

Added Pressure to Perform: The Effect of S&P 500 Index Inclusion on Earnings Management

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Abstract

We investigate whether the added pressure of S&P 500 Index addition affects how managers use earnings management techniques. Using a difference-in-differences research design, we find that firms added to the S&P 500 Index use more income increasing discretionary accruals around Index addition than their peers. We investigate the effect of Sarbanes-Oxley on our results and find that managers of firms added to the S&P 500 Index use positive discretionary accruals to improve reported firm performance in the pre-SOX period but use income increasing real activities management in the post-SOX period. We investigate whether our results are sensitive to the amount of pressure added from index addition. We find that results hold only for high pressure added firms. Our results suggest that managers use financial reporting discretion more aggressively when the added pressure of Index addition is high.

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1. Introduction

Firms added to the S&P 500 Index gain membership into a select, high profile set of firms. Denis et al. (2003) suggest that S&P 500 Index inclusion puts pressure on corporate managers to improve reported firm performance. One source of pressure for managers of newly added firms may be external pressure from the increased media coverage, analyst coverage, regulatory scrutiny and institutional ownership of index inclusion. Another source of pressure may be internal pressure stemming from the manager's own desire to be worthy of inclusion into such a high profile group of corporate managers. Whatever the source of added pressure, we expect that S&P 500 Index inclusion puts added pressure on managers to improve firm performance. Given this added pressure to perform, we are interested in how managers achieve improvements in reported earnings. Managers have countless ways to achieve improvements in earnings. Our focus is on the use of earnings management techniques. Specifically, we investigate whether S&P 500 Index inclusion causes a shift in how managers use strategic operating decisions and financial reporting discretion to affect reported earnings.¹

We employ measures developed in the earnings management literature to examine discretionary accruals (Jones 1991) and unexpected operating activities (Roychowdhury 2006) around S&P 500 Index inclusion for firms added to the S&P 500 index relative to a peer portfolio of firms. Prior research finds that firms trade off accruals based earnings management and real operating activities management based on their relative costs (Roychowdhury 2006, Badertscher 2011, Zang 2012). We examine discretionary accruals and unexpected operating activities in a setting where an exogenous event, S&P 500 Index addition, is likely to cause a shift in the relative costs of these mechanisms.

¹ We use the terms earnings management techniques and financial reporting discretion interchangeably. Our use of these terms encompasses strategic accounting choices and judgments made by managers to either provide more informative financial statements or to obfuscate financial statements.

To provide evidence on how the earnings management techniques of newly added firms differ from peer firms around the years of addition, we follow Denis et al. (2003) and match firms added to the S&P 500 index with a peer portfolio of firms formed based on industry, size and liquidity (ISL). We then use a difference-in-differences research design to investigate significant differences in earnings, discretionary accruals and unexpected operating activities around the index inclusion years for firms added to the S&P 500 index relative to their peer portfolio firms.

We find earnings performance is lower in the year following S&P 500 Index addition. However, the decline in reported earnings is significantly smaller for firms added to the S&P 500 index than peer firms. Given that firms added to the S&P 500 Index have better relative performance around index addition, we investigate whether S&P 500 addition firms use financial reporting discretion or unexpected operating activities to achieve better earnings performance. We find a positive change in discretionary accruals around index addition that is significantly larger for S&P 500 index addition firms than peer firms. Thus, despite the added scrutiny and visibility of index addition, managers of addition firms use more income increasing accounting choices around index addition. We find no evidence in our main tests that managers shift from discretionary accruals to real operating decisions when faced with added pressure of index addition. Specifically, we investigate unexpected cash flows and unexpected discretionary spending around index addition for addition firms relative to peer firms. We find no significant differences in unexpected operating decisions around index addition for addition firms relative to peer firms.

We investigate the effect of high profile accounting scandals and Sarbanes-Oxley (SOX) on our main results. We find that the observed increase in positive discretionary accruals around

index inclusion for S&P 500 index addition firms is specific to the pre-SOX time period. Also, we find that in the post-SOX period, S&P 500 index addition firms have significant unexpected decreases in operating cash flows. Unexpected decreases in operating cash flows are consistent with income increasing operating decisions such as increased sales discounts and more lenient credit sales terms.

To provide further evidence that observed differences in discretionary accruals and unexpected operating activities stem from added pressure to perform, we sort our addition firms by the expected amount of added pressure. We use relative rank at index addition to partition firms based on the likelihood of increased scrutiny and pressure. Those firms that, upon addition, are ranked in the top 150 of the S&P 500 are likely to have substantial visibility and scrutiny before index addition and likely have low pressure added due to index addition. Given the effect of SOX on discretionary accruals and unexpected operating activities, we focus on discretionary accruals in the pre-SOX period and unexpected operating activities in the post-SOX period for high and low pressure added firms. We find that our results hold for high pressure added firms but do not hold for low pressure added firms. Our results suggest that when faced with added pressure of S&P 500 index inclusion, managers use financial reporting discretion more actively in the pre-Sox period. However, in the post-SOX period, managers use unexpected operating decisions to report more favorable changes in earnings performance than their peers.

Our paper contributes to the accounting and finance literatures in several ways. Our investigation adds to a growing stream of literature in accounting documenting real activities earnings management and the mix of accruals based and real activities based earnings management. We also contribute evidence specific to the financial reporting of firms added to

the S&P 500 index. Concurrent research by Martin, Thomas and Wieland (2013) finds that firms added to the S&P 500 index are less likely to provide conservative financial statements following addition. Conservatism is the tendency to understate assets and revenues and overstate liabilities and expenses. Conservative financial reporting results in the more timely recognition of expected losses than expected gains. Martin et al. (2013) measure conservatism using the estimated incremental earnings-returns relation when returns are negative, following Basu (1997). Our paper differs from Martin et al. (2013) in focus and research methodology. However, the implications we draw from our research findings complement the findings in Martin et al. (2013). We find that managers of firms added to the S&P 500 are more aggressively (and hence less conservatively) using income increasing financial reporting discretion around index addition than peer firms.

Our study also builds on the evidence in Denis et al. (2003) to provide evidence on *how* managers respond to the added pressure of S&P 500 Index inclusion. We find that managers under pressure from S&P 500 Index addition use income increasing financial reporting discretion more actively than their peers. Our findings do not imply that these managers are not also working harder to deliver real improvements in reported earnings, only that financial reporting discretion is an important tool used by the managers with the most added pressure of Index inclusion.

The remainder of the paper is organized as follows. We provide background information on S&P 500 index eligibility criteria and a review of related prior research in Section 2. In Section 3, we develop our research hypotheses. We discuss the sample selection and empirical methodology in Section 4 and provide the empirical results in Section 5. We offer our conclusions in Section 6.

2. Background Information and Review of Prior Literature

Firms are added to the S&P 500 index based on specific eligibility criteria. The criteria include market capitalization, liquidity, domicile, public float, sector classification and financial viability (S&P U.S. Indices Methodology, 2012). Financial viability is usually measured as four consecutive quarters of positive earnings. Standard & Poor's provides a disclaimer that, "Inclusion of a security within an index is not a recommendation by Standard & Poor's or its affiliates to buy, sell, or hold such security, nor is it considered to be investment advice." Standard and Poor's index selection criteria is based on historical information that should provide no new information about expected future cash flows or discount rates.

Studies in the empirical finance literature have investigated S&P 500 inclusion as an information free event. However, the overall evidence is not consistent with this claim. Firms added to the S&P 500 Index experience positive price changes upon inclusion to the Index (Shleifer, 1996; Jain, 1997; Dhillon and Johnson, 1991; Beneish and Whaley, 1996; Lynch and Mendenhall, 1997 and Wurgler and Zhuravskaya, 2002). The positive market response is puzzling given S&P 500 Index selection is based on historical performance, size, industry and stock liquidity; criteria that provide no new information about future cash flows or discount rates. Denis et al. (2003) argue that the market response does not reflect information in the S&P selection process but rather that firms added to the S&P have added pressure to perform. Denis et al. (2003) investigate analysts' earnings expectations around Index inclusion and find evidence consistent with the market impounding the expectation of improved future earnings. We investigate how managers respond to this added pressure of index inclusion.

Managers can affect the reported performance of the firm by using operating, investing and financing decisions and/or by using the discretion in financial reporting. The use of

discretion includes changing accounting estimates and changing the timing or structure of transactions. This discretion over financial reporting allows managers to more accurately reflect the economic performance of the firm in the reporting period. Prior research provides evidence that discretionary accruals are used informatively in certain contexts. Linck, Netter and Shu (2013) find that financially constrained firms with valuable investment opportunities use discretionary accruals as an informative signal of positive future prospects. Louis and Robinson (2005) find that managers use discretionary accruals informatively before stock splits. However, financial reporting discretion can also be used opportunistically by managers. Numerous studies in the accounting literature provide evidence that managers with incentives to affect earnings in a desired direction use financial reporting discretion opportunistically to achieve the desired effect on reported earnings (Dechow, Ge and Schrand, 2010). The combined evidence in prior research suggests that financial reporting discretion is used informatively and opportunistically. Our focus is not on why financial reporting discretion is used. Our study is motivated by the claim in Denis et al. (2003) that managers of firms added to the S&P 500 Index are under added pressure to perform and thereby exert greater effort. We investigate whether that greater effort extends to using financial reporting discretion more aggressively.

Prior literature on real activities management finds that managers trade off accruals based and real activities management based on their relative costs (Roychowdhury 2006, Badertscher 2011, Zang 2012). Survey evidence in Graham et al. (2005) reveals that managers face pressure to manage earnings and are willing to make real accounting choices that sacrifice future cash flows to meet current period earnings targets. An example of this “real” type of earnings management is cutting discretionary spending on advertising or research and development to achieve desired increases in reported earnings. Real activities management alters activities and

affects earnings and cash flows. In contrast, accruals based earnings management involves using accounting discretion to achieved desired changes in reported earnings without affecting cash flows. To provide evidence on the use of earnings management techniques in the context of firms added to the S&P 500 Index, we investigate both accruals based measures and real earnings management measures.

3. Hypothesis Development

Based on the argument in Denis et al. (2003) that managers of firms added to the S&P 500 Index experience added pressure to improve firm performance, we expect firms added to the S&P 500 Index will use more income increasing discretionary accruals or unexpected operating decisions than peer firms. If managers use these earnings management techniques as complements in this setting, we may find significant changes in both discretionary accruals and unexpected operating activities around index addition. However, if managers substitute one earnings management mechanism for another, we may find significant changes in one method and not others.

A tradeoff between discretionary accruals and unexpected operating activities will depend on changes in the relative costs of the mechanisms. S&P 500 Index inclusion is characterized by increased institutional ownership and analyst coverage (Chen, Noronha and Singal 2004; Yu 2008). Index inclusion also attracts more media coverage and regulatory scrutiny. All of these factors have been found to mitigate the opportunistic use of discretionary accruals in achieving desired reported earnings (Bushee 1998; Cohen, Dey and Lys 2008). This suggests that reliance on discretionary accruals may decrease with S&P 500 addition and managers may switch to operating decisions. However, because managers may also use

discretionary accruals informatively to provide better information about the future prospects of the firm, the use of discretionary accruals may increase upon index addition.

The added scrutiny of market participants increases the likelihood that earnings management is detected. The costs of detected opportunistic earnings management are the costs of SEC enforcement actions, earnings restatements, shareholder litigation, qualified audit reports, and negative coverage in the business press (Marquardt and Wiedman, 2004). Therefore, firms under additional scrutiny from auditors, investors, analysts and regulators may find the use of discretionary accruals too costly and may trade off the use of discretionary accruals for real operating activities management. Even firms using discretionary accruals informatively, may find it too costly if positive discretionary accruals are perceived as vehicles of opportunistic earnings management. We expect that the exogenous shock of S&P 500 addition results in significant changes in discretionary accruals, unexpected operating activities or both. We hypothesize that the direction of the change in discretionary accruals or unexpected operating activities around Index addition will be income increasing and will be significantly larger for firms added to the S&P 500 Index than for peer firms.²

4. Sample Selection and Research Methodology

Our initial sample consists of 821 firms that were added to the S&P 500 Index between September 22, 1976 and December 31, 2009. Standard and Poor's provides data on additions and deletions to the S&P 500 Index on its website.³ The information provided on S&P's website includes the firm added and the date the firm is added to the Index (the effective date). Our

² We specify the direction of the change as income increasing and not positive or negative because a positive change in discretionary accruals is income increasing, however negative changes in the unexpected operating activities (unexpected operating cash flows and unexpected discretionary expenses) are income increasing.

³ <http://www.standardandpoors.com>

initial sample includes the name of the firm added to the S&P 500 Index and the date it was announced that the firm would be added to the S&P 500 Index (announcement date).

Announcement dates for the years 1976-1999 were collected from Jeffrey Wurgler's website and announcement dates for the years 2000-2009 were hand-collected using searches in Lexis-Nexus.⁴ We are interested in whether the exogenous shock of S&P 500 index addition affects how managers use earnings management techniques around the announcement date ($t=0$).⁵ Financial statement information is provided on Compustat for the fiscal year, however the year of the announcement date is the calendar year. As a result, we adjust for the Compustat convention that fiscal years between June of year t and May of year $t+1$ are coded on Compustat as year t . We identify year $t=0$ based on the calendar year and match up the appropriate fiscal year financial reporting data from Compustat.

Table 1 provides details on how our main sample of addition firms is formed. We require firms to have reported operating cash flows in the Statement of Cash Flows.⁶ This data is not available until after 1987, which results in eliminating 212 observations. Because our calculation of discretionary accruals and unexpected operating performance require two previous years of data for each firm-year, our actual sample begins in 1989. There were 557 S&P 500 index additions after 1989. Following prior research, we exclude regulated financial firms and utilities. We also exclude observations with missing data or for which the requisite data is not available. Because S&P 500 Index addition criteria state that selection is usually based on four

⁴ <http://people.stern.nyu.edu/jwurgler/>

⁵ Our results on the difference in differences around Index addition ($t=0$) are unlikely to be affected by the measurement of $t=0$ based on the announcement date or the effective date.

⁶ Consistent with prior research, we start our data collection period in 1987 in order to use the cash flow from operations data that is reported in a firm's Statement of Cash Flows under the Statement of Financial Accounting Standards No. 95 (Collins and Hribar 2002). This cash flow from operations data is used in our estimate of discretionary accruals, and is available from the Compustat annual industrial and research files ("Compustat") beginning in 1987.

consecutive quarters of positive earnings, we delete any addition firms with negative EPS in year $t-1$. Also, we delete observations with negative changes in EPS greater than the 95th percentile. We truncate the long, fat left-hand tail of the distribution of changes in EPS because we are interested in managers under pressure to improve reported firm performance. For the 13 firms with extreme negative changes in EPS, the reported EPS is unlikely to be the metric of firm performance on which the manager is focused.⁷ Our final sample includes 254 firms that were added to the S&P 500 index with announcement dates between 1989 and 2009.

For the empirical tests of our hypotheses, we use a difference-in-differences approach. We compare changes in performance and earnings management mechanisms around Index addition for firms added to the S&P 500 Index relative to changes in a matched portfolio of peer firms across the same time period. Following Denis et al. (2003) and Standard and Poor's (2012), we identify peer firms by creating benchmark portfolios based on industry, size, and liquidity (ISL). This benchmark matches on criteria used by S&P for index inclusion. We first assign each firm into one of twelve Fama and French industries. Within each industry, we create three portfolios based on size, giving us thirty-six industry-size portfolios. Within each of these portfolios, we create three portfolios based on liquidity, giving us a total of 108 benchmark portfolios. We match each of the added firms with its respective ISL portfolio.⁸

Table 2 reports descriptive statistics for our sample of added firms and the ISL portfolio of peer firms around S&P 500 Index addition ($t=0$). We find no significant differences in market

⁷ Given a distribution of changes in EPS from 3.06 to -48.79, we investigate the reason for such extreme negative changes in EPS. We find that the 13 firms in the top 5% of negative changes in EPS have very, large negative one time items or are expensing stock options for the first time. Managers of these firms are likely to focus on some other non-GAAP measure of adjusted EPS and are unlikely to have pressure to improve the reported, GAAP EPS measure.

⁸ Size is computed as the average market cap from the monthly CRSP file over the prior twelve months. Liquidity is computed as the five-year moving average of the annual trading volume (computed from the monthly CRSP file over twelve months) divided by the number of shares outstanding in the last month of the five-year moving average.

values across added firms and the ISL matched portfolios. Given that we match on size, this provides evidence consistent with our matching procedures. In Table 2, we find that added firms have significantly higher market to book ratios than ISL firms, higher scaled sales, earnings before extraordinary items and operating cash flows. Even though S&P's criteria for selecting firms added to the Index do not include any measures of current or future performance, on average in the year of addition, S&P 500 Index firms have stronger sales, earnings, cash flows and market to book ratios.

In an unreported investigation of industry classifications of added firms, we find that 129 added firms are in manufacturing industries. Given that approximately half of our sample firms do not have the ability to manage earnings using production costs, we do not investigate changes in unexpected production costs as in Rohy Chowdhury (2006). In untabulated results, we also assess whether our sample of added firms have the ability to affect reported earnings using discretionary expenses. Discretionary expenses consist of research and development expenses, advertising expenses and selling, general and administrative expenses. The median discretionary expenses to total assets for our sample of added firms (ISL firms) is 33% (39%). The average Compustat firm across our sample period has median discretionary expenses to total assets of 38%. Rohy Chowdhury (2006) reports medians of discretionary expenses to total assets of 30% for suspect firm-years and 37% for the rest of the sample. Therefore, we expect that added firms will have the ability to affect reported earnings using discretionary spending and test changes in unexpected discretionary spending around index addition for added firms relative to peer firms.

Measurement of discretionary accruals and unexpected operating activities

Following prior accounting research, we use a cross-sectional model (Jones 1991) to estimate discretionary accruals. In particular, we estimate the following regression model for each 2-digit SIC industry group on an annual basis. Variable definitions are provided in the Appendix.

$$\frac{TA_{i,t}}{Assets_{i,t-1}} = \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

We require at least 8 observations for each industry-year combination. In addition, in order to limit the impact of extreme values on our regression, we winsorize the regression variables (both dependent and independent variables) at the 1% level.

The estimated industry-year coefficients from (1) are then used to compute fitted values of firm-specific nondiscretionary accruals (*NDA*) using (2) below:

$$NDA_{i,t} = \widehat{b}_1 \frac{1}{Assets_{i,t-1}} + \widehat{b}_2 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \widehat{b}_3 \frac{PPE_{i,t}}{Assets_{i,t-1}} \quad (2)$$

where \widehat{b}_1 , \widehat{b}_2 , and \widehat{b}_3 are the estimated industry-year coefficients from (1) above.

Finally, firm-specific discretionary accruals (*DA*) are computed as the difference between total accruals and the fitted nondiscretionary accruals computed in (2). In other words, discretionary accruals are defined as below:

$$DA_{i,t} = \frac{TA_{i,t}}{Assets_{i,t-1}} - NDA_{i,t} \quad (3)$$

We use two measures of unexpected operating activities: unexpected cash flows from operations and unexpected levels of discretionary expenses. Following prior research (Rohychowdhury 2006, Zang 2012), we first estimate the normal levels of these operating activities using the following industry-level regressions (variables are defined in the Appendix):

Normal levels of CFO:

$$\frac{CFO_{i,t}}{Assets_{i,t-1}} = \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{SALES_{i,t}}{Assets_{i,t-1}} + \beta_3 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (4)$$

Normal levels of discretionary expenses:

$$\frac{DISX_{i,t}}{Assets_{i,t-1}} = \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{SALES_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (5)$$

As with the calculation of nondiscretionary accruals, we require at least 8 observations for each industry-year combination.

The estimated industry-year coefficients from (4) and (5) are then used to compute fitted values of firm-specific expected levels of operating cash flows and discretionary expenses, respectively, using (6) and (7) below:

$$Fitted_CFO = \widehat{b}_1 \frac{1}{Assets_{i,t-1}} + \widehat{b}_2 \frac{SALES_{i,t}}{Assets_{i,t-1}} + \widehat{b}_3 \frac{\Delta SALES_{i,t}}{Assets_{i,t-1}} \quad (6)$$

$$Fitted_DISX = \widehat{b}_1 \frac{1}{Assets_{i,t-1}} + \widehat{b}_2 \frac{SALES_{i,t-1}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (7)$$

Finally, we compute firm-specific unexpected operating activities as the difference between actual operating activity less the fitted values. In other words, unexpected cash flows and unexpected discretionary expenses are defined as:

$$U_CFO = \frac{CFO_{i,t}}{Assets_{i,t-1}} - Fitted_CFO \quad (8)$$

$$U_DISX = \frac{DISX_{i,t}}{Assets_{i,t-1}} - Fitted_DISX \quad (9)$$

The above models attempt to capture real earnings management (as opposed to accrual management), which is defined by Rohychowdhury (2006) as “departures from normal *operational* [emphasis added] practices....” For example, reductions in discretionary expenses can occur in the normal course of business. However, if managers reduce discretionary expenses more than what would be suggested by business conditions in the firm or industry, the reductions (or at least a portion of them) may be indicative of real earnings management.

5. Empirical Results

We provide evidence on earnings performance around index addition in Table 3. We measure earnings performance using earnings per share before extraordinary items and earnings before extraordinary items scaled by lagged total assets. In Panels A and B of Table 3, we find, that earnings performance around Index addition declines, on average, for firms added to the S&P 500 Index. The mean difference in earnings per share (earnings scaled by lagged total assets) around index addition for firms added to the S&P 500 Index is -0.1637 (-0.0405) and is statistically significant at the 5% (1%) level. However, relative to the matched ISL peer portfolio, firms added to the S&P 500 Index have better earnings performance around index

addition. The mean difference in differences in earnings performance around index addition is significantly positive, 0.3836 in Panel A and 0.0132 in Panel B.

We also provide evidence on operating cash flows around index addition in Panel C of Table 3. We find that changes in mean operating cash flows scaled by lagged total assets are not significantly different around index addition for S&P 500 addition firms and their ISL peer portfolio. The mean difference-in-differences in operating cash flows is -0.0083 with a t-statistic of -1.22. Our results in Table 3 provide evidence that in the years around index addition, firms added to the S&P 500 Index reported better earnings performance than their peers. However, changes in operating cash flow performance are not significantly different across the two groups. Our findings are consistent with the notion that managers of firms added to the S&P 500 index face additional pressure to deliver improvements in reported earnings.

In Panel A of Table 4, we report mean discretionary accruals around index inclusion for firms added to the index and the peer portfolio. We find statistically significant positive discretionary accruals for the peer portfolio firms in both years reported. Positive discretionary accruals reflect income increasing accounting choices. For firms added to the S&P 500 Index, we do not observe significant positive discretionary accruals in the year prior to addition but find weak evidence (10% significance level) of positive discretionary accruals in the year after addition (mean of 0.0094 with a t-stat of 1.06 in $t-1$ and mean of 0.0130 with a t-stat of 1.73 in $t+1$). In terms of the relative change in discretionary accruals, we find that the mean increase in discretionary accruals around addition is significantly higher for added firms than peer firms. The mean difference-in-differences across the two groups and years is statistically positive (0.0267 with a t-stat of 2.89). This evidence is consistent with added pressure on managers of

S&P 500 firms to use earnings management techniques as part of an overall strategy to deliver improvements in reported earnings.

Given the added visibility and scrutiny of index addition, discretionary accruals may not be the preferred mechanism for achieving improvements in reported earnings. Managers may also rely on real activities management to deliver improvements in reported earnings. In Table 5, we investigate unexpected cash flows and discretionary spending around index addition for firms added to the S&P 500 index and the peer portfolio. In Panel A of Table 5, we find significant reductions in unexpected cash flows for both S&P 500 addition firms and the peer portfolio. When cash flows are unexpectedly lower, firms may be relaxing their credit sales policies or offering more discounts on sales. For firms added to the Index, the significant difference (mean of -0.0421 with a t-statistic of -4.45) between unexpected cash flows before and after index addition is consistent with operating decisions aimed at increasing reported earnings. We find weak evidence (10% significance) that the decrease in unexpected cash flows is significantly larger for S&P addition firms around Index addition than for the peer portfolio.

When we measure unexpected operating decisions using discretionary spending in Panel B, we find unexpected decreases in discretionary spending around index addition which are consistent with income increasing operating decisions. However, the difference in unexpected decreases in discretionary spending is not significantly different across S&P addition firms and the peer portfolio (mean of -0.0110 with a t-statistic of -0.84).

5.1 Sensitivity Analysis

We investigate whether the use of positive discretionary accruals around index addition is driven by addition years prior to the Sarbanes-Oxley Act of 2002. Cohen, Dey and Lys (2008) find that firms are more likely to use discretionary accruals to achieve desired reported earnings in the years prior to Sarbanes-Oxley. If the addition year ($t=0$) falls before the year 2000 (after

2002), we include the observation in the pre-SOX (post-SOX) period. As in Cohen, Dey and Lys, we partition out observations in the years of the high profile financial reporting scandals, between the years 2000-2002. Therefore, we investigate differences in discretionary accruals around index addition for S&P addition firms relative to the peer portfolio for 3 time periods, the pre-SOX period, the 2000-2002 period, and the post-SOX period. We report results for these tests of differences in Table 6. Consistent with prior research, we only find increasing discretionary accruals by S&P 500 addition firms in the pre-SOX period. The mean difference in differences in Panel A of Table 6 is positive and significant (0.0598). We find no significant difference-in-differences in Panels B or C relating to the 2000-2002 time period and the Post-SOX time periods, respectively. We also investigate changes in unexpected operating decisions in these SOX time period partitions. In untabulated results for S&P 500 addition firms relative to the peer portfolio, we find no significant differences in changes to unexpected cash flow and unexpected discretionary accruals in the pre-SOX and 2000-2002 time period partitions. We report the results for the post-SOX time period partition in Table 7. In Table 6 for the SOX (Panel B) and post-SOX periods (Panel C), we reported that changes in discretionary accruals from the year prior to index addition to the year after addition were not significantly different for the S&P 500 addition firms and the peer portfolio. However, after the accounting scandals of 2000-2002 turned the spotlight on discretionary accruals as vehicles for accounting fraud, we find some evidence that managers shift away from discretionary accruals and use operating decisions to affect reported earnings in the post-SOX period. In Panel A of Table 7, we find that S&P 500 addition firms have significant unexpected decreases in operating cash flows. These unexpected decreases in operating cash flows are significantly larger for S&P 500 addition firms than their peer portfolio firms. Lower unexpected cash flows are consistent with income

increasing operating decisions such as more lenient credit terms or discounts on sales. The difference-in-differences are not significant in Panels B for unexpected discretionary spending.

We next provide additional evidence that managers respond to added pressure of index addition by identifying firms that may have little if any added pressure when added to the index. We argue that firms that join the index with a ranking in the top 150 of the S&P 500 face less added pressure. These firms likely already have significant visibility and scrutiny and so we label these firms as low pressure. In Table 8, we provide results on mean discretionary accruals for the pre-SOX period for partitions of high and low pressure added firms. For our analysis across high and low pressure added partitions, we follow the evidence in our prior tests to examine discretionary accruals in the pre-SOX period and unexpected operating activities in the post-SOX period. In Panel A, we find that added firms ranked in the top 150, low pressure firms, do not have significant increases in discretionary accruals around index addition. In contrast, we find that firms added at rankings below 150 that are likely to have the most added scrutiny, visibility and pressure are the firms with the significant increases in discretionary accruals around index addition in the pre-SOX period. In Panel B of Table 9, we find that high pressure added firms have significant decreases in unexpected operating cash flows in the post-SOX period. The decrease is significantly larger for firms added to the S&P 500 than peer firms (-0.0266 with a t-statistic of -2.44). In Panel A of Table 9, we find that low pressure added firms do not have any significant unexpected changes in operating cash flows in the post-SOX period. In untabulated results for high pressure and low pressure added partitions, we find no significant difference-in-differences in unexpected discretionary spending.

In untabulated results, we investigate unexpected discretionary spending when research and development expenses are excluded. Prior research suggests that managers would be less

likely to cut R&D spending to improve reported earnings when dedicated institutional ownership is high (Bushee 1998). Because index funds must hold the firms in the Index, firms added to the S&P 500 Index gain dedicated institutional investors. Therefore, we investigate the effect of research and development expense on our results. When we examine the difference-in-differences of unexpected discretionary spending after excluding research and development expenses, we still find no significant differences. We find no evidence that managers of firms added to the S&P 500 index make larger changes to discretionary SG&A and advertising spending around index addition than peer firms.

6. Conclusion

We provide evidence that firms under pressure from S&P 500 Index addition use more income increasing discretionary accruals around addition than their peer firms. However, these results are specific to the pre-SOX period. Consistent with prior research on the effect of SOX on earnings management techniques, we find that added firms do not use significantly more income increasing discretionary accruals in the post-SOX period. We find some evidence in the post-SOX period that added firms have larger decreases in unexpected cash flows than peer firms. Our findings suggest that, around Index addition, managers respond to the added pressure of Index addition by using earnings management techniques to improve reported earnings. Our research focuses on the year before and after Index addition and the use of financial reporting discretion as a mechanism to affect reported earnings. Therefore, we cannot conclude that managers of added firms are not also exerting more effort on other dimensions as well. We also cannot draw conclusions about how managers respond to the pressure of S&P 500 membership beyond the year following addition. Our study provides evidence consistent with the claim in Denis et al. (2003) that managers of firms added to the S&P 500 Index are under added pressure

to improve reported firm performance. We show that firms added to the S&P 500 Index use earnings management mechanisms and achieve greater improvements in reported earnings around Index addition than peer firms.

Appendix

Variable Definitions

Assets = Total assets (Compustat data item AT)

TA = Total accruals, which is estimated as earnings before extraordinary items (Compustat data item IBC) less operating cash flows (Compustat data item OANCF) and less extraordinary items and discontinued operations (Compustat data item XIDOC).

$\Delta SALES$ = Change in sales (Compustat data item SALES)

PPE = Gross Property, Plant and Equipment (Compustat data item PPEGT)

CFO = Cash flow from operations, estimated as operating cash flows (Compustat data item OANCF) less extraordinary items and discontinued operations (Compustat data item XIDOC).

DISX = Discretionary expenses, estimated as advertising expense (Compustat data item XAD) + research and development expense (Compustat data item XRD) and selling, general and administrative expenses (Compustat data item XSGA).⁹

⁹ If XSGA was missing, we set DISX as missing. However, if XAD and XRD were missing but XSGA was not, we set XAD and XRD equal to zero.

Table 1

This table presents the formation of our sample. We begin with all S&P 500 index additions between September 22, 1976 and December 31, 2009. We require at least two years of data from the statement of cash flows and thus only look at firms with an announcement date in or after 1989. We also require firms to have positive earnings in the year prior to addition and firms to have an ISL matching portfolio with complete data. Finally, we truncate our sample at the 95% level on the negative change in earnings per share.

S&P 500 Index Additions between September 22, 1976 and December 31, 2009	821
S&P 500 Index Additions with announcement date in or after 1987	609
S&P 500 Index Additions with announcement date in or after 1989	557
After deleting financial/utility firms and those with missing accruals data in either $t=-1$ or $t=+1$	300
After deleting if earnings are negative at $t = -1$	288
After deleting firms without an ISL matching portfolio	<u>265</u>
<hr/> Final Sample after truncating extreme negative changes in earnings per share	<hr/> 254

Table 2

This table reports descriptive statistics for our sample and the ISL portfolios around S&P 500 addition (t=0). We also report the difference in the means and medians, along with statistical significance based on the t-test for means and rank sum test for medians. MVE is the market value of equity. MVE/BE is the book value of equity. Sales/A is total sales scaled by lagged total assets, IBEI is income before extraordinary items scaled by lagged total assets. CFO/A is cash flows from operations scaled by lagged total assets. All variables are defined in the appendix. Significance at the 10%, 5% and 1% levels are denoted *, **, *** respectively.

	Our Sample				ISL Portfolios			Difference in Mean	Difference in Median
	N	Mean	Median	St.Dev.	Mean	Median	St.Dev.		
MVE	254	10045.28	6286.36	15766.10	9868.11	6212.47	12508.47	177.16	73.89
MVE/BVE	254	6.12	4.03	9.68	3.21	3.45	9.41	2.91***	0.58***
Sales/A	254	1.43	1.21	1.07	1.29	1.22	0.44	0.14***	-0.01
IBEI/A	254	0.1214	0.1122	0.1235	0.0709	0.0760	0.0403	0.0505***	0.0362***
CFO/A	254	0.1835	0.1521	0.1329	0.1362	0.1353	0.0278	0.0473***	0.0168***

Table 3

This table presents difference-in-differences in earnings and cash flows from the year before addition (t-1) to the year after addition (t+1) for S&P 500 addition firms and a peer portfolio. The peer portfolio contains firms matched to the S&P 500 addition sample based on industry, size and stock liquidity (ISL). Earnings is measured before extraordinary items. Means are reported followed by t-statistics in parentheses. Significance at the 10%, 5% and 1% levels are denoted *, **, *** respectively.

Panel A: Basic Earnings per share (n=254)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	1.8635 (22.48)***	1.6998 (15.42)***	-0.1637 (-2.30)**
ISL Peer Portfolio	1.7651 (34.29)***	1.2177 (19.45)***	-0.5474 (-11.00)***
Difference (S&P firms – Peers)	0.0985 (1.25)	0.4821 (4.89)***	0.3836 (5.10)***

Panel B: Earnings scaled by lagged total assets (n=254)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	0.1316 (21.26)***	0.0911 (13.67)***	-0.0405 (-5.30)***
ISL Peer Portfolio	0.1087 (56.55)***	0.0550 (21.31)***	-0.0537 (-14.46)***
Difference (S&P firms – Peers)	0.0230 (3.92)***	0.0361 (5.47)***	0.0132 (1.87)*

Panel C: Cash flow from operations scaled by lagged total assets (n=254)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	0.1900 (23.00)***	0.1601 (24.20)***	-0.0299 (-4.16)***
ISL Peer Portfolio	0.1498 (69.64)***	0.1282 (71.26)***	-0.0216 (-11.14)***
Difference (S&P firms – Peers)	0.0401 (5.21)***	0.0319 (4.86)***	-0.0083 (-1.22)

Table 4

This table presents difference-in-differences in discretionary accruals from the year before addition (t-1) to the year after addition (t+1) for S&P 500 addition firms and a peer portfolio. The peer portfolio contains firms matched to the S&P 500 addition sample based on industry, size and stock liquidity (ISL). Means are reported followed by t-statistics in parentheses. Significance at the 10%, 5% and 1% levels are denoted *, **, *** respectively.

Mean Discretionary Accruals (n=254)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition firms	0.0094 (1.06)	0.0130 (1.73)*	0.0036 (0.37)
Peer Portfolio	0.0365 (12.19)***	0.0135 (4.97)***	-0.0231 (-6.10)***
Difference (S&P firms – Peers)	-0.0272 (-3.35)***	-0.0005 (-0.07)	0.0267 (2.89)***

Table 5

This table presents difference-in-differences in unexpected cash flows and unexpected discretionary expenses from the year before addition (t-1) to the year after addition (t+1) for S&P 500 addition firms and a peer portfolio. The peer portfolio contains firms matched to the S&P 500 addition sample based on industry, size and stock liquidity (ISL). Means are reported followed by t-statistics in parentheses. Significance at the 10%, 5% and 1% levels are denoted *, **, *** respectively.

Panel A: Unexpected CFO (n=254)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	0.1608 (15.42)***	0.1187 (16.60)***	-0.0421 (-4.45)***
Peer Portfolio	0.1096 (26.59)***	0.0822 (32.73)***	-0.0274 (-8.47)***
Difference (S&P firms – Peers)	0.0512 (5.60)***	0.0364 (5.41)***	-0.0147 (-1.68)*

Panel B: Unexpected Discretionary Expenses (n=234)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	0.0322 (1.39)	0.0027 (0.17)	-0.0295 (-2.05)**
Peer Portfolio	0.0253 (3.01)***	0.0068 (0.96)	-0.0185 (-3.81)***
Difference (S&P firms – Peers)	0.0069 (0.33)	-0.0042 (-0.28)	-0.0110 (-0.84)

Table 6

This table presents difference-in-differences in discretionary accruals across pre, during and post SOX time periods. Means are reported followed by t-statistics in parentheses and the number of observations. Significance at the 10%, 5% and 1% levels are denoted *, **, *** respectively.

Panel A: Mean Discretionary Accruals Pre-2000 (N=110)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	-0.0298 (-2.04)**	0.0194 (1.41)	0.0492 (3.73)***
Peer Portfolio	0.0266 (7.34)***	0.0160 (3.87)***	-0.0106 (-2.55)**
Difference (S&P firms – Peers)	-0.0564 (-4.05)***	0.0034 (0.27)	0.0598 (4.34)***

Panel B: Mean Discretionary Accruals 2000-2002 (N=55)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	0.0764 (4.17)***	-0.0150 (-0.97)	-0.0914 (-3.51)***
Peer Portfolio	0.0797 (10.44)***	0.0013 (0.20)	-0.0784 (-6.83)***
Difference (S&P firms – Peers)	-0.0033 (-0.19)	-0.0162 (-1.12)	-0.0130 (-0.53)

Panel C: Mean Discretionary Accruals Post 2002 (N=89)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	0.0164 (1.44)	0.0223 (2.57)**	0.0059 (0.48)
Peer Portfolio	0.0221 (5.77)***	0.0179 (4.22)***	-0.0043 (-1.19)
Difference (S&P firms – Peers)	-0.0058 (-0.56)	0.0045 (0.54)	0.0102 (0.83)

Table 7

This table presents difference-in-differences in unexpected cash flows and unexpected discretionary expenses from the year before addition (t-1) to the year after addition (t+1) for S&P 500 addition firms and a peer portfolio. The peer portfolio contains firms matched to the S&P 500 addition sample based on industry, size and stock liquidity (ISL). The sample time period is constrained to the post SOX period. Means are reported followed by t-statistics in parentheses. Significance at the 10%, 5% and 1% levels are denoted *, **, *** respectively.

Panel A: Unexpected CFO Post 2002 (N=89)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	0.1326 (10.64)***	0.0977 (9.95)***	-0.0348 (-3.62)***
Peer Portfolio	0.0938 (21.56)***	0.0806 (18.10)***	-0.0132 (-3.16)***
Difference (S&P firms – Peers)	0.0388 (3.20)***	0.0171 (1.96)*	-0.0217 (-2.42)**

Panel B: Unexpected Discretionary Expenses Post 2002 (N=85)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	-0.0239 (-0.82)	-0.0270 (-1.06)	-0.0031 (-0.23)
Peer Portfolio	0.0048 (0.51)	0.0002 (0.02)	-0.0046 (-0.93)
Difference (S&P firms – Peers)	-0.0287 (-0.98)	-0.0272 (-1.05)	0.0015 (0.11)

Table 8

This table presents results partitioned by the relative ranking at addition into the S&P 500. Firms added into the S&P 500 with a ranking in the top 150 of S&P 500 firms are labeled low pressure added with all other added firms labeled high pressure added. In Panel A (Panel B), we present for the low (high) pressure group, the difference-in-differences in discretionary accruals from the year before addition (t-1) to the year after addition (t+1) for S&P 500 addition firms and a peer portfolio. The peer portfolio contains firms matched to the S&P 500 addition sample based on industry, size and stock liquidity (ISL). The sample time period is constrained to the pre SOX period. Means are reported followed by t-statistics in parentheses. Significance at the 10%, 5% and 1% levels are denoted *, **, *** respectively.

Panel A: Discretionary Accruals- Low Pressure Pre-2000 (N=21)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	-0.0025 (-0.12)	0.0022 (0.10)	0.0046 (0.20)
Peer Portfolio	0.0333 (4.18)***	0.0189 (2.71)**	-0.0144 (-2.00)*
Difference (S&P firms – Peers)	-0.0358 (-1.60)	-0.0167 (-0.79)	0.0190 (0.81)

Panel B: Discretionary Accruals- High Pressure Pre 2000 (N=89)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	-0.0363 (-2.09)**	0.0234 (1.44)	0.0597 (3.94)***
Peer Portfolio	0.0250 (6.15)***	0.0153 (3.16)***	-0.0097 (-1.99)**
Difference (S&P firms – Peers)	-0.0613 (-3.74)***	0.0081 (0.56)	0.0694 (4.35)***

Table 9

This table presents results partitioned by the relative ranking at addition into the S&P 500. Firms added into the S&P 500 with a ranking in the top 150 of S&P 500 firms are labeled low pressure added with all other added firms labeled high pressure added. In Panel A (Panel B), we present for the low (high) pressure group, the difference-in-differences in unexpected operating cash flows from the year before addition (t-1) to the year after addition (t+1) for S&P 500 addition firms and a peer portfolio. The peer portfolio contains firms matched to the S&P 500 addition sample based on industry, size and stock liquidity (ISL). The sample time period is constrained to the post SOX period. Means are reported followed by t-statistics in parentheses. Significance at the 10%, 5% and 1% levels are denoted *, **, *** respectively.

Panel A: Unexpected Operating Cash Flows- Low Pressure Post-2002 (N=23)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	0.0999 (7.68)***	0.0775 (4.66)***	-0.0224 (-1.17)
Peer Portfolio	0.0829 (9.46)***	0.0681 (6.74)***	-0.0148 (-1.57)
Difference (S&P firms – Peers)	0.0171 (1.29)	0.0095 (0.67)	-0.0076 (-0.51)

Panel B: : Unexpected Operating Cash Flows- High Pressure Post-2002 (N=66)

	t=-1 (Before)	t=+1 (After)	Difference (After – Before)
S&P 500 Addition Firms	0.1440 (9.00)***	0.1048 (8.83)***	-0.0392 (-3.52)***
Peer Portfolio	0.0976 (19.66)***	0.0850 (17.71)***	-0.0126 (-2.74)***
Difference (S&P firms – Peers)	0.0463 (2.97)***	0.0198 (1.84)*	-0.0266 (-2.44)**

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