period.

The second aspiration measure taken from the accounting and finance literature on earnings management is the analyst consensus projections of the firm's earnings per share (EPS) for the period. Managers are attentive to and will release financial guidance to try to shape the expectations of analysts assigned to their industry or firm. A firm's stock price is also sensitive to whether a firm meets or exceeds these expectations. This is a sound reason for why there has been previous empirical findings that some firms engage in earnings management to meet or beat analyst expectations (Degeorge et al., 1999). The variable *Analyst Consensus* is a binary variable indicating whether the firm reported EPS meeting or exceeding the analyst consensus expectation.

Instrumental Variables

There are two instrumental variables used in this study: variation in special items and industry peer earnings smoothing. The rationale and implications of these variables are described above, in the Identification Strategy section. *Special Items* is calculated as the natural log of the standard deviation of special items scaled by beginning period total assets over the previous 4 quarters. *Peer Smoothing* is calculated as the mean level of Earnings Smoothing in the firm's four-digit NAICS code, omitting the focal firm.

Control Variables

Several control variables are included in the models below in order to partial out the effects of firm characteristics could plausibly affect both the explanatory and outcome variables. These fall into three main categories—the size or maturity of the firm; the level of financial strain or bankruptcy risk facing the firm; and the level of slack resources available to the firm. These are represented by Firm Size and Firm Age; Altman's Z-Score; and Financial Slack and Organizational Slack, respectively. Additionally, time- and firm-level fixed effects are included to account for unobserved heterogeneity that may cause additional omitted variable bias. Natural log transformations are used for Firm Size, Firm Age, Financial Slack, and Organizational Slack due to their exponential distribution to better fit a linear model. Altman's Z is divided by 1,000 for ease in tabular layout as the coefficients were quite small relative to other variables.

Firm Size. Firm Size could quite plausibly affect strategic change; this could be through several mechanisms, including organizational inertia, a more complex cost or investment structure, or the existence of more stakeholders who need to buy in on significant shifts of strategy. There appears to be a positive correlation between Earnings Smoothing and Firm Size, and it is plausible that firm size could affect the motivation for or opportunity to engage in earnings smoothing. Larger firms may be under more pressure and scrutiny by investors and financial analysts to hit quarterly targets. Additionally, having a larger firm may create a more complex financial and operational structure, which could provide more tools or opportunities with which to smooth earnings. Empirical studies on strategic change often control for firm size either by including a measure based on revenues, assets, or number of employees. This study utilizes firm revenues, as it should be appropriate across a wide selection of industries.

Firm Age. The number of years a firm has been in operation could affect both strategic change as well as the motivation or opportunity to smooth earnings. More mature organizations may have more entrenched procedures and norms that create barriers to redeploying resources or changing fundamental capital structures. Mature organizations may be held to a higher standard of consistency in hitting earnings targets by investors and financial analysts or may be more willing to smooth due to managerial belief that they understand the ebbs and flows of their industry through experience. Firm Age is measured as the number of fiscal years between the firm's first appearance in Compustat (beginning in 1950) and the fiscal year of the focal quarter.

Altman's Z-Score. Many scholars from the tradition of the behavioral theory of the firm have suggested that poor performance could be a major driver of organizational search and change (Gavetti et al., 2012). However, if financial ruin is facing a firm, some scholars theorize that an organization-level phenomenon parallel to the individual psychology phenomenon of threat rigidity could occur, suppressing the organization's propensity to engage in strategic change (Staw and Ross, 1987; Staw et al., 1981). Essentially, the firm is overwhelmed with the immediate task of treading water and is either unable or unwilling to make drastic organizational changes or take on additional risk. This study utilizes a proxy variable for the risk of financial ruin developed by Altman (1968) as a way to compare the relative credit risk of various publicly traded firms. A higher Z score is associated with a low risk of bankruptcy or default, while a low Z score is associated with a high risk. Financial strain could also affect the capacity a firm has to smooth earnings, since it is believed that there must be some flexibility in the financial system to engage in period-to-period smoothing (Ronen and Yaari, 2008).

Financial Slack. Financial Slack is a measure of how much capital is easily accessible by the firm. Having such slack could make it more feasible for a firm to engage in strategic change, as there are often costs associated with such transition. Similar to the Altman Z-Score, this variable can also account for situations where a firm cannot engage in earnings smoothing due to financial constraints. The measure is constructed by taking the ratio of current assets over current liabilities.

Organizational Slack. Organizational slack is similar to financial slack in that it represents flexible resources that managers can apply in different ways to implement strategy. It should represent the excess capacity available to a firm over and above the bare bones level of expenditures necessary to conduct the core business functions. Organizational slack in this way represents the resource allocations that can be trimmed to effect change, as well as the flexibility in cost structure that managers can tweak to shift earnings from one period to another. Additionally, a key part of the organizational search and learning literature concerns the notion of slack search—or excess capacity as being a key to innovating new technology (Levinthal and March, 1981). Accordingly, there is reason to believe that this variable may be correlated with both strategic change and earnings smoothing, and therefore should be included as a control. Organizational Slack is the total amount of firm expenses scaled by total assets.

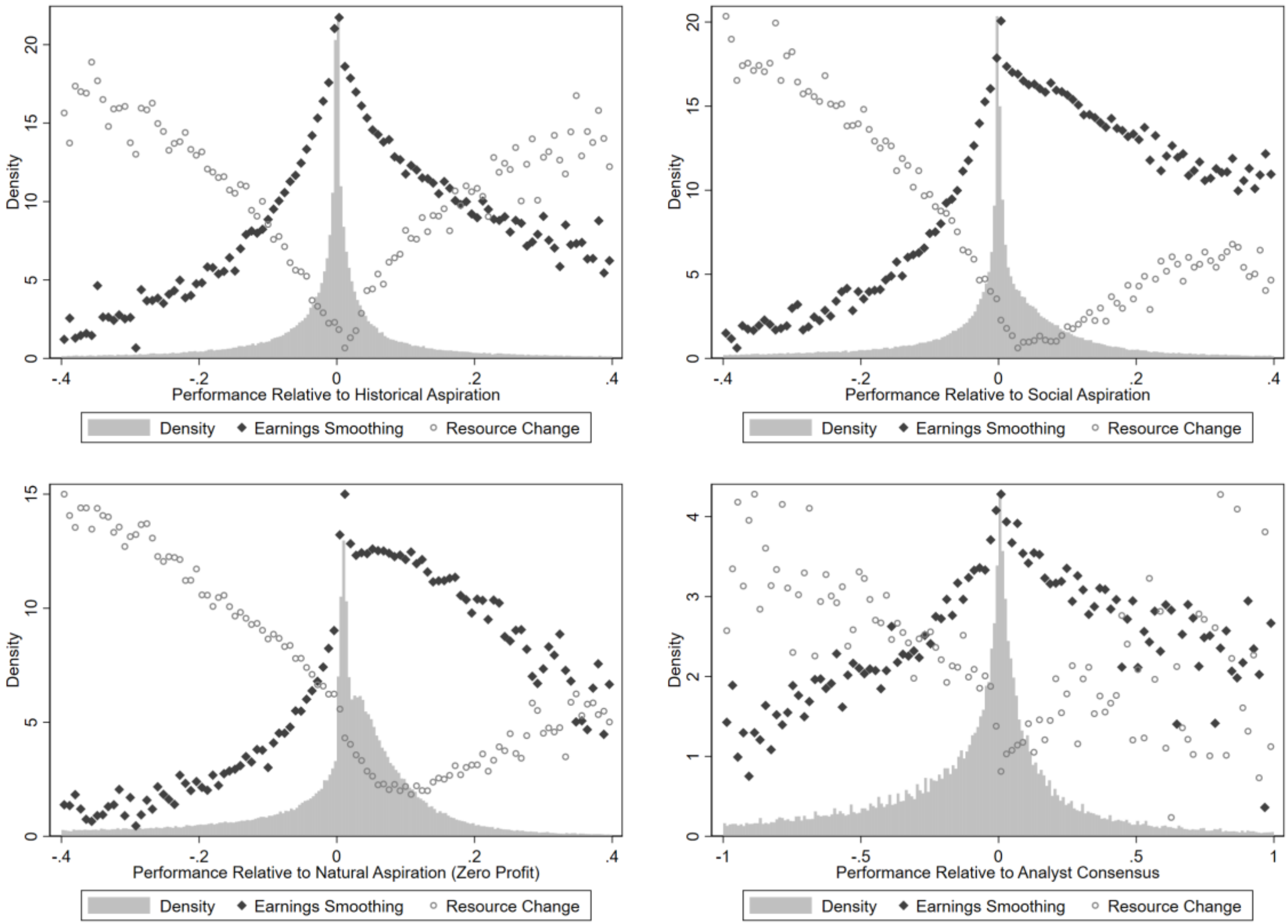
Time- and Firm-level fixed effects. Time-fixed effects are included in the models to account for unobserved heterogeneity correlated with the time period. Firm-level fixed effects are also included to more stringently address potential sources of unobserved heterogeneity. These fixed effects isolate the within-firm variation and partial out all between-firm variation. While this is effective at removing the bias that comes from firm characteristics that tend to be stable over time, it comes at the cost of losing the potential explanatory power of comparing firms that engage in different activity. Since earnings smoothing tends to be longer-term strategy managers employ, a substantial part of the variation in the independent variable is inter-firm rather than intra-firm. Therefore, while the firm-fixed effects address additional OVB concerns, they may understate the magnitude of the relationship between the independent variable and the dependent variable because of the variation discarded.

RESULTS

Presented below are the main results and analyses for the three hypotheses of the study, but the reader is also directed to the supplemental tables and figures. While the primary analyses focus on the results of the fully identified models, the supplemental tables in Appendix D include an iterative build-up of models from simple OLS to include the addition of controls, fixed effects, and each instrument in sequence for all outcome variables discussed. Additionally, specification maps detailing key choices such as time period (for example, whether Earnings Smoothing and/or Resource Change covers 1, 2, or 3-year periods), the exclusion of financial firms from the analysis, or the restriction of sample to the post-SOX period are included in the supplemental tables so that the reader can see the effects of these choices on the coefficients of interest for each variable and model specification.

Before diving into the analysis for each hypothesis, the primary results and main takeaway of the paper can be best visualized by the graphs in Figure 3-2. These graphs are histograms of firm-year performance relative to the four aspiration levels studied—(left to right, top to bottom) the firm's ROA from the previous year, the industry average ROA, zero profits (which is simply the firm's reported ROA), and the EPS forecast from a consensus of analysts. If the firm reported exactly at the aspiration level, it would be a zero on the x-axis of this graph. The positive region are firm-years where reported performance surpassed the aspiration, the negative region are firm-years where it did not. Overlaid on these histograms are binned

Figure 3-2: Histograms of Relative Performance with Earnings Smoothing and Resource Change (Overall Results)

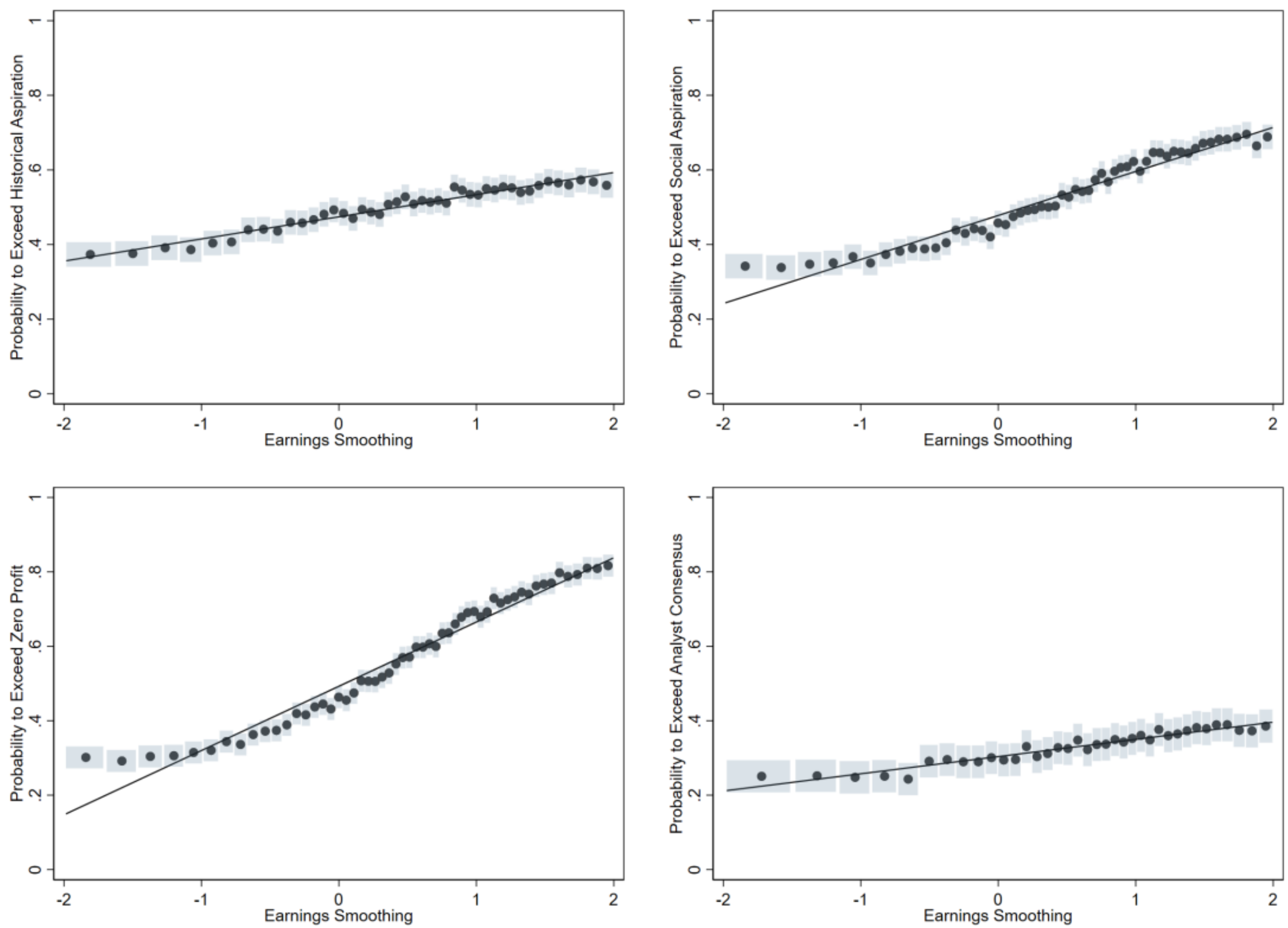


scatter plots of both Earnings Smoothing (the solid diamonds) and Resource Change (the open circles). It is worth remembering that Resource Change is measured at $t + 1$ relative to the other variables, so this represents the association of Earnings Smoothing and performance on Resource Change over the following fiscal year.

What is most noteworthy about these graphs is that they depict 1) a negative relationship between Earnings Smoothing and Resource Change, 2) that Earnings Smoothing tends to be highest in the proximity around the aspiration level (zero on the x-axis), and 3) Resource Change tends to be lowest at or slightly above the aspiration level. This allows us to intuitively visualize the theoretical premises discussed earlier—earnings smoothing is a tool to manipulate period-to-period reported accounting profit to more consistently achieve aspirations; these aspiration levels may provide salient targets for managers to aggressively reach for when they would otherwise fall short as well as targets for how much profit to understate if they are overperforming for the period; and finally, that the mechanism of more consistently reporting performance at or above aspirations could dampen pressures for the organization for strategic change.

Now that we have an overall picture of these variables, let's drill down into the specific hypotheses. Hypothesis 1 predicts that earnings smoothing will lead to a higher propensity for attaining organizational aspirations. First, Figure 3-3 depicts binned scatter plots of simple OLS regression of aspiration attainment on Earnings Smoothing, with mean-centered controls, for the four types of aspirations. The plots

Figure 3-3: Binscatter of Earnings Smoothing and Aspiration Attainment (Hypothesis 1)



were generated with the binsreg command in Stata (Cattaneo et al., 2019). The y-axis can be interpreted as the probability of attaining the aspiration for a given value of x. As Earnings Smoothing is a log-transformed measure, a .01 increase along the x-axis can be interpreted as a 1 percent increase in the ratio of the standard deviation of a firm's cash flows to the standard deviation of its earnings. The binscatter plots show a positive relationship between Earnings Smoothing and aspiration attainment as hypothesized. The fit is approximately linear across the meat of the distribution of earnings smoothing, which gives some comfort about the linear assumptions of OLS for these specifications.

Table 3-3 presents the results of OLS models with year and firm fixed effects (Models 1.1-1.4), as well as the fully specified models that are 2-stage-least-squares (2SLS) utilizing the two instrumental variables (Models 1.5-1.8). The coefficients of interest are on Earnings Smoothing and the columns represent the four aspiration types. We see that the coefficients of interest are positive, as hypothesized, and of high enough magnitude to have economic significance. For example, the 0.180 coefficient on Model 1.7 can be interpreted as a 1 percent increase in Earnings Smoothing leading to a 0.180 percentage point increase in the probability that the firm posts above the natural aspiration level of zero—i.e., posts a profit for the period rather than a loss. Looking further down the table, we see that the first stage of the instruments are strong and in the hypothesized direction. The expectation that a higher variance of special items making it more difficult to smooth earnings

Table 3-3: OLS and 2SLS Regression of Aspiration Attainment on Earnings Smoothing (Hypothesis 1)

Model Number	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
Outcome Variable	Historical Aspiration	Social Aspiration	Zero Profit	Analyst Consensus	Historical Aspiration	Social Aspiration	Zero Profit	Analyst Consensus
Model Type	OLS	OLS	OLS	OLS	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	0.0663	0.0752	0.104	0.0382	0.163	0.121	0.180	0.0673
	(0.00153)	(0.00147)	(0.00143)	(0.00188)	(0.00475)	(0.00415)	(0.00407)	(0.00525)
Firm Size	0.00131	0.0476	0.0507	0.0205	-0.0178	0.0320	0.0299	0.0175
	(0.00193)	(0.00226)	(0.00221)	(0.00401)	(0.00326)	(0.00300)	(0.00304)	(0.00577)
Firm Age	-0.000519	-0.00896	-0.0104	-0.0972	-0.00225	0.0167	0.0222	-0.0968
	(0.00688)	(0.00783)	(0.00647)	(0.0113)	(0.0111)	(0.0107)	(0.00940)	(0.0162)
Altman Z	0.00197	-0.0130	-0.0147	2.031	0.00950	-0.0155	-0.0149	2.099
	(0.00274)	(0.00257)	(0.00284)	(0.384)	(0.00338)	(0.00635)	(0.00647)	(0.767)
Financial Slack	0.00485	0.0500	0.0494	0.0150	-0.00163	0.0448	0.0444	0.0112
	(0.00263)	(0.00269)	(0.00261)	(0.00635)	(0.00416)	(0.00367)	(0.00371)	(0.00889)
Organizational Slack	0.00959	-0.0386	-0.0343	0.0244	0.0262	-0.0363	-0.0246	0.0312
	(0.00366)	(0.00392)	(0.00377)	(0.00717)	(0.00555)	(0.00522)	(0.00520)	(0.00937)
Year Fixed Effects	X	X	X	X	X	X	X	X
Firm Fixed Effects	X	X	X	X	X	X	X	X
Instrument (Spec. Items)					X	X	X	X
Instrument (Peer Smooth)					X	X	X	X
Observations	119696	127176	127176	70250	64523	66936	66936	40134
Adjusted R^2	0.003	0.378	0.485	0.104	-0.007	0.045	0.071	0.008
1st stage Spec. Items					-0.328	-0.327	-0.327	-0.327
					(0.004)	(0.004)	(0.004)	(0.005)
1st stage Peer Smooth					0.217	0.216	0.216	0.245
					(0.015)	(0.015)	(0.015)	(0.018)
F test of excl. inst.					4055.87	4153.45	4153.45	2612.17
P-Val					(0.000)	(0.000)	(0.000)	(0.000)
Hansen J statistic					5.93	238.39	31.85	27.53
P-Val					(0.015)	(0.000)	(0.000)	(0.000)

Standard errors in parentheses for coefficients, p-value for test statistics. Standard errors are clustered at the firm level fits with the negative coefficient on this instrument. Likewise, the expectation of more earnings smoothing by industry peers causing higher focal firm earnings smoothing also fits with this instrument's positive coefficient in the first stage. The F-test of the excluded instruments is comfortably high, alleviating concerns associated with weak instruments.

It is noteworthy that the joint test of overidentification (Hansen's J statistic) is too high to give comfort. This reinforces concerns that the assumption of exclusion restriction for the instruments does not strictly hold. That is, the instruments themselves appear to have a direct effect on the outcome variable independent of that through the explanatory variable. Accordingly, this calls for the techniques pioneered in Conley et al. (2012) and refined in van Kippersluis and Rietveld (2018). This method allows us to see what the effect is on point estimates and standard errors for the coefficients of interest when we relax the exclusion restriction assumption.

This was conducted by using the plausexog command in Stata (Clarke, 2014), which estimates the second stage of the 2SLS adding a direct effect for each instrument. The "union of confidence intervals" approach was used, where a confidence interval of potential direct effects for each instrument is given and then the union of all confidence intervals for the coefficient of interest is inferred as a total range.

The results of adjustment to relax the exclusion restriction assumption are presented in Table 3-4. Shown in in each column are the original point estimates, adjusted point estimates, and the estimated upper and lower bounds of the adjusted coefficient. The estimates are still in the hypothesized direction (positive), with a tight enough confidence interval to provide comfort in interpreting the results.

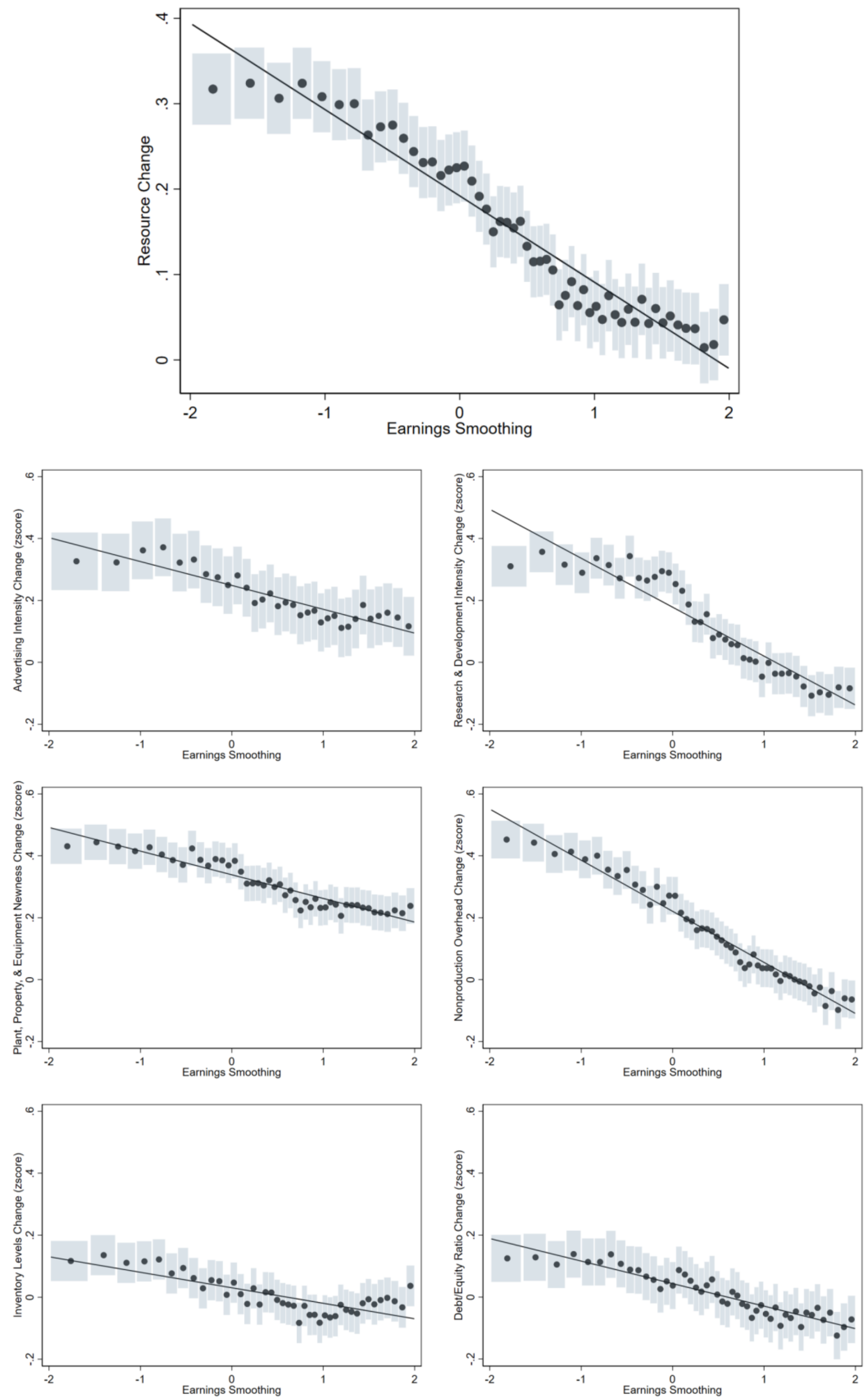
Table 3-4: "Plausibly Exogenous" Relaxing Exclusion Restriction (Hypothesis 1)

Outcome Variable	Model Number	Original Estimate	Adjusted Estimate	Lower Bound	Upper Bound
Historical Aspiration	1.5	0.163	0.0889	0.0202	0.158
Social Aspiration	1.6	0.121	0.0714	0.0553	0.0875
Zero Profit	1.7	0.180	0.322	0.257	0.386
Analyst Consensus	1.8	0.0673	0.238	0.154	0.321

Estimates calculated using uci method of plausexog command in Stata

For Hypothesis 2, the same approach is repeated. We begin as before with binned scatter plots of a simple OLS regression with mean-centered controls (Figure 3-4). The topmost graph in the figure represents Resource Change, the combined index variable consistent with previous literature on strategic change. However, because there is concern about how well the index functions as a latent construct (e.g., the Cronbach alpha of .63 is near but just below traditional levels of fit), each of the six subcomponents of the measure are also pictured (left to right and top to bottom, change in advertising intensity, R&D intensity, PPE newness, nonproductive overhead, inventory levels, and debt/equity ratio). In each graph of the figure, we

Figure 3-4: Binscatter of Earnings Smoothing and Resource Change (Hypothesis 2)



see a clear negative relationship between Earnings Smoothing and change in the next period. The relationships are fairly consistent and approximately linear across each of the outcome variables.

Tables 3-5 and 3-6 present the results of OLS models with controls and fixed effects and the 2SLS models with the two instruments. Each column represents a different outcome variable, with the Resource Change as the left-most column and the sub-component measures to the right. The second hypothesis predicts that higher levels of earnings smoothing will lead to lower levels of resource change in the subsequent period, so we should expect a negative coefficient of interest on Earnings Smoothing. We do indeed see negative point estimates consistent with the hypothesis, with relatively tight dispersion signified by low standard errors. Earnings Smoothing is a log-transformed measure and Resource Change is an average of the standardized values of the sub-components, which makes interpreting the economic significance a bit challenging. Therefore, the sub-components are presented in unstandardized form. They too are log-transformed, therefore the interpretation is easier: percent change in the explanatory variable leading to percent change in the outcome variable. For example, model 2.10 estimates that a 1 percent increase in Earnings Smoothing leads to a 0.187 percent decrease in R&D Change.

We see again that the first stage of the instruments are strong, but the Hansen J statistics for three of the models give concern for direct effects of the instruments on the outcome variables (Models 2.8, 2.11, and 2.12). Accordingly, the methods of “Plausibly Exogenous” (Conley et al., 2012) were again used to explore

Table 3-5: OLS Regression of Resource Change on Earnings Smoothing (Hypothesis 2)

Model Number	2.1	2.2	2.3	2.4	2.5	2.6	2.7
Outcome Variable	Resource Change	Advertising Change	R&D Change	PPE Change	SG&A Change	Inventory Change	Debt/Equity Change
Model Type	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Earnings Smoothing	-0.0314	-0.0523	-0.108	-0.0568	-0.102	-0.0224	-0.0577
	(0.00146)	(0.00801)	(0.00657)	(0.00436)	(0.00444)	(0.00464)	(0.00686)
Firm Size	-0.180	-0.385	-0.671	-0.453	-0.550	-0.334	0.0146
	(0.00404)	(0.0252)	(0.0155)	(0.0117)	(0.0116)	(0.0119)	(0.0166)
Firm Age	-0.0168	-0.205	-0.0734	-0.115	-0.0464	-0.0987	0.0164
	(0.00920)	(0.0515)	(0.0407)	(0.0269)	(0.0254)	(0.0265)	(0.0489)
Altman Z	-0.00243	0.154	0.0256	0.0493	-0.0188	-0.286	0.129
	(0.00973)	(0.0513)	(0.0412)	(0.0544)	(0.0441)	(0.133)	(0.0602)
Financial Slack	-0.0115	0.0331	0.0588	-0.0698	-0.0164	0.0681	-0.364
	(0.00460)	(0.0242)	(0.0177)	(0.0124)	(0.0114)	(0.0121)	(0.0223)
Organizational Slack	-0.106	-0.0797	-0.175	-0.550	-0.106	-0.285	0.0322
	(0.00630)	(0.0302)	(0.0260)	(0.0183)	(0.0161)	(0.0182)	(0.0272)
Year Fixed Effects	X	X	X	X	X	X	X
Firm Fixed Effects	X	X	X	X	X	X	X
Observations	114902	36150	54195	113814	100970	91982	95153
Adjusted R^2	0.647	0.534	0.760	0.584	0.600	0.504	0.396

Standard errors in parentheses. Standard errors are clustered at the firm level

Table 3-6: 2SLS Regression of Resource Change on Earnings Smoothing (Hypothesis 2)

Model Number	2.8	2.9	2.10	2.11	2.12	2.13	2.14
Outcome Variable	Resource Change	Advertising Change	R&D Change	PPE Change	SG&A Change	Inventory Change	Debt/Equity Change
Model Type	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	-0.0518	-0.0991	-0.187	-0.0815	-0.151	-0.0806	-0.110
	(0.00416)	(0.0218)	(0.0187)	(0.0130)	(0.0126)	(0.0136)	(0.0192)
Firm Size	-0.175	-0.356	-0.637	-0.433	-0.548	-0.299	0.0189
	(0.00538)	(0.0321)	(0.0205)	(0.0157)	(0.0153)	(0.0164)	(0.0229)
Firm Age	-0.0485	-0.285	-0.161	-0.153	-0.129	-0.175	-0.0228
	(0.0123)	(0.0704)	(0.0542)	(0.0367)	(0.0354)	(0.0376)	(0.0680)
Altman Z	0.00343	0.192	0.0904	0.0197	0.0307	-0.420	0.0895
	(0.0129)	(0.0382)	(0.0512)	(0.0635)	(0.0604)	(0.121)	(0.0308)
Financial Slack	-0.00614	0.0568	0.0598	-0.0476	-0.00613	0.0803	-0.314
	(0.00610)	(0.0318)	(0.0226)	(0.0169)	(0.0156)	(0.0167)	(0.0292)
Organizational Slack	-0.104	-0.0481	-0.176	-0.550	-0.0980	-0.279	0.0420
	(0.00794)	(0.0385)	(0.0321)	(0.0246)	(0.0213)	(0.0235)	(0.0367)
Year Fixed Effects	X	X	X	X	X	X	X
Firm Fixed Effects	X	X	X	X	X	X	X
Instrument (Spec. Items)	X	X	X	X	X	X	X
Instrument (Peer Smooth)	X	X	X	X	X	X	X
Observations	59124	19730	29237	58643	52818	47385	50638
Adjusted R^2	0.106	0.023	0.108	0.082	0.079	0.031	0.008
1st stage	-0.328	-0.313	-0.334	-0.328	-0.334	-0.328	-0.335
Spec. Items	(0.004)	(0.007)	(0.006)	(0.004)	(0.004)	(0.004)	(0.004)
1st stage	0.220	0.160	0.183	0.222	0.207	0.224	0.220
Peer Smooth	(0.015)	(0.026)	(0.025)	(0.015)	(0.016)	(0.017)	(0.016)
F test of excl. inst.	3713.38	1160.89	1776.72	3682.38	3380.26	2985.39	3306.21
P-Val	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Hansen J statistic	15.793	0.687	3.17	25.32	15.87	0.51	0.08
P-Val	(0.000)	(0.407)	(0.075)	(0.000)	(0.000)	(0.476)	(0.776)

Standard errors in parentheses for coefficients, p-value for test statistics. Standard errors are clustered at the firm level the effects of relaxing the strict assumption of exclusion restriction for these three models. Table 3-7 presents the results of the adjustments. For each of the models, we see both a point estimate in the hypothesized direction as well as a confidence interval comfortably in the negative region. It is noteworthy that bias from direct effects seems to be on net in the opposite direction of the main effect, giving comfort that the model specifications are not at risk of spurious inference from this particular threat.

Table 3-7: "Plausibly Exogenous" Relaxing Exclusion Restriction (Hypothesis 2)

Outcome Variable	Model Number	Original Estimate	Adjusted Estimate	Lower Bound	Upper Bound
Resource Change	2.8	-0.0518	-0.163	-0.230	-0.097
PPE Change	2.11	-0.0815	-0.517	-0.941	-0.098
SG&A Change	2.12	-0.151	-0.522	-0.745	-0.300

Estimates calculated using uci method of plausexog command in Stata

Hypothesis 3 predicts that aspiration attainment mediates the relationship between earnings smoothing and strategic change. This analysis uses the three tests suggested by Baron and Kenny (1986), 1) that the explanatory variable affects the mediator, 2) that the explanatory variable affects the outcome variable, and 3) that when the indirect path is controlled, the direct effect is more attenuated toward zero (with full mediation at zero). They also suggest performing a Sobel z-test to determine significance of the indirect path. While other scholars have demonstrated advanced methods that are more efficient for this last test, such as bootstrapping (Zhao et al., 2010; Hayes, 2009), the simpler traditional Baron and Kenny approach is sufficiently powered for the purposes of this study.

Table 3-8: Mediation Results (Hypothesis 3)

Model Number	2.8	3.1	3.2	3.3	3.4	3.5
Outcome Variable	Resource Change	Resource Change	Resource Change	Resource Change	Resource Change	Resource Change
Model Type	2SLS	2SLS	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	-0.0518	-0.0482	-0.0430	-0.0334	-0.0475	-0.0316
	(0.00416)	(0.00448)	(0.00442)	(0.00484)	(0.00492)	(0.00621)
Firm Size	-0.175	-0.173	-0.172	-0.172	-0.170	-0.165
	(0.00538)	(0.00565)	(0.00536)	(0.00534)	(0.00892)	(0.00898)
Firm Age	-0.0485	-0.0560	-0.0478	-0.0472	-0.0224	-0.0291
	(0.0123)	(0.0135)	(0.0122)	(0.0122)	(0.0162)	(0.0174)
Altman Z	0.00343	0.00422	0.00129	0.000631	-1.763	-1.637
	(0.0129)	(0.0222)	(0.0127)	(0.0126)	(0.647)	(0.643)
Financial Slack	-0.00614	-0.00519	-0.00214	-0.00108	-0.00742	-0.00204
	(0.00610)	(0.00637)	(0.00611)	(0.00610)	(0.00909)	(0.00911)
Organizational Slack	-0.104	-0.103	-0.106	-0.106	-0.0917	-0.0978
	(0.00794)	(0.00823)	(0.00791)	(0.00786)	(0.0108)	(0.0109)
Historical Aspiration		-0.0271				-0.00275
		(0.00398)				(0.00470)
Social Aspiration			-0.0760			-0.0309
			(0.00547)			(0.00686)
Zero Profit				-0.0991		-0.0503
				(0.00691)		(0.00929)
Analyst Consensus					-0.0247	-0.0152
					(0.00492)	(0.00496)
Observations	59124	56709	58832	58832	35435	34613
Adjusted R^2	0.106	0.103	0.113	0.117	0.063	0.071
Sobel z-score		-6.679	-12.543	-13.642	-4.675	

Standard errors in parentheses. Standard errors are clustered at the firm level

The results for Hypotheses 1 and 2 correspond to the first two criteria suggested above. Table 3-8 corresponds to the third. The leftmost column presents the fully specified Model 2.8 as comparison. To the right, Models 3.1-3.4 represent individually controlling for aspiration attainment for the four types of aspirations, and Model 3.5 shows the effects of controlling for all four on the coefficient of interest on Earnings Smoothing. By comparing models 2.8 and 3.5, we can see that there is an approximately 40 percent reduction (from -0.0518 to -0.0316) in the size of the main effect when controlling for the indirect pathways. Additionally, the Sobel z-scores for each aspiration independently in Models 3.1-3.4 are high enough to suggest mediation in each case.

Conclusion

Earnings smoothing is a widespread behavior (Graham et al., 2005) that can have substantial consequences for firms and stakeholders. In addition to the ethical questions around whether the intentional manipulation of earnings higher or lower in a given period has any long-term information value or is by its nature misleading, there are important questions about how engaging in such behavior has downstream effects on other strategic decisions. This paper answers one of those questions by studying the effects of earnings smoothing on subsequent strategic change.

The first contribution of the paper is to the performance feedback literature. While accounting scholars have previously theorized and found evidence that managers smooth earnings to avoid reporting losses, to meet previous performance, and to meet analyst expectations (Degeorge et al., 1999), this behavior is not often discussed in the context of performance feedback. This study extends these findings to social aspirations (one of the core aspirations from BToF) and then connects this fact to subsequent theory regarding performance feedback.

This raises important theoretical questions. When managers have performance near but below salient thresholds, an available option may be to temporarily inflate earnings to present to external audiences purported performance above salient thresholds. If managers are presumed to know actual performance (i.e., before manipulation), then are subsequent decisions about risk and change driven by the inward-facing feedback (which would be a shortfall) or by the outward-facing feedback (which would meet aspirations)?

The second contribution of the paper is to theorize and identify a causal link between earnings smoothing and strategic change. Harris and Bromiley (2007) suggested that firm managers performing poorly may grossly overstate earnings instead of engaging in substantive change, but the context of their study was on egregious manipulations that violated GAAP and constituted financial fraud. This study applied similar logic to the context of the dubious gray area of within-GAAP earnings smoothing rather than plainly illegal behavior. It is plausible that behavioral differences between outright fraud and within-GAAP manipulation are more than simply a matter of degree, but a lower propensity for strategic change may very well be a “slippery slope” mechanism by which a struggling firm proceeds from within-GAAP earnings smoothing to financial fraud. Further research on this potential link is warranted.

The third contribution of the paper is to demonstrate that approximately 40 percent of the main effect of earnings smoothing on strategic change seems to occur due to attaining thresholds for reported performance. This is a substantial mechanism within this relationship, but there is also room for future work on the other mechanisms through which this may be occurring. For example, Mazmanian and Beckman (2018) describe the process of budgets and earnings forecasting as creating a single “reified” set of numbers promulgated throughout the organization. If earnings smoothing is part of this process, it could reduce the visibility of and sensitivity to volatility or risks in the firm’s environment from the perspective of individuals within the organization. Thus, the possibility of the organization “fooling itself” could also be a part of the story. An unpacking of this possibility, or on other effects of intra-firm information asymmetry could yield further insight.

The final intended contribution is in the leveraging of two instruments that are orthogonal to each other as a tool for non-parametric estimates of each instrument’s direct effects on outcome variables. van Kippersluis and Rietveld (2018) suggest selecting subsamples for which the first-stage relationship is zero between the instrument and the explanatory variable. In the absence of strong theoretical reasons for such subgrouping, using instruments exogenous to one another as a way of constructing these subgroups by using instrumented values of the explanatory variable in turn is a useful way to more systematically leverage the techniques of Conley et al. (2012).

Appendix A: Derivation of π_L

To find the lower threshold of the "hole" in reported earnings (i.e., π_L), we can look for solutions of $U\left(\frac{1}{\gamma};\pi\right) = U(-\pi;\pi)$. At that point, the CEO is indifferent between making a larger adjustment that achieves the bonus B or staying with the locally optimal report $a^* = \frac{1}{\gamma}$. Substituting into equation (1) and simplifying leads to the quadratic equation

$$\frac{\gamma}{2} \cdot \pi^2 + \pi + \left(\frac{1}{2\gamma} - B\right) = 0$$

The roots of this quadratic are $\pi = \frac{-1 \pm \sqrt{2\gamma B}}{\gamma}$. The larger root cannot be the solution, because for $\pi > \frac{-1}{\gamma}$ the CEO would obtain the bonus under her "normal" reporting strategy $a^* = \frac{1}{\gamma}$. This implies that the solution for the lower threshold must be $\pi_L = \frac{-1-\sqrt{2\gamma B}}{\gamma}$, or equivalently, $\pi_L \equiv -\left(\frac{1}{\gamma} + \sqrt{\frac{2B}{\gamma}}\right)$, as reported in the text.

Appendix B: Alternative Bunching Estimates

Blomquist and Newey (2018) critique the use of bunching estimators in public finance to estimate the tax elasticity of income using kinks or notches in the tax schedule. The core of their argument is that identification rests on functional form assumptions. In particular, within the region where outcomes are assumed to be manipulated, bunching methods impute counterfactual outcomes entirely from extrapolation, rather than any comparison of observed quantities. For example, if the true counterfactual distribution of ROA is highly non-linear around zero, then the estimates of earnings management that we report in Section 4 could be biased.

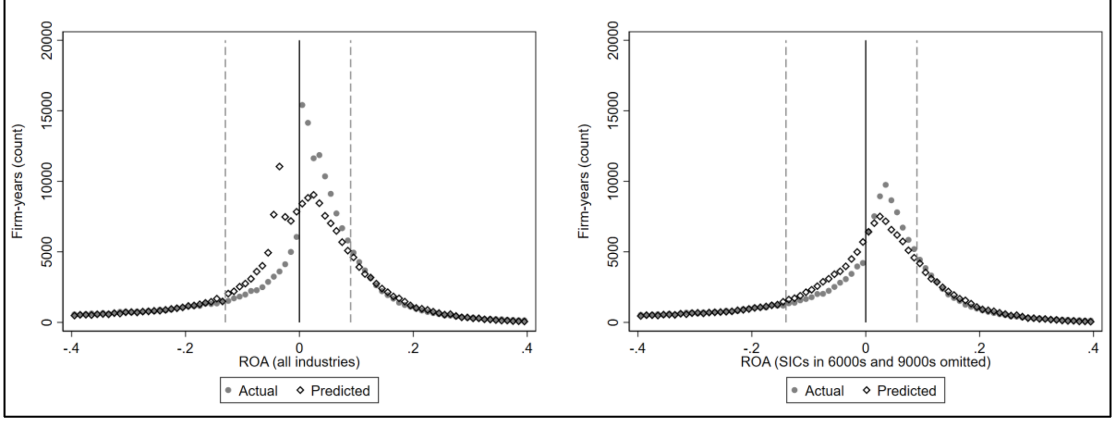
Setting aside any debate over the practical implications of this critique, there is a natural solution available in our empirical setting. If we assume that OCFOA is not manipulated, then the relationship between OCFOA and ROA helps identify the counterfactual distribution of ROA within the manipulated region. To implement this idea, we use the following model:

$$P = \beta CF_{x+T} + \sum_{x=L}^{-1} \alpha_x + \sum_{x=0}^{U} \gamma_x + \epsilon \tag{4}$$

where P is the number of observations with ROA equal to x, CF_{x+T} is the number observations with OCFOA equal to $x + T$, and all other parameters are defined as in equation (2). Comparing (4) to (2), it should be clear that we have simply replaced the polynomial previously used to extrapolate ROA in the region [L, U] with a linear function of the OCFOA that is "shifted" by T bins.

The reason we allow for the OCFOA distribution to be shifted relative to ROA is that operating activities are normally a profit center, so OCFOA generally exceeds ROA (e.g., due to taxes, depreciation, etc.). We select a value of T using the cross-validation procedure described in Chapter 2, searching over T rather than K (the degree of the polynomial). Figure B.1 shows the resulting histogram for all firms as well as the non-financial sample. As for earlier figures, the upper (U) and lower (L) bounds of the region of ROA manipulation are indicated by dashed lines, gray circles indicate the number of firm-year observations in each ROA bin, and black diamonds represent the counterfactual estimate for that bin imputed from the model.

Figure B.1: Comparison of Imputed Vs. Actual ROA - Alternative Method



For both panels, the cross-validation procedure selected a leftward shift of 5 bins for OCFOA (T = 5). The left panel shows the results from the full sample, which has a lower bound (L) of -0.13, an upper bound (U) of 0.09, and a total amount of displaced probability mass of 16.8 percent. The right panel shows the results from the non-financial sample, which has a lower bound (L) of -0.14, an upper bound (U) of 0.09, and a total amount of displaced probability mass of 6.4 percent. In both cases, our estimates of total earnings manipulation decline slightly, because the distribution of OCFOA has a more pronounced peak than the counterfactuals based on a polynomial approximation. This can be seen by comparing Figures B.1 and 2-3.

Finally, we note the spike in the predicted values of ROA just below zero in the left panel. This corresponds to a discontinuity in the distribution of OCFOA for financial firms that can also be observed in the top right panel of Figure 2-5. We interpret this spike as evidence of real earnings management (i.e., manipulation that also influences OCF) by financial firms. It suggests that the approach used in this Appendix will work better for the non-financial sector, whereas the standard approach of relying on a polynomial extrapolation may be more reliable for the full sample.

Appendix C: Supplemental Tables and Figures for Chapter 2

Figure C.1: Binned Scatterplot of ROA and OCFOA

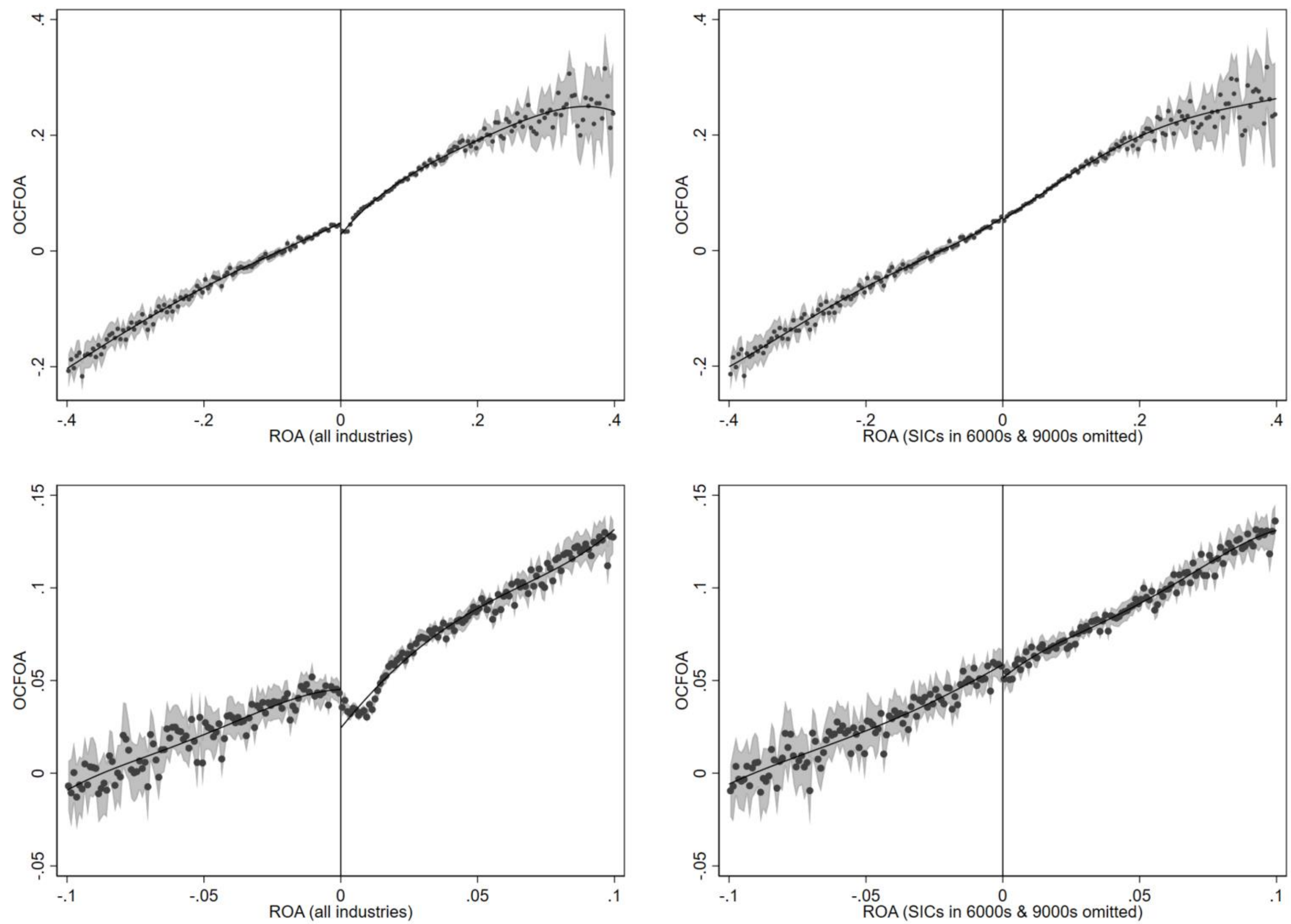


Figure C.2: Comparison of ROA and OCFOA Histograms

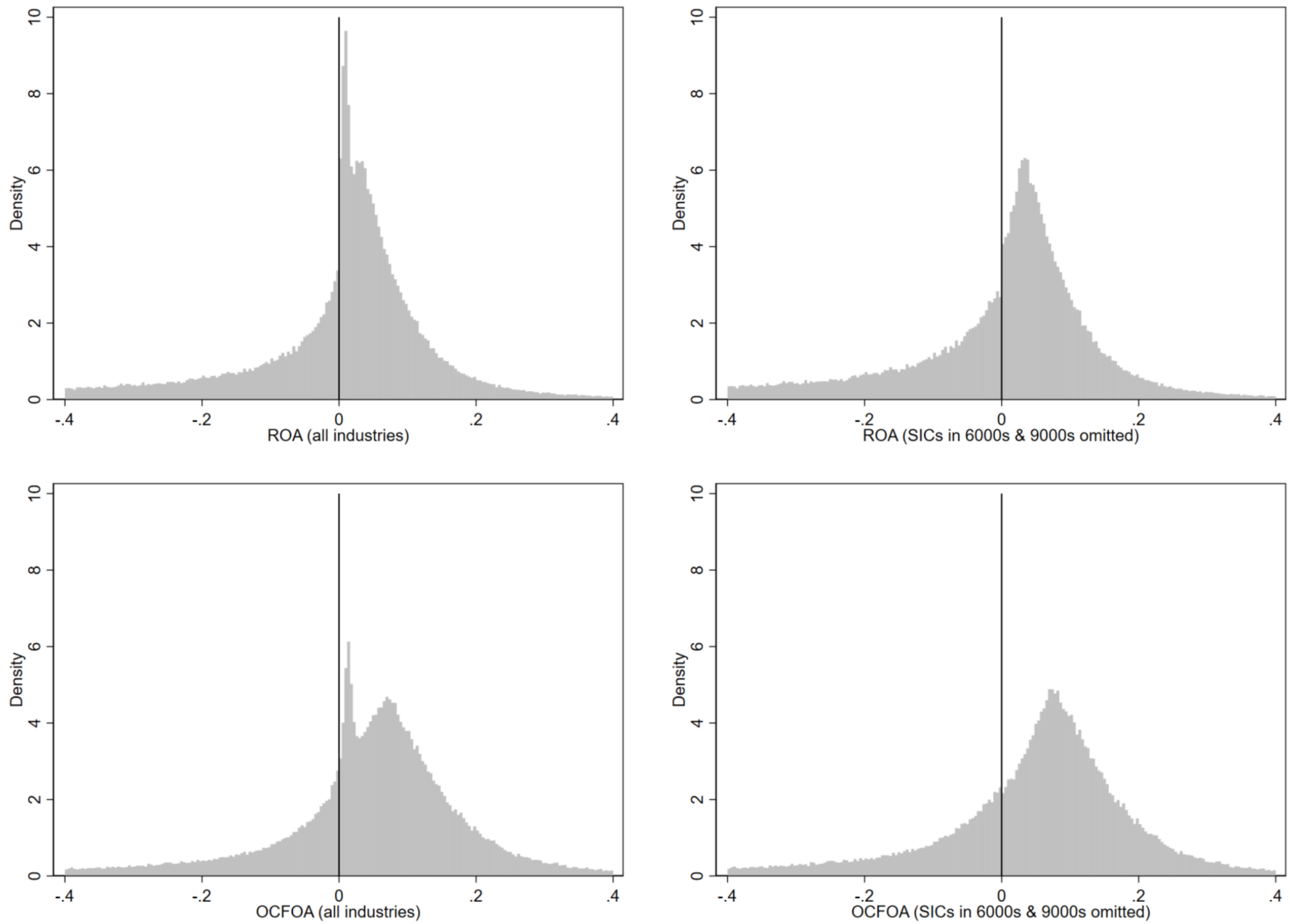


Figure C.3: Comparison of Smoothing Vs. ROA and OCFOA

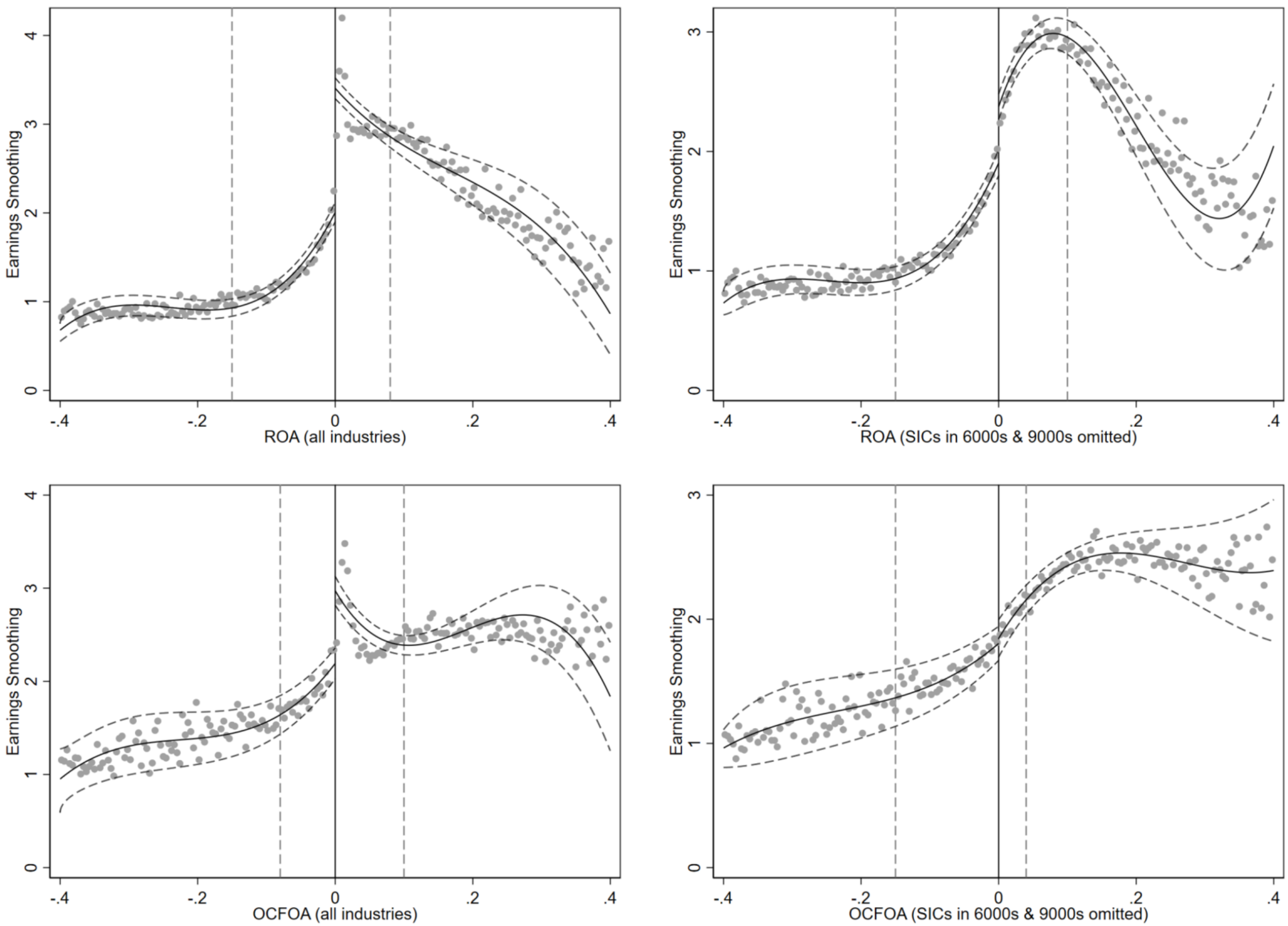


Table C.1: Nested and Simultaneous ANOVA Results

All Industries - Nested ANOVA

Category	ROA Variance Explained	ROA Percentage of Explained Var.	OCFOA Variance Explained	OCFOA Percentage of Explained Var.
Year	.0138	2.61	.0032	0.51
Industry	.0700	13.23	.1520	24.34
Firm	.3071	58.02	.3494	55.95
CEO	.1384	26.15	.1199	19.20
Full Model	.5293	100	.6245	100

All Industries - Simultaneous ANOVA

Category	ROA Variance Explained	ROA Percentage of Explained Var.	OCFOA Variance Explained	OCFOA Percentage of Explained Var.
Year	.0149	3.65	.0033	0.89
Industry	.0212	5.19	.0254	6.86
Firm	.2128	52.07	.2120	57.22
CEO	.1598	39.10	.1298	35.03
Full Model	.5555	100	.6386	100

SICs in 6000s and 9000s Omitted - Nested ANOVA

Category	ROA Variance Explained	ROA Percentage of Explained Var.	OCFOA Variance Explained	OCFOA Percentage of Explained Var.
Year	.0147	2.79	.0019	0.31
Industry	.0624	11.85	.1155	19.07
Firm	.3112	59.07	.3626	59.86
CEO	.1385	26.29	.1257	20.75
Full Model	.5268	100	.6057	100

SICs in 6000s and 9000s Omitted - Simultaneous ANOVA

Category	ROA Variance Explained	ROA Percentage of Explained Var.	OCFOA Variance Explained	OCFOA Percentage of Explained Var.
Year	.0165	3.99	.0038	1.00
Industry	.0196	4.74	.0232	6.05
Firm	.2162	52.30	.2200	57.35
CEO	.1611	38.97	.1366	35.61
Full Model	.5544	100	.6215	100

Appendix D: Supplementary Tables and Figures for Chapter 3

Figure D.1: Specification Map of Regressions of Aspiration Attainment on Earnings Smoothing - All Industries, Full Sample

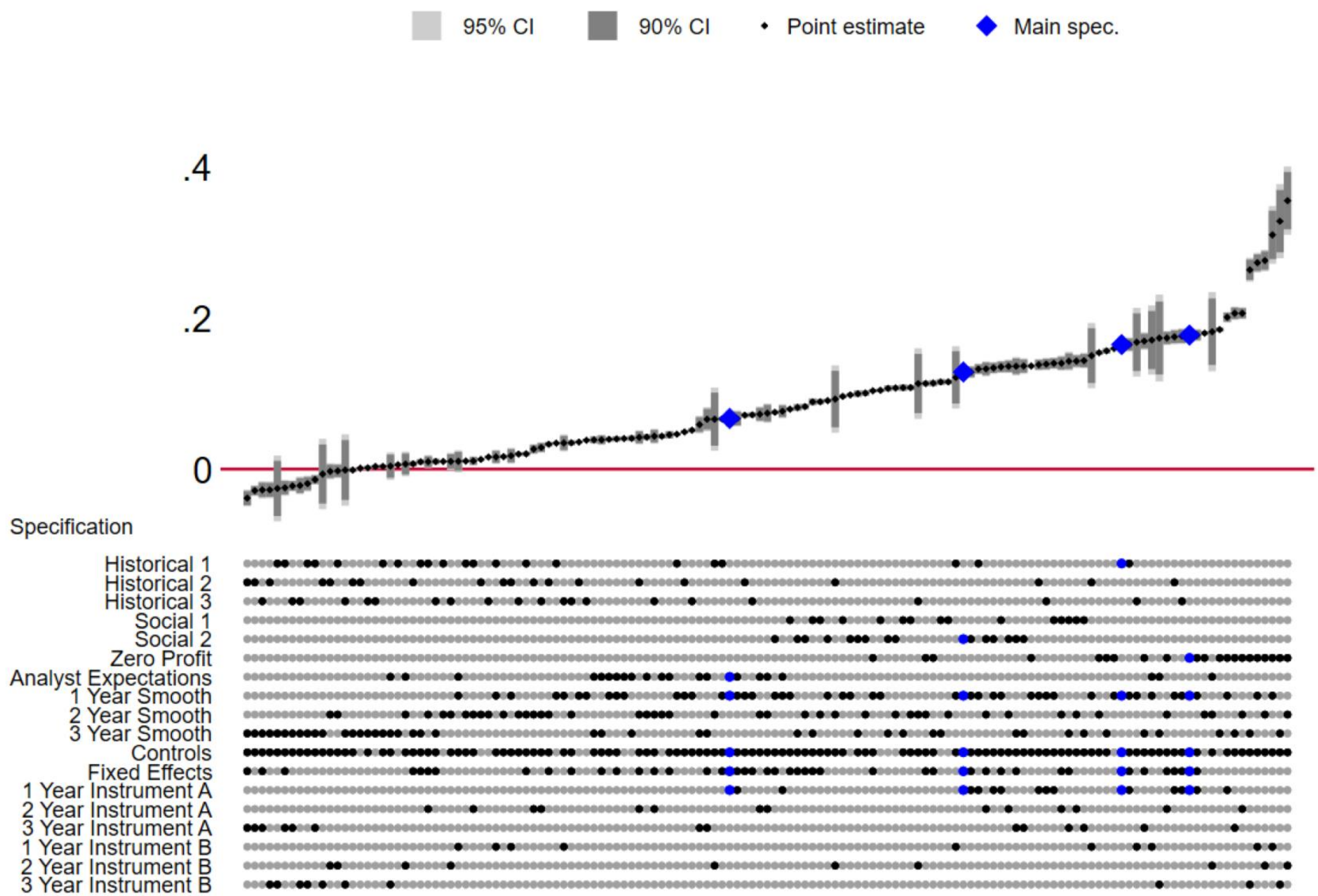


Figure D.2: Specification Map of Regressions of Aspiration Attainment on Earnings Smoothing - Non-Financial Firms

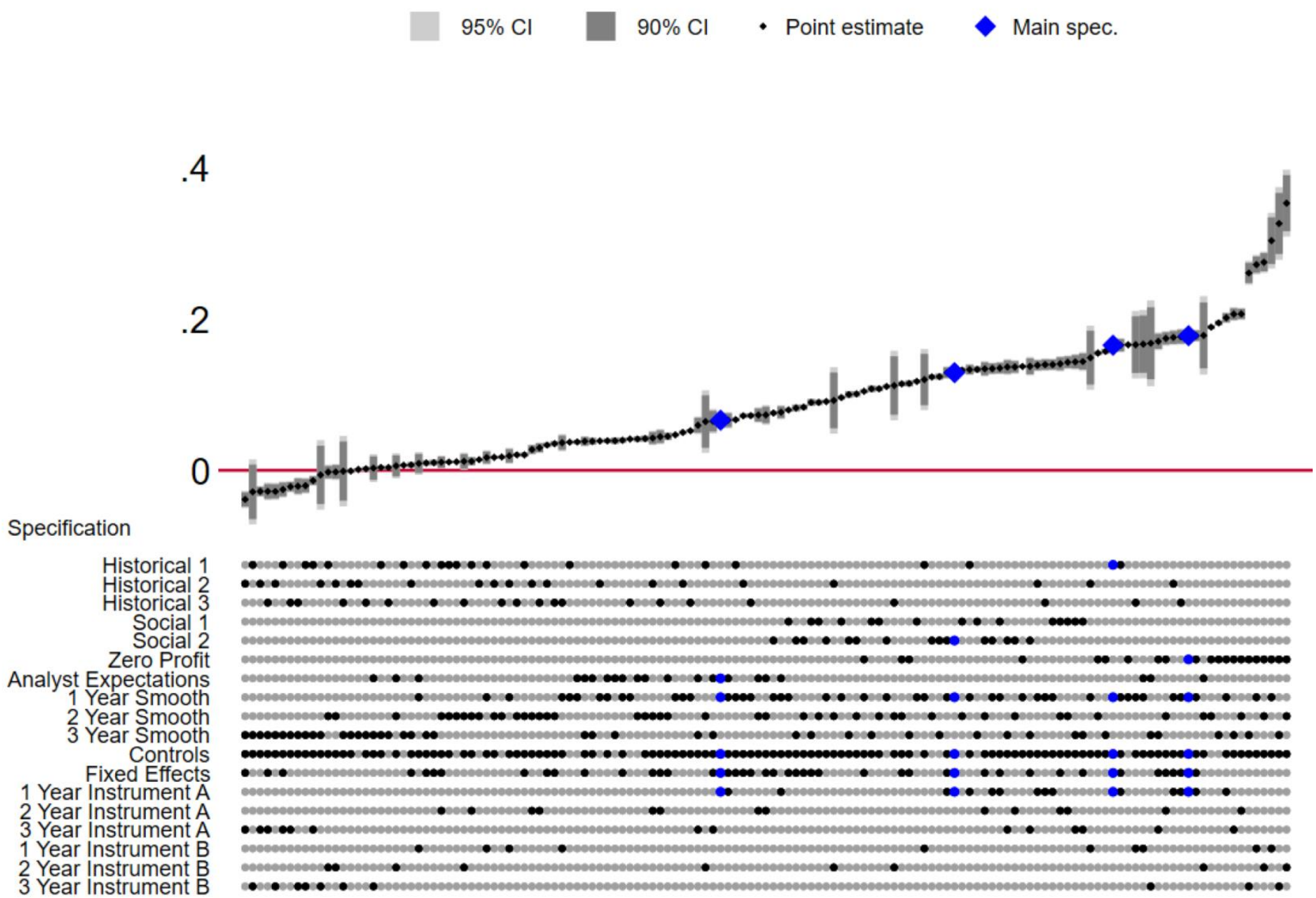


Figure D.3: Specification Map of Regressions of Aspiration Attainment on Earnings Smoothing - Post-SOX

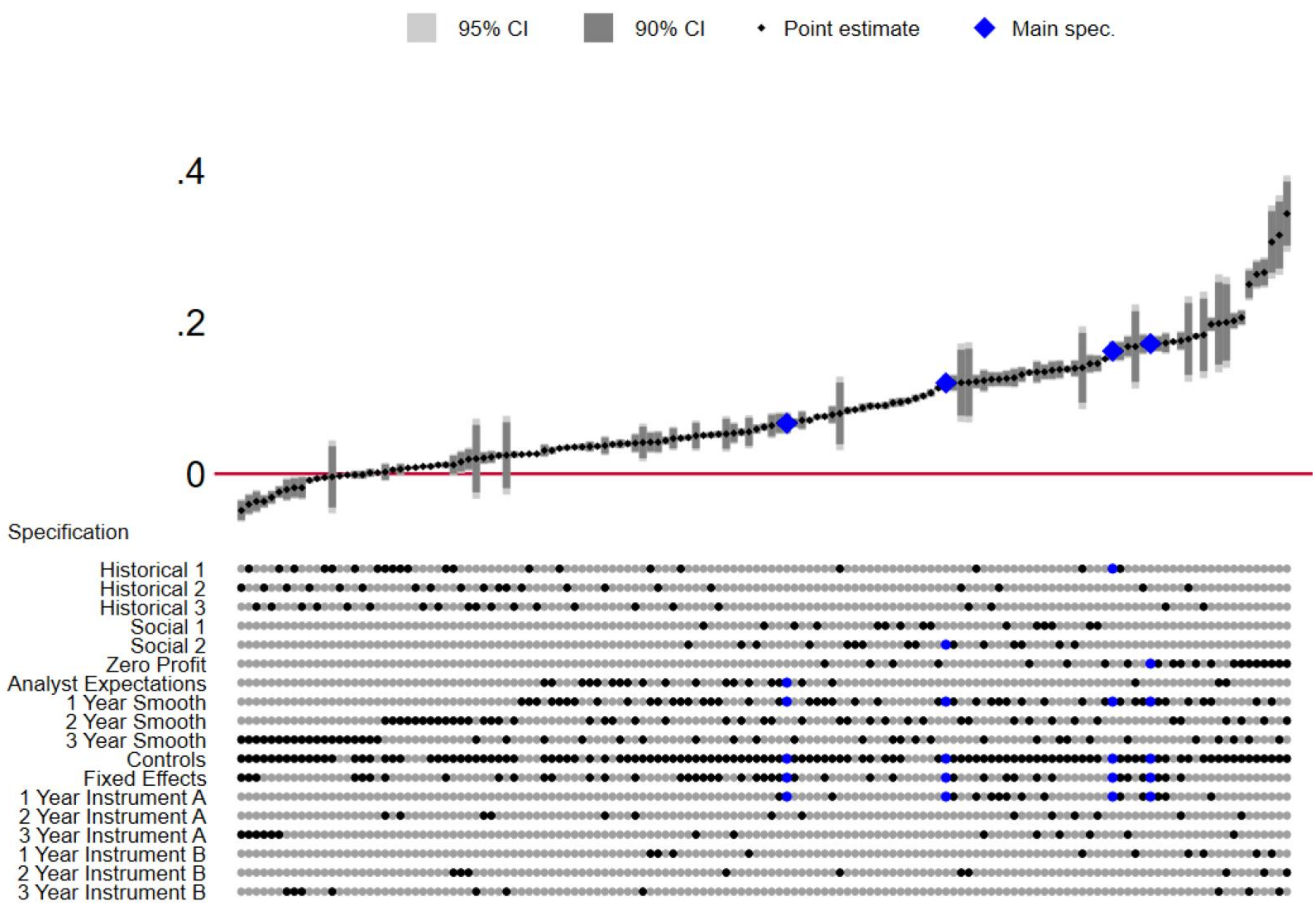


Table D.4: Regression of Historical Aspiration Attainment on Earnings Smoothing (H1)

Model Number	A1.1	A1.2	A1.3	A1.4	A1.5	A1.6	A1.7
Outcome Variable	Exceed Historical Aspiration	Exceed Historical Aspiration	Exceed Historical Aspiration	Exceed Historical Aspiration	Exceed Historical Aspiration	Exceed Historical Aspiration	Exceed Historical Aspiration
Model Type	Logit	Logit	Logit	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	0.139	0.188	0.267	0.133	0.165	0.0161	0.121
	(0.00367)	(0.00500)	(0.00601)	(0.00370)	(0.00481)	(0.00480)	(0.0211)
Firm Size		-0.0132	0.00554	-0.0156	-0.0180	0.000567	-0.00441
		(0.00199)	(0.00810)	(0.000904)	(0.00326)	(0.000755)	(0.00296)
Firm Age		0.00847	-0.00532	-0.00506	-0.00292	0.00276	0.00326
		(0.00745)	(0.0304)	(0.00285)	(0.0111)	(0.00181)	(0.00738)
Altman Z		-0.000412	0.0184	-0.00426	0.00942	0.000180	0.00194
		(0.00855)	(0.0157)	(0.00283)	(0.00342)	(0.00186)	(0.00375)
Financial Slack		-0.0226	0.0197	-0.0281	-0.00253	0.00209	-0.00277
		(0.00566)	(0.0109)	(0.00225)	(0.00416)	(0.00179)	(0.00405)
Organizational Slack		-0.0621	0.0397	-0.0387	0.0258	-0.00942	0.0147
		(0.00592)	(0.0152)	(0.00238)	(0.00553)	(0.00171)	(0.00422)
Year Fixed Effects			X		X		X
Firm Fixed Effects			X		X		X
Instrument (Spec. Items)				X	X		
Instrument (Peer Smooth)						X	X
Observations	174029	121395	116862	67476	64972	120528	118836
Pseudo or Adjusted R^2	0.006	0.010	0.026	-0.017	-0.009	0.008	0.006
1st stage coeff.				-0.347	-0.329	0.515	0.230
				(0.004)	(0.004)	(0.011)	(0.013)
F test of excl. inst.				8908.73	7804.09	2081.49	301.14

Standard errors in parentheses. Standard errors are robust and clustered at the firm level

Table D.5: Regression of Social Aspiration Attainment on Earnings Smoothing (H1)

Model Number	A2.1	A2.2	A2.3	A2.4	A2.5	A2.6	A2.7
Outcome Variable	Exceed Social Aspiration	Exceed Social Aspiration	Exceed Social Aspiration	Exceed Social Aspiration	Exceed Social Aspiration	Exceed Social Aspiration	Exceed Social Aspiration
Model Type	Logit	Logit	Logit	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	0.432	0.449	0.461	0.0812	0.129	-0.151	-0.319
	(0.00691)	(0.00809)	(0.00757)	(0.00183)	(0.00418)	(0.00957)	(0.0317)
Firm Size		0.212	0.407	0.0363	0.0305	0.0698	0.0903
		(0.00564)	(0.0115)	(0.00119)	(0.00300)	(0.00164)	(0.00476)
Firm Age		0.0256	-0.0867	0.0199	0.0168	0.0121	-0.0426
		(0.0164)	(0.0342)	(0.00416)	(0.0106)	(0.00405)	(0.0118)
Altman Z		-0.0592	-0.0832	-0.0156	-0.0153	-0.0124	-0.0128
		(0.0142)	(0.0490)	(0.00573)	(0.00639)	(0.00499)	(0.00836)
Financial Slack		0.398	0.510	0.0460	0.0433	0.116	0.106
		(0.0141)	(0.0161)	(0.00298)	(0.00366)	(0.00373)	(0.00608)
Organizational Slack		-0.280	-0.350	-0.0606	-0.0357	-0.00375	-0.0740
		(0.0152)	(0.0206)	(0.00353)	(0.00520)	(0.00397)	(0.00671)
Year Fixed Effects			X		X		X
Firm Fixed Effects			X		X		X
Instrument (Spec. Items)				X	X		
Instrument (Peer Smooth)						X	X
Observations	185821	128917	101373	70056	67419	127971	126235
Pseudo or Adjusted R^2	0.056	0.147	0.090	0.166	0.038	-0.164	-0.961
1st stage coeff.				-0.346	-0.329	0.518	0.226
				(0.004)	(0.004)	(0.011)	(0.013)
F test of excl. inst.				9206.65	8003.27	2240.65	310.03

Standard errors in parentheses. Standard errors are robust and clustered at the firm level

* Peer Smoothing instrument and Social Aspirations have extreme collinearity; likely not meaningful

Table D.6: Regression of Natural Aspiration Attainment on Earnings Smoothing (H1)

Model Number	A3.1	A3.2	A3.3	A3.4	A3.5	A3.6	A3.7
Outcome Variable	Exceed Zero Profit	Exceed Zero Profit	Exceed Zero Profit	Exceed Zero Profit	Exceed Zero Profit	Exceed Zero Profit	Exceed Zero Profit
Model Type	Logit	Logit	Logit	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	0.871	0.850	0.757	0.201	0.177	0.273	0.310
	(0.00783)	(0.00972)	(0.00897)	(0.00360)	(0.00409)	(0.00667)	(0.0195)
Firm Size		0.355	0.541	0.0432	0.0302	0.0374	0.0284
		(0.00596)	(0.0134)	(0.00103)	(0.00303)	(0.00118)	(0.00322)
Firm Age		0.224	-0.0738	0.0449	0.0208	0.0367	0.00763
		(0.0163)	(0.0401)	(0.00324)	(0.00934)	(0.00265)	(0.00728)
Altman Z		-0.0625	-0.265	-0.0111	-0.0151	-0.0164	-0.0148
		(0.0197)	(0.0466)	(0.00536)	(0.00651)	(0.00521)	(0.00457)
Financial Slack		0.300	0.613	-0.000332	0.0442	-0.00504	0.0208
		(0.0143)	(0.0181)	(0.00261)	(0.00370)	(0.00269)	(0.00412)
Organizational Slack		-0.257	-0.404	-0.0586	-0.0246	-0.0611	-0.0164
		(0.0155)	(0.0232)	(0.00285)	(0.00515)	(0.00276)	(0.00479)
Year Fixed Effects			X		X		X
Firm Fixed Effects			X		X		X
Instrument (Spec. Items)				X	X		
Instrument (Peer Smooth)						X	X
Observations	185821	128917	94200	70056	67419	127971	126235
Pseudo or Adjusted R^2	0.172	0.303	0.195	0.294	0.074	0.224	-0.212
1st stage coeff.				-0.346	-0.329	0.518	0.226
				(0.004)	(0.004)	(0.011)	(0.013)
F test of excl. inst.				9206.65	8003.27	2240.65	310.03

Standard errors in parentheses. Standard errors are robust and clustered at the firm level

Table D.7: Regression of Analyst Expectation Aspiration Attainment on Earnings Smoothing (H1)

Model Number	A4.1	A4.2	A4.3	A4.4	A4.5	A4.6	A4.7
Outcome Variable	Exceed Analyst Consensus	Exceed Analyst Consensus	Exceed Analyst Consensus	Exceed Analyst Consensus	Exceed Analyst Consensus	Exceed Analyst Consensus	Exceed Analyst Consensus
Model Type	Logit	Logit	Logit	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	0.171	0.174	0.191	0.0765	0.0670	0.0103	0.171
	(0.00611)	(0.00748)	(0.00893)	(0.00467)	(0.00544)	(0.00753)	(0.0234)
Firm Size		0.122	0.117	0.0242	0.0146	0.0302	0.00919
		(0.00592)	(0.0168)	(0.00174)	(0.00604)	(0.00151)	(0.00501)
Firm Age		-0.103	-0.451	-0.0261	-0.107	-0.0247	-0.0923
		(0.0143)	(0.0430)	(0.00421)	(0.0164)	(0.00337)	(0.0121)
Altman Z		7.979	13.15	0.560	2.203	1.093	1.756
		(1.892)	(1.309)	(0.556)	(1.058)	(0.389)	(0.419)
Financial Slack		0.124	0.0641	0.0316	0.0143	0.0370	-0.00155
		(0.0212)	(0.0266)	(0.00574)	(0.0104)	(0.00473)	(0.00740)
Organizational Slack		-0.144	0.107	-0.0538	0.0239	-0.0232	0.0357
		(0.0125)	(0.0303)	(0.00381)	(0.00968)	(0.00380)	(0.00825)
Year Fixed Effects			X		X		X
Firm Fixed Effects			X		X		X
Instrument (Spec. Items)				X	X		
Instrument (Peer Smooth)						X	X
Observations	94669	71661	63135	42430	40372	71222	69822
Pseudo or Adjusted R^2	0.009	0.022	0.026	0.025	0.009	0.022	-0.067
1st stage coeff.				-0.345	-0.329	0.580	0.284
				(0.005)	(0.005)	(0.014)	(0.016)
F test of excl. inst.				5703.89	4916.51	1775.38	309.56

Standard errors in parentheses. Standard errors are robust and clustered at the firm level

Figure D.8: Specification Map of Regressions of Resource Change on Earnings Smoothing - All Industries, Full Sample

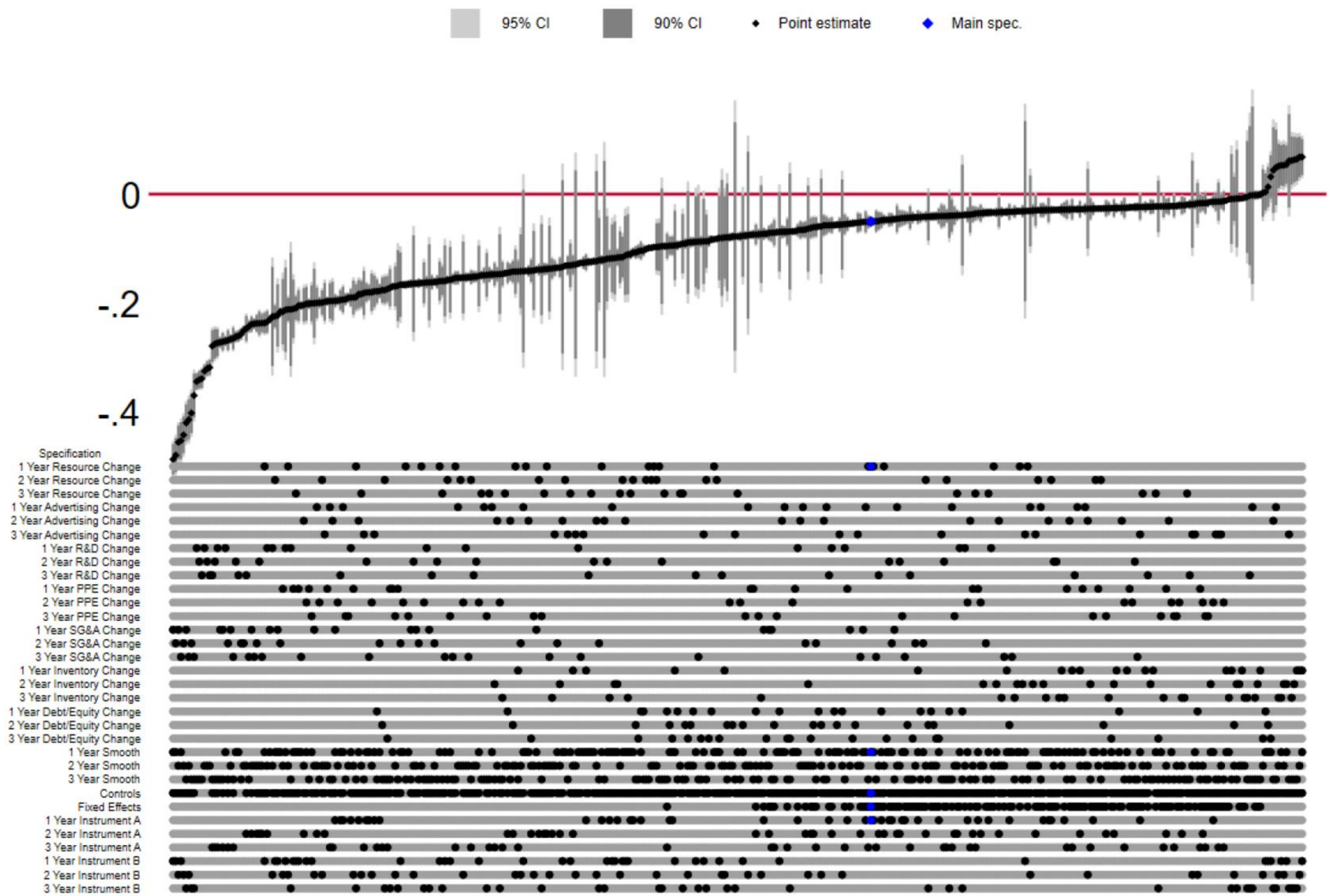


Figure D.9: Specification Map of Regressions of Resource Change on Earnings Smoothing - Non-Financial Firms

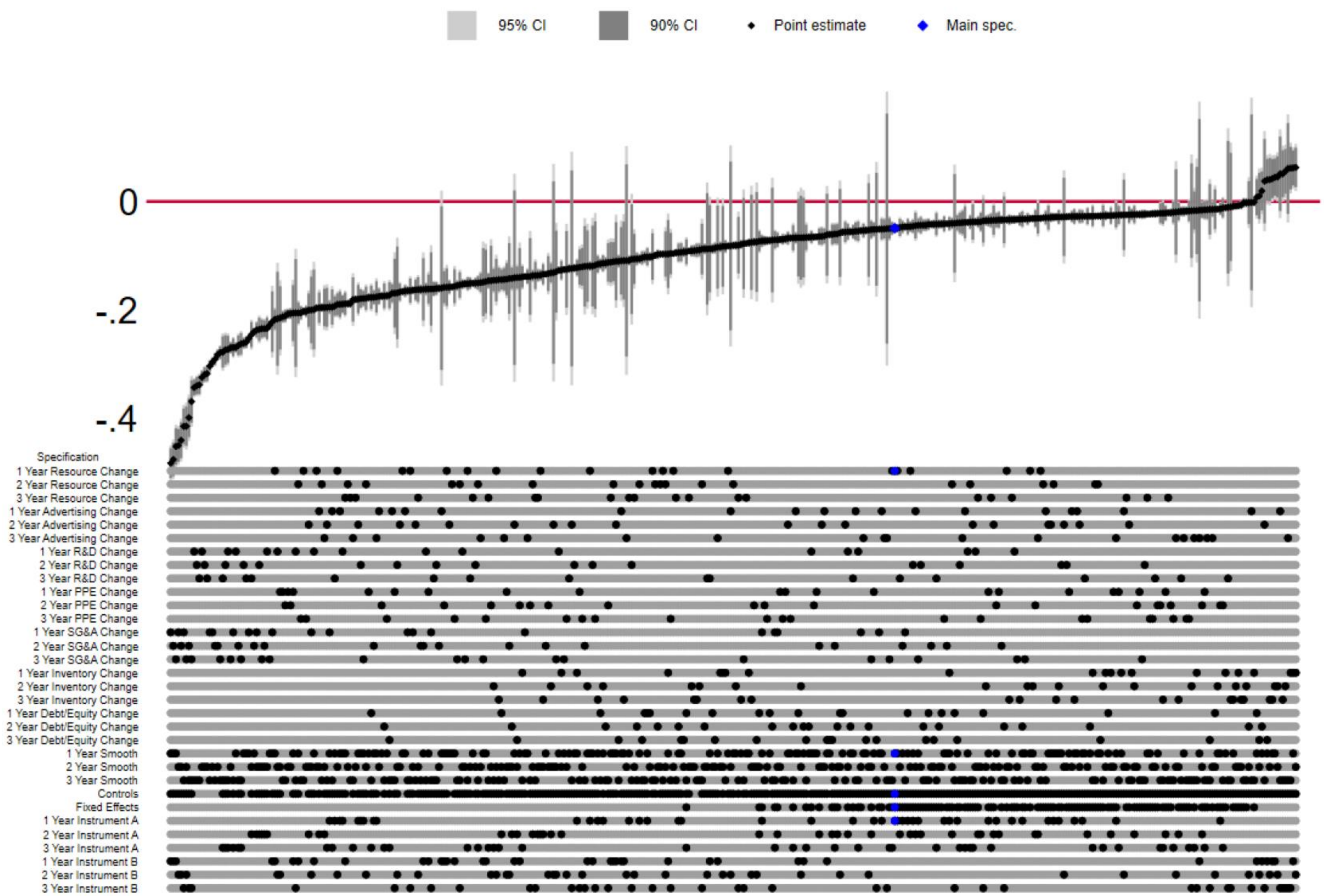


Figure D.10: Specification Map of Regressions of Resource Change on Earnings Smoothing - Post-SOX

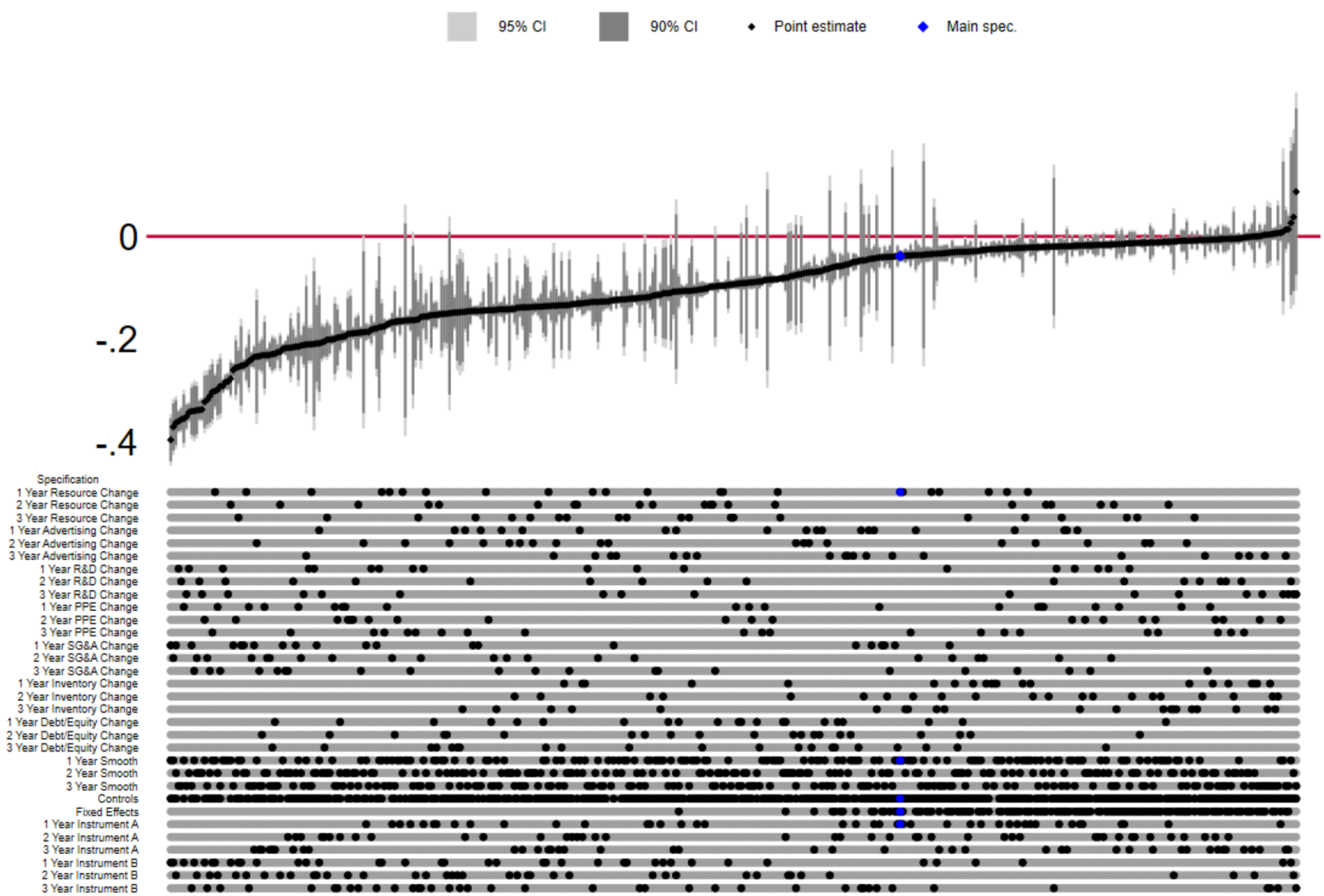


Table D.11: Regression of Advertising Change on Earnings Smoothing (H2)

Model Number	B1.1	B1.2	B1.3	B1.4	B1.5	B1.6	B1.7
Outcome Variable	Advertising Change	Advertising Change	Advertising Change	Advertising Change	Advertising Change	Advertising Change	Advertising Change
Model Type	OLS	OLS	OLS	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	-0.279	-0.131	-0.0523	-0.366	-0.0965	-0.223	-0.267
	(0.0101)	(0.0110)	(0.00801)	(0.0270)	(0.0218)	(0.0718)	(0.172)
Firm Size		-0.265	-0.385	-0.224	-0.356	-0.253	-0.360
		(0.00904)	(0.0252)	(0.0115)	(0.0320)	(0.0126)	(0.0329)
Firm Age		-0.252	-0.205	-0.194	-0.278	-0.255	-0.201
		(0.0262)	(0.0515)	(0.0322)	(0.0702)	(0.0262)	(0.0516)
Altman Z		-0.0357	0.154	0.0542	0.192	-0.0113	0.153
		(0.159)	(0.0513)	(0.117)	(0.0384)	(0.150)	(0.0471)
Financial Slack		-0.121	0.0331	-0.0884	0.0576	-0.0956	0.0690
		(0.0203)	(0.0242)	(0.0260)	(0.0316)	(0.0301)	(0.0382)
Organizational Slack		-0.163	-0.0797	-0.119	-0.0480	-0.143	-0.0907
		(0.0237)	(0.0302)	(0.0287)	(0.0384)	(0.0297)	(0.0318)
Year Fixed Effects			X		X		X
Firm Fixed Effects			X		X		X
Instrument (Spec. Items)				X	X		
Instrument (Peer Smooth)						X	X
Observations	50391	37194	36150	21159	19888	36903	35864
Adjusted R^2	0.038	0.196	0.534	0.155	0.023	0.194	0.006
1st stage coeff.				-0.339	-0.314	0.447	0.165
				(0.006)	(0.007)	(0.019)	(0.023)
F test of excl. inst.				2829.22	2266.60	569.82	53.26

Standard errors in parentheses. Standard errors are robust and clustered at the firm level

Table D.12: Regression of R&D Change on Earnings Smoothing (H2)

Model Number	B2.1	B2.2	B2.3	B2.4	B2.5	B2.6	B2.7
Outcome Variable	R&D Change	R&D Change	R&D Change	R&D Change	R&D Change	R&D Change	R&D Change
Model Type	OLS	OLS	OLS	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	-0.753	-0.356	-0.108	-0.530	-0.185	-2.508	-0.593
	(0.0148)	(0.0101)	(0.00657)	(0.0267)	(0.0187)	(0.0995)	(0.131)
Firm Size		-0.586	-0.671	-0.551	-0.638	-0.312	-0.610
		(0.0108)	(0.0155)	(0.0127)	(0.0205)	(0.0163)	(0.0224)
Firm Age		-0.229	-0.0734	-0.157	-0.162	-0.0966	-0.108
		(0.0272)	(0.0407)	(0.0298)	(0.0541)	(0.0324)	(0.0411)
Altman Z		-0.721	0.0256	-0.624	0.0915	-0.560	-0.0101
		(0.161)	(0.0412)	(0.133)	(0.0507)	(0.0867)	(0.0413)
Financial Slack		0.0506	0.0588	0.106	0.0590	0.594	0.137
		(0.0236)	(0.0177)	(0.0280)	(0.0225)	(0.0401)	(0.0282)
Organizational Slack		-0.757	-0.175	-0.664	-0.176	-0.218	-0.157
		(0.0340)	(0.0260)	(0.0361)	(0.0319)	(0.0470)	(0.0270)
Year Fixed Effects			X		X		X
Firm Fixed Effects			X		X		X
Instrument (Spec. Items)				X	X		
Instrument (Peer Smooth)						X	X
Observations	63149	55133	54195	30627	29298	55013	54075
Adjusted R^2	0.113	0.491	0.760	0.471	0.108	-0.330	0.015
1st stage coeff.				-0.346	-0.334	0.505	0.224
				(0.005)	(0.006)	(0.018)	(0.022)
F test of excl. inst.				4219.54	3492.36	771.24	100.70

Standard errors in parentheses. Standard errors are robust and clustered at the firm level

Table D.13: Regression of Plant, Property, and Equipment Change on Earnings Smoothing (H2)

Model Number	B3.1	B3.2	B3.3	B3.4	B3.5	B3.6	B3.7
Outcome Variable	PPE Change	PPE Change	PPE Change	PPE Change	PPE Change	PPE Change	PPE Change
Model Type	OLS	OLS	OLS	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	-0.349	-0.140	-0.0568	-0.113	-0.0727	-0.421	-0.434
	(0.00707)	(0.00604)	(0.00436)	(0.0154)	(0.0130)	(0.0356)	(0.0671)
Firm Size		-0.250	-0.453	-0.257	-0.434	-0.216	-0.410
		(0.00567)	(0.0117)	(0.00676)	(0.0157)	(0.00696)	(0.0142)
Firm Age		-0.0651	-0.115	-0.0117	-0.155	-0.0623	-0.146
		(0.0136)	(0.0269)	(0.0163)	(0.0365)	(0.0135)	(0.0276)
Altman Z		-0.201	0.0493	-0.182	0.0185	-0.180	0.00959
		(0.0547)	(0.0544)	(0.0623)	(0.0635)	(0.0529)	(0.0523)
Financial Slack		-0.312	-0.0698	-0.327	-0.0503	-0.245	-0.0141
		(0.0119)	(0.0124)	(0.0150)	(0.0168)	(0.0148)	(0.0161)
Organizational Slack		-1.055	-0.550	-1.002	-0.551	-0.997	-0.581
		(0.0141)	(0.0183)	(0.0174)	(0.0244)	(0.0160)	(0.0195)
Year Fixed Effects			X		X		X
Firm Fixed Effects			X		X		X
Instrument (Spec. Items)				X	X		
Instrument (Peer Smooth)						X	X
Observations	152701	115531	113814	61455	59038	114716	113004
Adjusted R^2	0.051	0.332	0.584	0.304	0.082	0.305	0.016
1st stage coeff.				-0.348	-0.330	0.516	0.229
				(0.004)	(0.004)	(0.011)	(0.013)
F test of excl. inst.				8268.20	7076.82	2023.58	291.78

Standard errors in parentheses. Standard errors are robust and clustered at the firm level

Table D.14: Regression of Selling, General, and Administrative Change on Earnings Smoothing (H2)

Model Number	B4.1	B4.2	B4.3	B4.4	B4.5	B4.6	B4.7
Outcome Variable	SG&A Change	SG&A Change	SG&A Change	SG&A Change	SG&A Change	SG&A Change	SG&A Change
Model Type	OLS	OLS	OLS	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	-0.458	-0.276	-0.102	-0.390	-0.145	-0.970	-0.444
	(0.00741)	(0.00553)	(0.00444)	(0.0138)	(0.0127)	(0.0343)	(0.0693)
Firm Size		-0.434	-0.550	-0.425	-0.547	-0.350	-0.510
		(0.00549)	(0.0116)	(0.00657)	(0.0153)	(0.00645)	(0.0143)
Firm Age		-0.129	-0.0464	-0.0906	-0.133	-0.130	-0.0771
		(0.0127)	(0.0254)	(0.0145)	(0.0353)	(0.0126)	(0.0262)
Altman Z		-0.197	-0.0188	-0.214	0.0303	-0.165	-0.0295
		(0.0803)	(0.0441)	(0.140)	(0.0605)	(0.0745)	(0.0443)
Financial Slack		-0.0737	-0.0164	-0.0254	-0.00859	0.123	0.0420
		(0.0122)	(0.0114)	(0.0152)	(0.0155)	(0.0156)	(0.0167)
Organizational Slack		-0.158	-0.106	-0.121	-0.0971	0.00536	-0.137
		(0.0122)	(0.0161)	(0.0141)	(0.0212)	(0.0146)	(0.0176)
Year Fixed Effects			X		X		X
Firm Fixed Effects			X		X		X
Instrument (Spec. Items)				X	X		
Instrument (Peer Smooth)						X	X
Observations	129922	102579	100970	55390	53181	101839	100233
Adjusted R^2	0.092	0.415	0.600	0.408	0.079	0.246	0.019
1st stage coeff.				-0.355	-0.335	0.504	0.220
				(0.004)	(0.004)	(0.012)	(0.014)
F test of excl. inst.				7776.40	6517.13	1736.96	254.73

Standard errors in parentheses. Standard errors are robust and clustered at the firm level

Table D.15: Regression of Inventory Change on Earnings Smoothing (H2)

Model Number	B5.1	B5.2	B5.3	B5.4	B5.5	B5.6	B5.7
Outcome Variable	Inventory Change	Inventory Change	Inventory Change	Inventory Change	Inventory Change	Inventory Change	Inventory Change
Model Type	OLS	OLS	OLS	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	-0.0620	-0.0473	-0.0224	-0.238	-0.0803	0.129	-0.178
	(0.00867)	(0.00661)	(0.00464)	(0.0165)	(0.0137)	(0.0381)	(0.0734)
Firm Size		-0.271	-0.334	-0.249	-0.298	-0.292	-0.315
		(0.00586)	(0.0119)	(0.00696)	(0.0163)	(0.00747)	(0.0151)
Firm Age		-0.00957	-0.0987	0.0323	-0.171	-0.0115	-0.120
		(0.0149)	(0.0265)	(0.0177)	(0.0374)	(0.0151)	(0.0275)
Altman Z		-1.293	-0.286	-1.490	-0.439	-1.366	-0.291
		(0.517)	(0.133)	(0.483)	(0.117)	(0.565)	(0.132)
Financial Slack		0.337	0.0681	0.416	0.0825	0.287	0.0959
		(0.0167)	(0.0121)	(0.0194)	(0.0166)	(0.0195)	(0.0184)
Organizational Slack		-0.0192	-0.285	0.0391	-0.278	-0.0677	-0.291
		(0.0167)	(0.0182)	(0.0179)	(0.0234)	(0.0203)	(0.0188)
Year Fixed Effects			X		X		X
Firm Fixed Effects			X		X		X
Instrument (Spec. Items)				X	X		
Instrument (Peer Smooth)						X	X
Observations	120033	93334	91982	49602	47682	92707	91357
Adjusted R^2	0.002	0.194	0.504	0.173	0.030	0.181	0.026
1st stage coeff.				-0.348	-0.329	0.504	0.217
				(0.004)	(0.004)	(0.012)	(0.014)
F test of excl. inst.				6885.42	5713.63	1632.62	233.43

Standard errors in parentheses. Standard errors are robust and clustered at the firm level

Table D.16: Regression of Debt/Equity Ratio Change on Earnings Smoothing (H2)

Model Number	B6.1	B6.2	B6.3	B6.4	B6.5	B6.6	B6.7
Outcome Variable	D/E Ratio Change	D/E Ratio Change	D/E Ratio Change	D/E Ratio Change	D/E Ratio Change	D/E Ratio Change	D/E Ratio Change
Model Type	OLS	OLS	OLS	2SLS	2SLS	2SLS	2SLS
Earnings Smoothing	-0.136	-0.130	-0.0577	-0.237	-0.110	0.00916	-0.158
	(0.00697)	(0.00831)	(0.00686)	(0.0218)	(0.0191)	(0.0474)	(0.102)
Firm Size		0.0309	0.0146	0.0569	0.0182	0.0149	0.0265
		(0.00624)	(0.0166)	(0.00813)	(0.0228)	(0.00838)	(0.0201)
Firm Age		-0.146	0.0164	-0.141	-0.0224	-0.145	0.00647
		(0.0193)	(0.0489)	(0.0243)	(0.0677)	(0.0195)	(0.0499)
Altman Z		0.120	0.129	0.0936	0.0892	0.112	0.127
		(0.0930)	(0.0602)	(0.0878)	(0.0309)	(0.0898)	(0.0582)
Financial Slack		-0.587	-0.364	-0.528	-0.316	-0.624	-0.350
		(0.0200)	(0.0223)	(0.0254)	(0.0291)	(0.0234)	(0.0281)
Organizational Slack		-0.136	0.0322	-0.120	0.0404	-0.165	0.0245
		(0.0168)	(0.0272)	(0.0213)	(0.0364)	(0.0196)	(0.0285)
Year Fixed Effects			X		X		X
Firm Fixed Effects			X		X		X
Instrument (Spec. Items)				X	X		
Instrument (Peer Smooth)						X	X
Observations	136374	96930	95153	53347	50992	96234	94462
Adjusted R^2	0.006	0.060	0.396	0.045	0.008	0.054	0.010
1st stage coeff.				-0.356	-0.337	0.521	0.230
				(0.004)	(0.004)	(0.012)	(0.014)
F test of excl. inst.				7424.65	6329.80	1829.61	259.74

Standard errors in parentheses. Standard errors are robust and clustered at the firm level

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