

Earnings Management over the Business Cycle

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Abstract

We examine the association between economic conditions and the tendency for firms to upwardly manage earnings. While earnings management has been studied extensively, virtually all studies have focused on firm specific effects. Ours is one of the first papers to relate earnings management to the state of the economy. We identify earnings management based on the tendency of firms to meet or beat earnings based benchmarks, and we measure the state of the economy based on both real output growth and the level of the stock market. We find that the tendency for firms to meet or beat earnings benchmarks is significantly related to the marketwide P/E ratio, and that this relation is not due to time-vary firm effects that are associated with the level of the market. Our findings add to our understanding of earnings management by showing that aggregate conditions, as well as firm specific effects, motivate this important behavior.

1. Introduction

In this paper, we compare the tendency for firms to upwardly manage earnings during good versus bad economic times. In our analysis, earnings management may be achieved by manipulating either accruals or real transactions (e.g., by decreasing discretionary expenditures such as R&D). While there are other forms of earnings management than earnings enhancing, such as smoothing or big bath, we focus on upward management because it is the greatest concern to both academics and practitioners. Our investigation is important, because while earnings management has been extensively studied, virtually all research has focused on firm-specific factors, and there has been a dearth of research on how earnings management varies with the state of the economy.¹ Understanding how the tendency to boost earnings changes with macroeconomic conditions would enhance our understanding of this important phenomenon.

Based on the analysis in Conrad et al. (2002) and on relative performance evaluation of managers, we predict that firms have a greater tendency to manage earnings upward during good times. Conrad et al find that investor reaction to earnings disappointments is more adverse during good times. Thus, firms face greater incentives to avoid poor earnings when the economy is up, so they are more prone to boost earnings at such times. As Conrad et al. explain, bad news in good times has such a negative stock price impact, both because it causes investors to revise downward their assessment of the economy, and because it leads to greater uncertainty about economic conditions, resulting in higher discount rates.

¹The list of studies on earnings management is voluminous. See Healy and Whalen (1999), Kothari (2001), and Graham et al. (2005) for references. The only papers we are aware of dealing with earnings management and the state of the economy are Rajgopal et al. (2007) and Khurana et al. (2007).

Relative performance evaluation of managers also provides a motivation for earnings management when the economy is strong. If managers' compensation is indeed tied to the performance of specific peer groups, one can argue that when the economy as a whole is performing well, managers will be under pressure to report positive results. Therefore, managers at firms that perform worse than their peers in 'good times' will be penalized by the capital markets if their reported earnings fail to meet expectations.²

Three central issues in our research are the identification of earnings management, the measure of business conditions, and the presence of time-varying firm characteristics. For earnings management, most studies use an abnormal accruals metric, based on the cross-sectional Jones (1991) model or one of its derivations. We do not use this method for a number of reasons. First, it is infeasible for us, because it produces a mean level of earnings management that is zero in each period, by construction. While using a firm-specific time-series version of the Jones model is technically feasible, it has been shown to be less accurate than the cross-sectional version, and eliminates many firms without adequate time-series observations (Dechow et al., 1995; Subramanyam, 1996; Skinner, 1996). More important, any metric based on abnormal accruals ignores earnings management by real activities manipulation, which firms prefer to accrual adjustments (Graham et al., 2005), and which has been shown to be used by firms to achieve earnings targets (Roychowdhury, 2006). Due to these deficiencies in abnormal accruals based proxies, rather than attempt to measure earnings management directly, we infer earnings

²An opposite prediction, expressed in the survey evidence of Graham et al. (2005), is that firms boost earnings more when the economy is down, because the reversal or catch-up comes when the economy recovers and intrinsic earnings are increasing; thus, the reversal is neither obvious nor painful, as future growth offsets the effects of past earnings management. Moreover, firms showing relatively strong earnings when the economy is down can distinguish themselves from the pack, thereby boosting their stock price. Thus, whether upward earnings management is more prevalent during good or bad economic times is ultimately an empirical question.

management based on the tendency of firms to meet or beat targets such as analysts' consensus forecasts, zero earnings, and the previous quarter's earnings. As Graham et al. discuss, managers consider meeting or beating benchmarks to be very important, especially the analysts' consensus and the previous quarter's earnings. Thus, we follow DeGeorge et al. (1999), Burgstahler and Dichev (1997), Matsumoto (2002), Brown and Caylor (2005), and Roychowdhury (2006), and identify earnings management from firms' meeting or beating benchmarks.

For business conditions, many studies use measures based on business cycle data such as growth rates of GDP or industrial production (e.g., Fama, 1981; Lev and Thiagarajan, 1993; Veronesi, 1999, Chordia and Shivakumar, 2002; Johnson, 1999; Kothari et al. 2001, and Klein and Marquardt, 2006). A potential problem with such measures for our study is look ahead bias (i.e., when do these figures become publicly available), because macroeconomic data for a given quarter might not be known until many weeks after the end of the quarter, and managers must know the state of the economy for it to affect their earnings management behavior.³ We address this issue in two ways. First, in addition to using contemporaneous measures of economic growth, we also use lagged measures. Second, we use Conrad et al's (2002) measure based on the aggregate level of the stock market, relative to next year's *forecasted* earnings. Since both components of this ratio are contemporaneously observable, there is no look ahead bias. The P/E ratio may also be a superior proxy for our purposes for two additional reasons. First, if incentives to manage earnings are based primarily on stock price effects, as Graham et al find, a price based measure is a better proxy for earnings management

³ This is less of a problem for accrual manipulation than for real activities management, because accruals can be adjusted after the end of the quarter.

motivations than economic growth rates are. Second, economic growth relates only to P/E's denominator, but the ratio reflects the market's valuation of future growth. Conrad et al. (footnote 4) suggest that this may be why P/E performs better than earnings growth in their tests.

Time-varying firm characteristics can be a problem for our tests, because it is well known that certain firm characteristics are associated with the propensity to manage earnings upward, and the presence of these characteristics may be correlated with the state of the economy. For example, Teoh et al. (1998a, b) show that IPOs and SEOs are associated with upward accrual adjustments. These stock issuances are positively correlated with the level of the stock market (Ritter, 2003). Thus, any relation we find between earnings management and economic conditions might be due not to the state of the economy per se, but to time-varying firm characteristics; i.e., our tests may suffer from a correlated omitted variable bias. To address this issue, we control for the level of SEO activity.

Using quarterly data from 1984 thru 2006, we construct measures of earnings management, the market P/E ratio, and production growth rates. Consistent with our predictions, we find that the percentage of firms that meet or beat earnings benchmarks in a given quarter is positively correlated with the aggregate level of the market that quarter, and that this relation is not due to SEO activity. If benchmark beating is due to earnings management, as is widely believed, our results indicate that earnings management activity is positively associated with aggregate market conditions. This is consistent with Conrad et al's evidence that the market penalty for poor earnings news is greatest when the market is up, and that managers try to avoid this penalty.

The rest of the paper is organized as follows. Section 2 discusses our hypothesis and related research. Section 3 discusses our data and tests. Section 4 reports our results. Section 5 concludes.

2. Hypothesis and Related Research

In this section we motivate our hypothesis, and we discuss related research. Our study links two streams of research, one on firms' earnings management behavior, and the other on the market's response to earnings news over the business cycle. Previously, these two streams have been largely disparate, as the former has dealt with firm specific effects, and the latter with aggregate effects.

2.1 Hypothesis

We motivate our predictions about the relation between earnings management and the state of the economy based on the arguments and evidence in Conrad et al (2002), and on the literature on relative performance evaluation (RPE). As Conrad et al discuss, there are intertemporal shifts in aggregate investor sentiment that cause the market's response to good vs bad news to change over time. In particular, during good times (up markets), investors are optimistic and expect that the good performance will continue. In this environment, the stock prices of firms disclosing good news are not affected much, but the stock prices of firms providing bad news are severely lowered.

Conrad et al point out that such market behavior is not necessarily irrational. A period of good market performance gives investors confidence in the state of the economy, and additional good news has little effect, because it does not alter beliefs.

However, in such an optimistic environment, bad news has a strong negative effect both because it causes investors to revise downward their assessment of the economy, and because it creates additional uncertainty about the economy, resulting in a higher market discount rate. By contrast, during bad times, the market's response is not strong to either bad news or good news: bad news is confirmatory; good news causes both a positive reassessment about the state of the economy, but this is somewhat offset by the increased uncertainty, which raises the market discount rate.

Conrad et al's empirical evidence is consistent with the predictions of this analysis. They find that in down markets, the market's response to good news and bad news earnings surprises is similar, and the market's response to good news is similar in up and down markets. Most importantly, both the market's response to bad news earnings surprises, and the differential response to bad news vs good news earnings surprises, both increase as the relative level of the market rises; i.e., both are greatest in up markets. Assuming managers are aware that the market's response to bad news is most severe during good times, they are motivated to avoid negative earnings surprises, and are most prone to upwardly manage earnings, when the market is up.

The literature on relative performance evaluation is relevant to our analysis, because managers are evaluated in relation to their peers, and thus are motivated to report earnings based on their competitors' performance. While increased competition among firms serves as a monitoring and disciplining mechanism facilitating relative performance evaluation (Holmstrom, 1982), it also exacerbates the career concern problem managers face. Holmstrom (1982) argues that Relative Performance Evaluation (RPE) is a useful and informative performance signal if it provides information about an agent's action that

cannot be inferred solely from the agent's output. In the CEO turnover literature, Gibbons and Murphy (1990) and DeFond and Park (1999) examine the relation between RPE and CEO turnover. DeFond and Park (1999) findings report direct evidence on how RPE is affected by product market competition which in turn affects CEO turnover. In particular, DeFond and Park (1999) report that the frequency of CEO turnover is positively related to the level of industry competition suggesting that RPE serves as a useful measure of performance evaluation in more competitive industries.

If managers' compensation is indeed tied to the performance of specific peer groups, one can argue that when the economy as a whole is performing well, managers will be under pressure to report positive results. Therefore, managers at firms that perform worse than their peers in 'good times' will be penalized by the capital markets if their reported earnings fail to meet expectations. Alternatively, when the economy as a whole is not performing as well, the penalty for not reporting positive results might not be as severe as in 'good times'. All else equal, this simple logic leads us to predict that managers' career concerns and performance evaluation will provide incentives to manage reported earnings upwards in 'good times' versus 'bad times'. Thus, based on both Conrad et al and RPE, we hypothesize that the tendency for firms to manage earnings upward is greatest when the economy is strong.

2.2 Summary of earnings management literature

Under the accounting standards in Generally Accepted Accounting Principles (GAAP) managers are given discretion and judgment in preparing financial statements. If the objective of financial statements is to provide useful information to facilitate efficient

resource allocation and stewardship decisions by certain stakeholders, managers' should be allowed discretion and judgment to convey their information regarding firms' performance when information asymmetries are present. Managers can use their knowledge and expertise about their business to select certain accounting methods, estimates, and disclosures thereby increasing the value of accounting information as a form of communication. However, providing unconstrained accounting choices and discretion is likely to impose certain costs on the users of financial statements. Managers are likely to have incentives to convey self-serving information and choose certain reporting accounting methods and estimates that do not accurately reflect their firms' underlying economics and thus mislead certain stakeholders.

Certain definitions and interpretations of earnings management have been advanced in the literature so far. For example, Watts and Zimmerman (1986) refer to earnings management occurring when managers exercise their discretion over the reported accounting numbers with or without restrictions. Such a discretion can be either value maximizing or opportunistic. Alternatively, Schipper (1999) defines earnings management as "implementation that impairs an element of decision usefulness or implementation that is inconsistent with the intent of the standard." Finally, Healy and Whalen (1999) define earnings management as occurring when "managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers."

There has been extensive evidence that managers engage in earnings management activities (for reviews of the evidence, see Healy and Wahlen, 1999, Kothari, 2001 and

Fields, Lys and Vincent, 2001). The extant accounting literature has identified and examined different motives and incentives for earnings management. In general, it is agreed that earnings management activities fall within one of the following three categories: (i) capital market motivations, (ii) contractual arrangements, and (iii) impact and influencing on third parties. Most related to our study is the capital market motivation which suggests that the widespread use of accounting information by investors and financial analysts to value stocks provides incentives for managers to manipulate reported earnings with the objective of influencing the short-term performance of their company's stock prices.

The evidence indeed suggests that managers are managing earnings to meet or beat analysts' forecast expectations and other important earnings benchmarks (e.g., Burgstahler and Dichev, 1997; DeGeorge et al. 1999; Bartov et al., 2002; Matsumoto, 2002; Brown and Caylor, 2005, and Graham et al. 2005). In particular, Graham et al. 2005 conclude that:

"...CFOs believe that earnings, not cash flows, are the key metric considered by outsiders. The two most important earnings benchmarks are quarterly earnings for the same quarter last year and the analyst consensus estimate. Meeting or exceeding benchmarks is very important."
(p. 5)

They also write:

"Several performance benchmarks have been proposed in the literature...such as previous years' or seasonally lagged quarterly earnings, loss avoidance, or analysts' consensus estimates. The survey evidence ... indicates that all four metrics are important: (i) same quarter last year (85.1% agree or strongly agree that this metric is important); (ii) analyst consensus estimate (73.5%); (iii) reporting a profit (65.2%); and (iv) previous quarter EPS (54.2%)."

The incentives to meet or beat certain accounting thresholds, especially analysts' earnings forecasts, have intensified recently as analysts have taken a more prominent role in the functioning of capital markets. Brown and Caylor (2005) document a significant recent increase in the number of analysts, the number of firms followed by analysts, the amount of media attention paid to analyst forecasts, and the accuracy and precision of analyst forecasts. Regulators, for instance the former SEC chairman Levitt, expressed concerns over the increased practice of earnings management to meet analyst expectations.⁴

In addition to the pressure from meeting/beating certain earnings thresholds, the increased stock-based compensation, especially through the 1990s have provided increased incentives for managers to engage in earnings management activities to influence the short-term performance of the stock price. Specifically, evidence in Cheng and Warfield (2005) suggest that equity incentives derived from stock-option compensation lead to incentives to engage in accrual-based earnings management activities. In addition, Bergstresser and Philippon (2006) show that the use of discretionary accruals to manipulate reported earnings is more pronounced at firms where the CEO's compensation is more closely tied to stock options. This evidence supports the assertions made by Coffee (2003) and Greenspan (2002), among others, that stock-based

⁴ In a widely cited speech delivered at New York University on September 28, 1998, Chairman Levitt claimed: "Well, today, I'd like to talk to you about another widespread, but too little-challenged custom: earnings management. This process has evolved over the years into what can best be characterized as a game among market participants. A game that, if not addressed soon, will have adverse consequences for America's financial reporting system. A game that runs counter to the very principles behind our market's strength and success. Increasingly, I have become concerned that the motivation to meet Wall Street earnings expectations may be overriding common sense business practices. Too many corporate managers, auditors, and analysts are participants in a game of nods and winks. In the zeal to satisfy consensus earnings estimates and project a smooth earnings path, wishful thinking may be winning the day over faithful representation . "

compensation increase managers' incentives to inflate reported earnings and, consequently, stock prices.⁵

2.3 Market's response to earnings news over the business cycle

How the stock market responds to earnings news is important to our investigation, because stock market motivations are so important for earnings management; i.e., earnings management is likely to be most prevalent when the reward (penalty) for good (poor) earnings is greatest. Johnson (1999) and Conrad et al. (2002) study how the stock market's response to unexpected earnings, ERC, varies over the business cycle. Johnson finds that earnings persistence and the ERC are higher during good times (business expansions) than in recessions, but she does not distinguish between the response to good versus bad news (positive versus negative unexpected earnings). Conrad et al. compare the market's response to good versus bad news during good and bad economic periods, where the state of the economy is defined as good (bad) if the current month's aggregate market P/E ratio is high (low) relative to its monthly average over the previous 12 months. The denominator of the P/E ratio is the market's consensus forecasted earnings for the coming year, so the economic state is observable. They find that the ERC for good news (positive unexpected earnings) is unrelated to the state of the economy. By contrast, the ERC for bad news (negative unexpected earnings) is positively associated with the state of the economy; i.e., the market reacts more negatively to bad news as the market

⁵ For instance, Coffee (2003) asserts that the increase in stock-based executive compensation created an environment where managers became very sensitive to short-term stock performance. Greenspan (2002) opines that "the highly desirable spread of shareholding and options among business managers perversely created incentives to artificially inflate earnings to keep stock prices high and rising."

level rises. This implies that upward earnings management should be most prevalent when the market is up, as firms attempt to avoid this penalty.

2.4 Earnings management over the business cycle

As pointed out above, we are aware of only two studies, Khurana et al. (2007) and Rajgopal et al. (2007), that examine how earnings management varies between good and bad economic times. Both of these studies are motivated by Conrad et al's finding that the market's response to bad news is most severe during good times; thus, both papers predict that earnings management is greatest when the economy is up.

Khurana et al. do not examine earnings management directly, but study asymmetric timely recognition of economic losses (conditional conservatism), an implication of earnings management. They measure asymmetric timely loss recognition by Ball and Shivakumar's (2005) regression of accruals on contemporaneous cash flows, and the state of the economy by the annual GDP growth rate. They hypothesize that since the penalty for reporting bad news is greater during good times, firms face a greater incentive to avoid reporting bad news at such times. Thus, there should be less asymmetric timely loss recognition when the economy is strong; i.e., firms delay reporting losses. Their results are consistent with their predictions.

Rajgopal et al also find greater earnings management during good times. Their measure of earnings management is based on the average level of abnormal accruals each quarter, estimated from the cross-sectional Jones (1991) model or its derivatives. They recognize the problem, mentioned above, that the cross-sectional model produces a mean level of abnormal accruals that is zero in each period, by construction, so they use the

model parameters from the previous quarter to compute the current quarter's abnormal accruals. However, their measure of earnings management is still problematic for a number of reasons. First, there is no reason why the parameters of the cross-sectional Jones model from one quarter should relate to normal accruals generation in the next quarter; thus, although their method produces a non-zero mean level of abnormal accruals, it is not clear that it is a good measure of earnings management. Second and more important, as Bernard and Skinner (1996) discuss, Jones model discretionary accruals (DA) might capture non-discretionary components, and the error in DA is likely correlated with stock prices.⁶ This measurement error causes the level of DA and the P/E ratio to be positively correlated, by construction. Third and perhaps most important, even if their method produced an accurate measure of abnormal accruals, it completely ignores earnings management by real activities manipulation. As pointed out above, (Graham et al., 2005) find that firms prefer this to accrual adjustments, and Roychowdhury (2006) shows that firms use such means to achieve earnings targets.

3. Data and Methodology

3.1 Identifying Earnings Management

Based on the evidence in Burgstahler and Dichev, (1997), DeGeorge et al. (1999), Graham et al (2005), and Roychowdhury (2006), we identify earnings management by the tendency of firms to meet or beat the following three benchmarks: the consensus analyst forecast for the quarter, a positive earnings change for the current quarter compared to the same quarter last year, and positive earnings less than or equal to .5% of total assets. Using three benchmarks gives us confidence in the robustness of our results.

⁶ McNichols (2000) raises similar concerns about Jones model discretionary accruals.

We obtain actual quarterly reported earnings, consensus analyst forecasts of quarterly and annual earnings, stock prices, from Thompson Financial I/B/E/S detail and summary files spanning the period 1984-2006. In addition we obtain financial quarterly and annual data from COMPUSTAT.

We record the last outstanding analyst consensus forecast prior to the current quarterly earnings announcement to ensure that the latest forecast is not “contaminated” by knowledge of the actual earnings number. Meeting/Beating analyst earnings expectations is defined as a zero or positive (non-negative) earnings surprise, which is the difference between the actual earnings and the latest consensus forecast for the quarter, $SURP = EPS - F_{\text{latest}} \geq 0$. Just meeting/beating analyst earnings expectations are firm-quarters observations for which the earnings surprise exceeds analysts’ expectations by a cent per share or less, i.e., $\$0.00 \leq SURP \leq \0.01 . We define the variable SM_BEAT as receiving the value of one if this is indeed the case and zero otherwise.

In addition to the previous benchmark which is a function of analysts’ forecasts, we define two additional earnings benchmarks which are based solely on reported earnings. First, we define earnings changes as reported earnings in quarter t less the earnings reported in the same quarter last year, i.e., in quarter t-4, $CHG = EPS_t - EPS_{t-4}$. If CHG is between zero and one cent per-share the variable INCREASEEPS takes on the value of one and zero otherwise.

Second, we group firm-quarter observations into intervals based on net income scaled by total assets at the beginning of the quarter. Burgstahler and Dichev (1997) and Roychowdhury (2006), among others, have argued that it is highly likely that firm-quarter observations in the interval just to the right of zero manage their earnings

upwards to report income just marginally higher than zero. We focus on firm-quarter observations where net income scaled by total assets is greater or equal to zero but less than 0.5% of total assets. If a firm-quarter observation meets this classification criterion, the variable ZERO takes on the value of one.^{7,8}

We delete from our sample firms that belong to one of the following three industries: financial institutions (SIC codes 6000-6999), utilities (SIC codes 4800-4999), or other regulated industries (SIC codes 4000-4499) due to their different operating activities. Our overall sample consists of 279,215 firm-quarter observations. For each of our three earnings benchmarks, we measure the degree of earnings management each period as the percentage of sample firms that meet or beat the benchmark in the period. We use percentages, because the number of sample firms changes over time. Thus, our observations are the quarterly frequency of benchmark beaters.

3.2 Measuring Economic Conditions

To determine whether the period of interest (either a month or a quarter) is referred to as a ‘good’ state of the economy versus a ‘bad’ one, as in Conrad et al. (2002), a monthly time series of market price/earnings ratios are estimated using the I/B/E/S data. In order to calculate the overall market P/E for a particular month t , we collect the consensus earnings forecast for the next fiscal year made in month t for each firm, as well as the observed price at the beginning of month t for that firm. We construct a value-

⁷ Since we scale net income by total assets, the observed discontinuity cannot be explained by Durlach and Easton (2006) who argue that scaling by market capitalization causes the observed discontinuity.

⁸ By definition, during good economic times, there will be more firms with positive earnings and with positive earnings changes (relative to the year ago quarter) than during bad times. However, this should not bias our results, because our definition of earnings management is based only on the cell immediately to the right of zero, not the entire positive side of the distribution.

weighted average of the I/B/E/S forecast earnings-to-price ratio across firms and then take the reciprocal of this figure as the overall market price/earnings ratio. In other words, we calculate the following:

$$P / E(mkt)_t = 1 / \left[\sum_{i=\{1, N_t\}} w_{it} (E_t[EPS_{i\tau}] / P_{it}) \right]$$

where w_{it} is the value of firm i relative to the total market value of firms available in the sample for month t , P_{it} is the share price of firm i in month t , and $E_t[EPS_{i\tau}]$ is the consensus analysts' earnings forecast in month t for annual earnings reported in month τ . Firms are deleted from the average if they do not have their stock price available, forecasted earnings, or shares outstanding numbers available.

We use expected future earnings to calculate the overall market P/E ratio since the resulting ratio better measures the market's valuation of future expected cash flows than does a ratio calculated using current reported earnings. In addition, it makes sure that the measure is not affected by transitory shocks to earnings that can cause fluctuations in P/E ratios based on trailing earnings that are more difficult to interpret.

In addition to the overall market P/E ratio, we employ two alternative proxies for macroeconomic conditions. First, following Lev and Thiagarajan (1993) we use the real GDP growth rate in any given quarter. The GDP growth rate is compiled by the U.S. Department of Commerce and includes personal consumption, government spending, private investments, inventory growth, and the trade balance. The higher the real GDP growth rate, the stronger the state of the economy is. Second, we also employ the quarterly change in total industrial production as used in prior research to proxy for business productivity (e.g., Fama, 1981; Chordia and Shivakumar, 2002; Klein and Marquardt, 2006). Industrial production, like GDP measures total real output, but is more

limited in its scope. The industrial production measure is compiled by the Federal Reserve and includes total production in manufacturing, mining, gas, and electric utilities. We obtain data on the growth rate in GDP and industrial production from the Federal Reserve Bank of St. Louis website (<http://research.stlouisfed.org/fred2/>).

One can argue that the observed variation in earnings management activities as evidenced in meeting and exceeding earnings benchmarks is a function of the variation in investor sentiment over time. To address this issue, we examine two investor sentiment proxies advanced by Baker and Wurgler (2006). The sentiment indexes are based on the first principal component of the correlation matrix of six variables: the close-end fund discount, NYSE share turnover, the number and average first-day returns on IPOs, the equity share in new issues, and the dividend premium. We obtained the monthly and yearly investor sentiment measures from Jeffrey Wurgler's website (<http://pages.stern.nyu.edu/~jwurgler/>).

Finally, data on IPOs and SEOs are obtained from SDC Platinum and Jay Ritter's website (<http://bear.cba.ufl.edu/ritter/ipodata.htm>). Consistent with the literature on IPOs and SEOs (e.g., Ritter, 2003) we exclude IPOs with offer price below \$5.00, unit offers, ADRs, close-end funds, partnerships, acquisition companies, REITs, bank and savings and loans IPOs, and firms not listed on CRSP. Regarding SEOs, we exclude SEOs with offer price less than \$5.00, spin-offs, reverse LBOs, close-end funds, unit investment trusts, REITs and limited partnerships, and non-domestic offers.

3.3 Figures

To provide visual perspective on the data, Figures 1, 2, and 3 show time-series plots of our key variables. Figure 1 shows measures of macroeconomic conditions: market P/E ratio (Figure 1a); GDP growth and industrial production growth (Figure 1b); and Baker and Wurgler's (2006) sentiment indexes (Figure 1c). The P/E ratio, GDP growth, and the industrial production rates are measured quarterly, while the sentiment index is measured annually. Each figure shows considerable variation. The P/E ratio has a noticeable positive time trend, although the other series do not.

Figure 2 shows time-series plots of our measure of earnings management, the percent of firms that meet or beat each of the three earnings benchmarks each period: analysts' consensus forecasts, reporting earnings just above zero, and earnings of the same quarter last year. Figure 2a plots the benchmarks quarterly; while Figure 3 plots them annually. Although our primary tests use the quarterly data, we show the annual plots for ease of visual presentation. Like the macroeconomic indices, the benchmark percentages vary considerably over time, so there is much to explain. The three measures are capturing different aspects of earnings management, because they clearly are not overwhelmingly correlated. Like the P/E ratio, the earnings benchmarks appear to have an upward time trend. This is important, because if we do not control for this trend in our regression analysis, any relation that we find between the P/E ratio and the benchmarks may be spurious.

Finally, Figure 4 plots two other measures of macro conditions, the annual number of IPOs and SEOs. As is well known, both vary considerably over time, with the number of SEOs exceeding the number of IPOs in most years, sometimes by a wide margin. Teoh, Welch, and Wong (1998a, b) find that both IPOs and SEOs are associated with upward

earnings management. Since the number of IPOs and SEOs vary over time, and since IPOs and SEOs may induce earnings management, we must control for stock issuance activity in our regressions, below.

4. Results

4.1 Sample Statistics

Table 1 shows annual summary statistics for the macroeconomic variables. Even though our primary tests use quarterly observations, we show the statistics annually for ease of presentation. Confirming the visual impression from Figure 1, all three measures have considerably variation, and the P/E ratio has a pronounced upward trend. For example, the P/E ratio is 8-10 in the mid-1980's and 15-17 by the mid-2000's.

Table 2 shows statistics for earnings benchmarks. Like Table 1, we show the statistics annually for ease of presentation. All three measures show the upward trend visible in Figure 2. The trend is consistent with the increased emphasis on accounting thresholds and analyst coverage over time (Brown and Caylor, 2005). For example, by the early 2000's, the percentage of firms meeting or beating the consensus analyst forecast was about twice the percentage in the mid-1980's.

4.2 Correlations

Table 3 shows the correlation matrix of the key variables. The correlations are based on 92 quarterly observations from 1984 thru 2006. Pearson correlations are shown above the diagonal, and Spearman-rank correlations are below the diagonal. We focus on the Pearson correlations, since the two are generally similar. Not surprisingly, the three

earnings benchmarks are significantly correlated, but not overwhelmingly so. For example, INCR_EPS and SM_BEAT explain less than 15% ($.381^2$) of the variation in each other, and no measure explains even half of the variation in another measure, as the maximum R^2 between them is $.42$ ($.651^2$). All three earnings benchmarks are significantly positively correlated with the P/E ratio. This is consistent with an implication of Conrad et al's finding that the market penalty for negative earnings surprises increases as the level of the market rises: since the penalty is greater when P/E is higher, firms should be more prone to manage earnings to avoid the penalty. However, the correlations between the earnings benchmarks and both the sentiment index and the GDP growth rate are mostly insignificant. The benchmarks' significant correlation with P/E but not with the other macroeconomic measures is consistent with Graham et al's finding that security price based motivations are the most powerful incentives for earnings management.

All three earnings measures are significantly positively correlated with SEO activity, where SEO activity is defined as the quarterly number of SEOs divided by the number of firms in the sample for the quarter. This is not surprising, because all three measures are positively associated with the P/E ratio, and SEOs are more prevalent when the market is up. These correlations are important, because SEOs are associated with earnings management; therefore, we must control for SEO activity in our regressions, below. By contrast, the earnings benchmarks are negatively correlated (or uncorrelated) with IPO activity. This is likely due to the fact that, by construction, our sample excludes IPOs, since we require earnings from the previous year to compute INCR_EPS. Finally, both the P/E ratio and all three earnings benchmarks are significantly positively

correlated with the time trend variable (TIME), highlighting the need to control for the non-stationarity of the variables in our regressions.

4.3 Primary Regression Results

To measure the association between earnings management and business conditions, we regress our three earnings benchmarks against the measures of business conditions, plus controls:

$$\text{Benchmark}\%_t = a + b*\text{Buscond}_t + c*\text{control}_t + e_t \quad (1)$$

Where $\text{Benchmark}\%_t$ is either SM_BEAT, INCREASEEPS, or ZERO and Buscond_t is the aggregate P/E ratio, the % growth in GDP and the % change in industrial production.

Table 4 shows the results of our regressions, using our quarterly observations. In Panel A we regress each of the three earnings benchmarks on either the P/E ratio (columns 1-3), the GDP growth rate (columns 4-6), or the industrial production growth rate (columns 7-9) and the time trend.⁹ In all regressions, the coefficient on the time trend is significant, confirming the importance of controlling for it.¹⁰ In columns 1-3, two of the three earnings benchmarks, SM_BEAT and INCR_EPS are significantly positively related to P/E, but ZERO is not. This is consistent with Graham et al. (2005) who report that beating the analysts' consensus forecast and the same quarter last year's EPS are the two most important earnings benchmarks. In columns 4-6, none of the three benchmarks is significantly related to %GDP. In columns 7-9, we observe the same pattern for the

⁹ We do not show the simple regression of the benchmarks against either P/E or %GDP or IPROD, since this would be repetitious given the correlations in Table 3.

¹⁰ We tested for any autocorrelation among the regression residuals and found that it is insignificantly different from zero. Thus, we are confident that including the time trend controls for any mean non-stationarity in the variables.

industrial production variable as well: IPROD is not significantly related to any of the specific earnings benchmarks we are considering.

Perhaps the difference between the results with P/E and %GDP and IPROD is not surprising. Managers might not be aware of contemporaneous output growth when they manage earnings, and even if they are aware, they likely consider stock prices a more important benchmark. Overall, the results in Table 4 show that benchmark beating is associated with macroeconomic conditions, as represented by the level of the stock market. Since benchmark beating is *prima facie* evidence of earnings management, we interpret these results to mean that the tendency to manage earnings upward is positively related with the level of the market. This is consistent with Conrad et al.'s evidence that the penalty for bad news earnings is also positively associated with the market level. It is inconsistent with the suggestion in Graham et al. that earnings management is more prevalent in bad times.

4.4 Time Varying Firm Conditions

The results in Table 4 showed that the tendency for firms to meet or beat earnings benchmarks is positively associated with the level of the stock market. This is evidence that earnings management depends on macroeconomic conditions, unless the earnings management is due to firm characteristics that vary over time, and are correlated with the level of the market. In this case, these time-varying firm effects are correlated omitted variables in our analysis. Time-varying firm effects are of particular concern for us, because Teoh et al. (1998a, b) find that IPOs and SEOs are associated with upward

earnings management, and these equity issuances are also correlated with the level of the market. Thus, we want to be sure that our results are not due to IPO or SEO activity.

IPOs are not a problem for us, because our sample consists only of firms that have existed for at least one year (i.e., we need the firm's earnings from the same quarter last year). However, SEOs might be a correlated omitted variable in our analysis. To address this problem, we include the SEO index in our regression. The SEO index is calculated as the number of seasoned equity offerings as a percentage of the number of sample firms in any given quarter; thus, it is a frequency, just like the dependent variable. Since investor sentiment has been shown to be a measure of market conditions, we also include Baker and Wurgler's (2006) sentiment index in the regressions. The results are in Table 5.

Although SEO enters significantly in most regressions, P/E is still positively and significantly associated with both SM_BEAT and INCR_EPS. Thus, we do not believe that time-varying firm characteristics are driving our results.¹¹

5. Conclusion

We examine the association between economic conditions and the tendency for firms to upwardly manage earnings. While earnings management has been studied extensively, virtually all studies have focused on firm specific effects. Ours is one of the first papers to relate earnings management to the state of the economy. Based on both survey and archival evidence, we identify earnings management based on the tendency of firms to meet or beat earnings based benchmarks. Also based on prior research, we

¹¹ To further control for overall financing activity, we repeated the analysis by considering the overall share of equity issues in total equity and debt issues since Baker and Wurgler (2006). The results, untabulated, show that the equity share is related to subsequent market returns. Our results are robust to this alternative specification.

measure the state of the economy based on both real output growth and the level of the stock market.

We find that the tendency for firms to meet or beat earnings benchmarks is significantly related to the marketwide P/E ratio, and that this relation is not due to time-vary firm effects that are associated with the level of the market. Our findings are inconsistent with the suggestion in Graham et al that earnings management is more prevalent in bad times, but they are consistent with Conrad et al, who show that the market's penalty for negative unexpected earnings is greatest when the market is up. In light of Conrad et al's findings, our evidence suggests that firms manage earnings more in up markets to avoid this higher penalty. Overall, our findings add to our understanding of earnings management by showing that aggregate conditions, as well as firm specific effects, motivate this important behavior.

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Figure 1a: Market P/E Ratio over time, 1984-2007

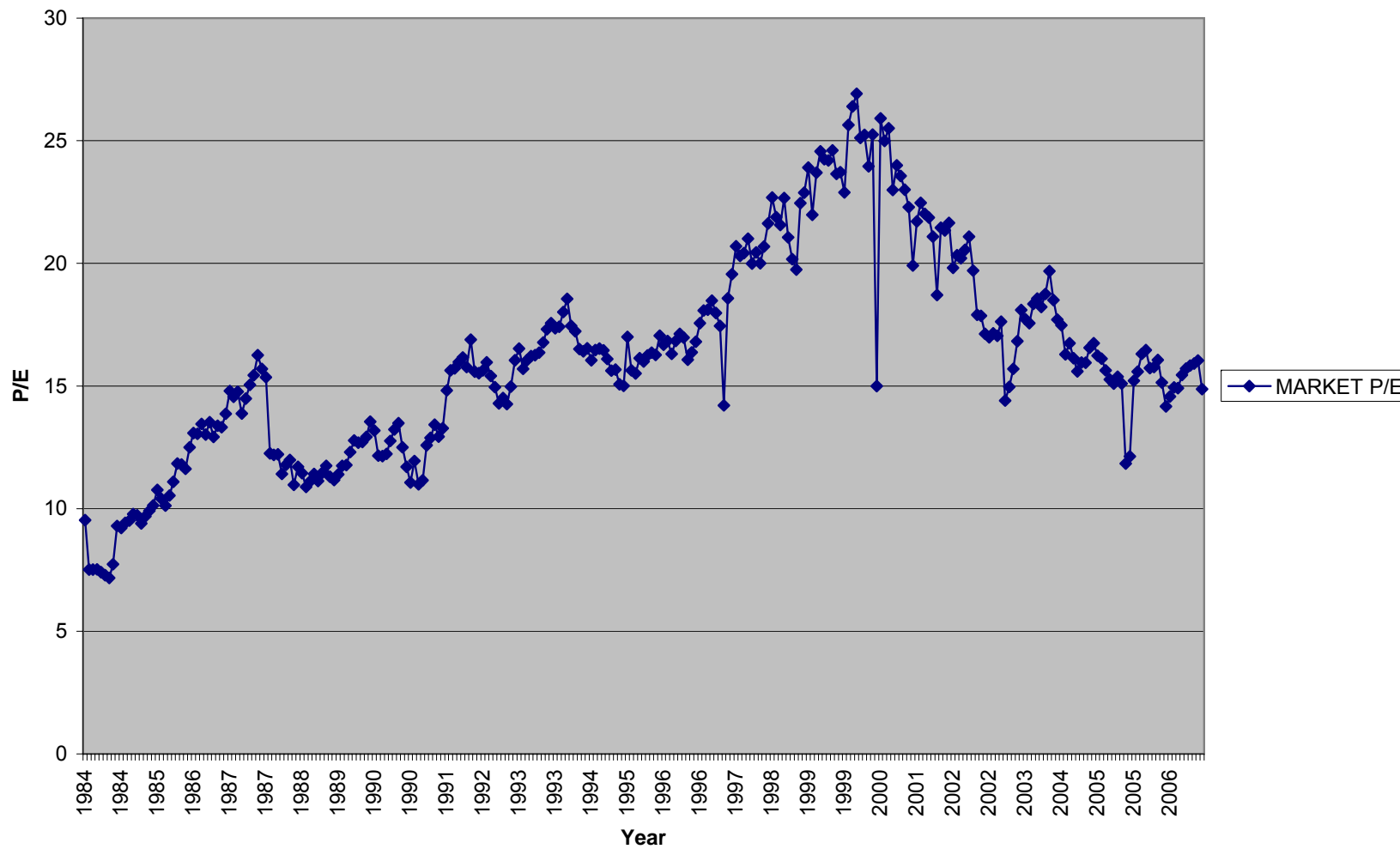


Figure 1b: Quarterly seasonally changes in real GDP and Industrial Production in chained 2000 dollars over time, 1984-2006

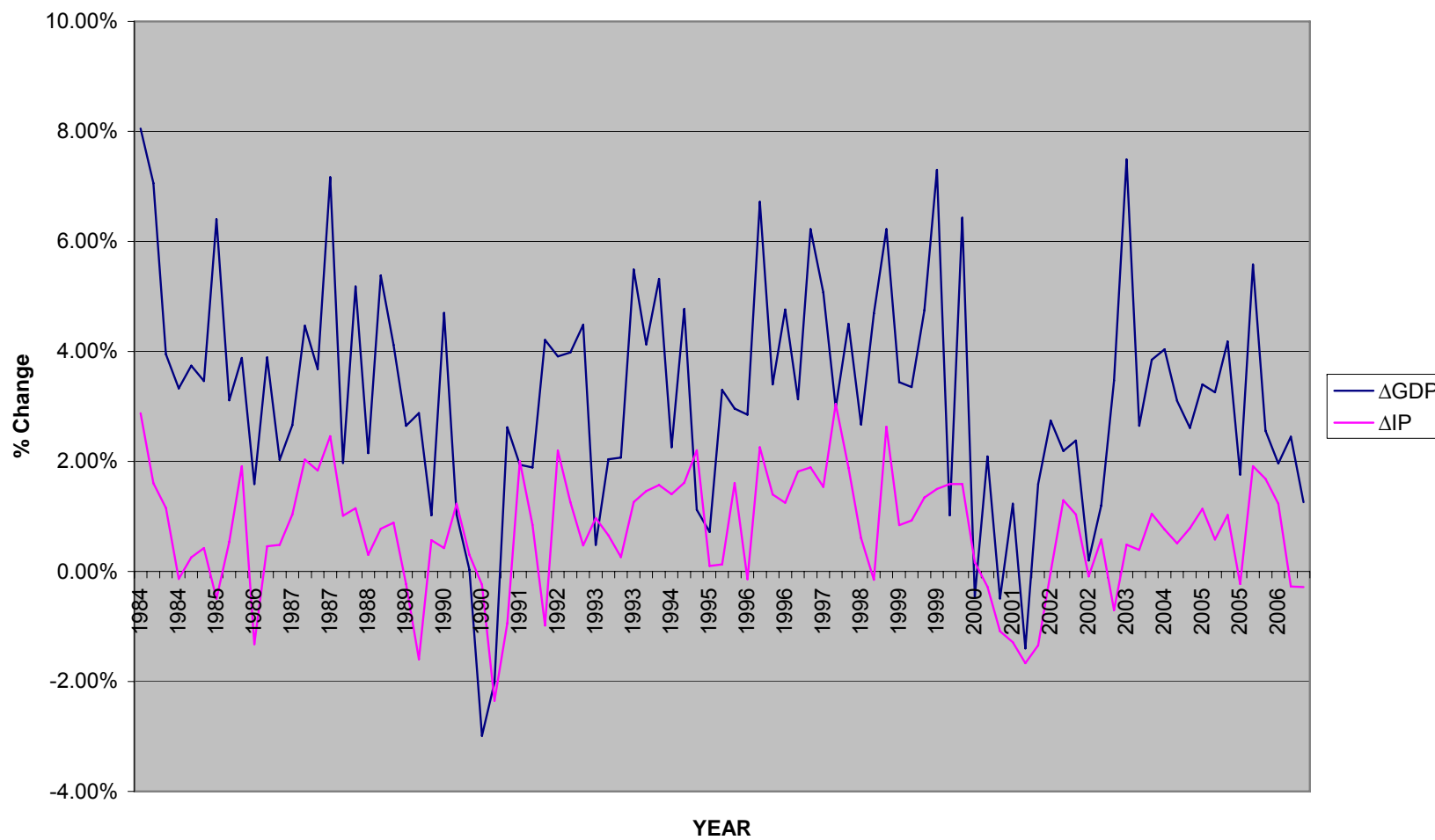


Figure 1c: Investor Sentiment based on Baker and Wrugler, 1984 - 2005

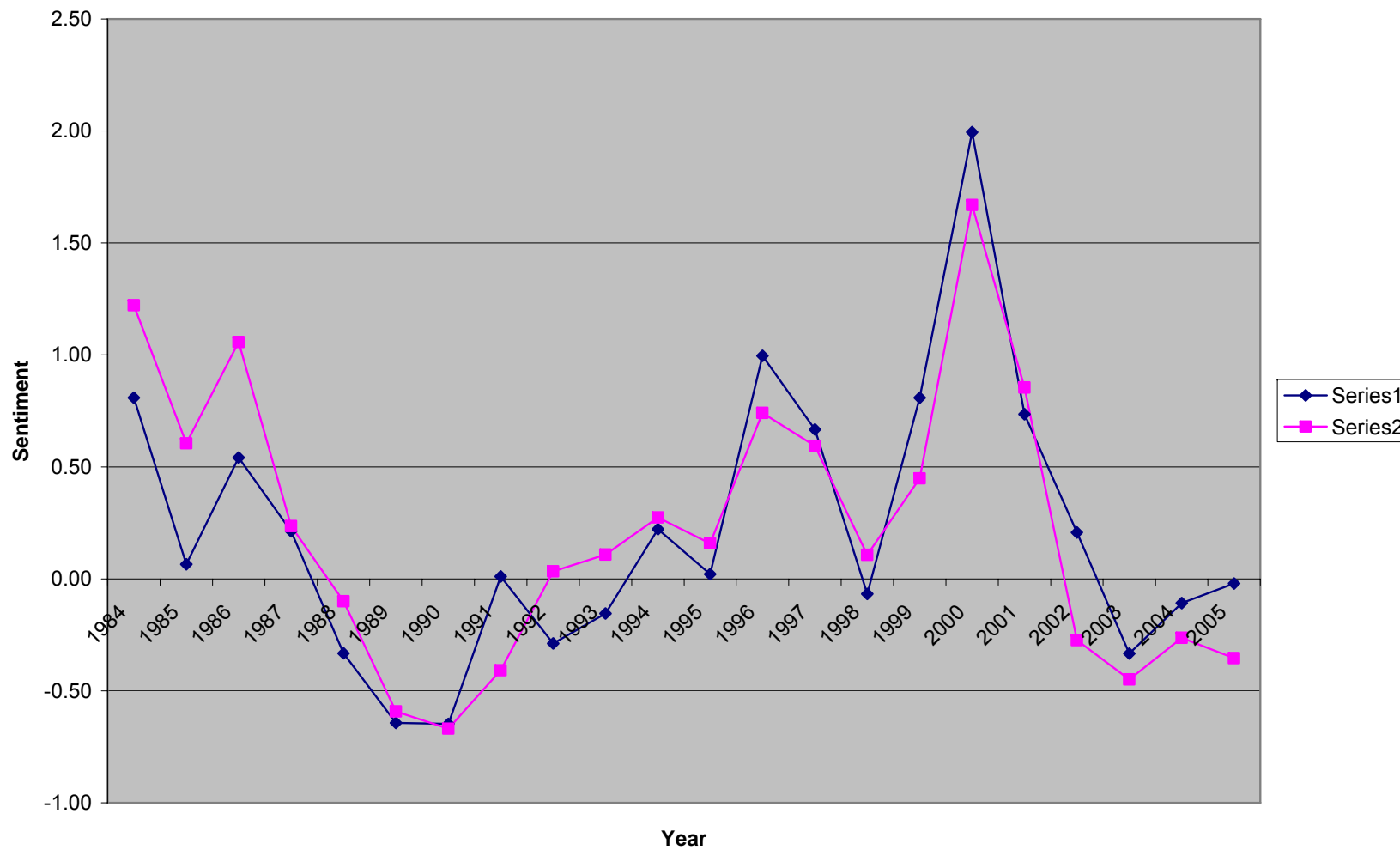


Figure 2a: Meeting Earnings Benchmarks over time, 1984-2006 (Quarterly frequency)

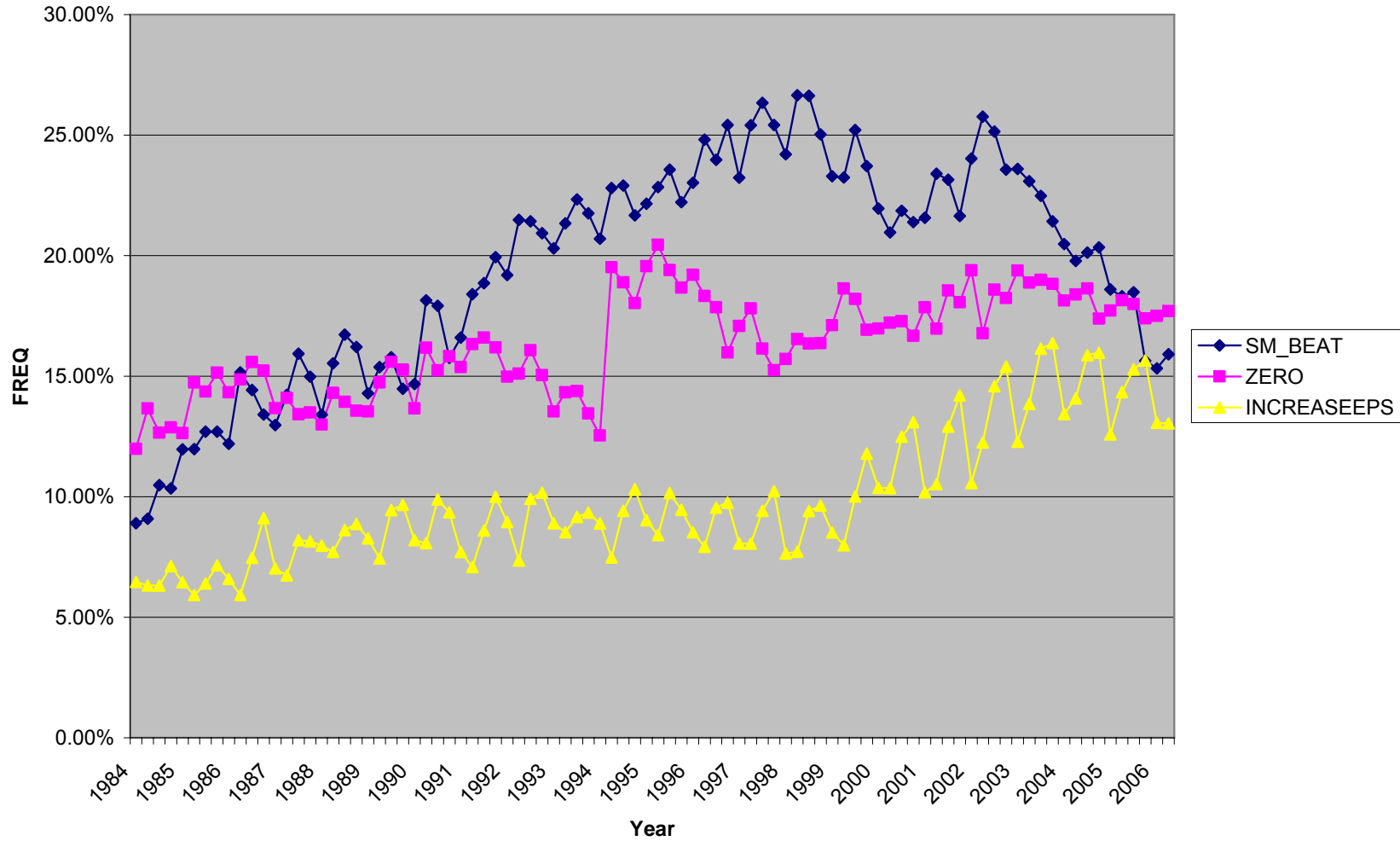


Figure 3: Meeting Earnings Benchmarks over time, 1984-2006 (Yearly frequency)

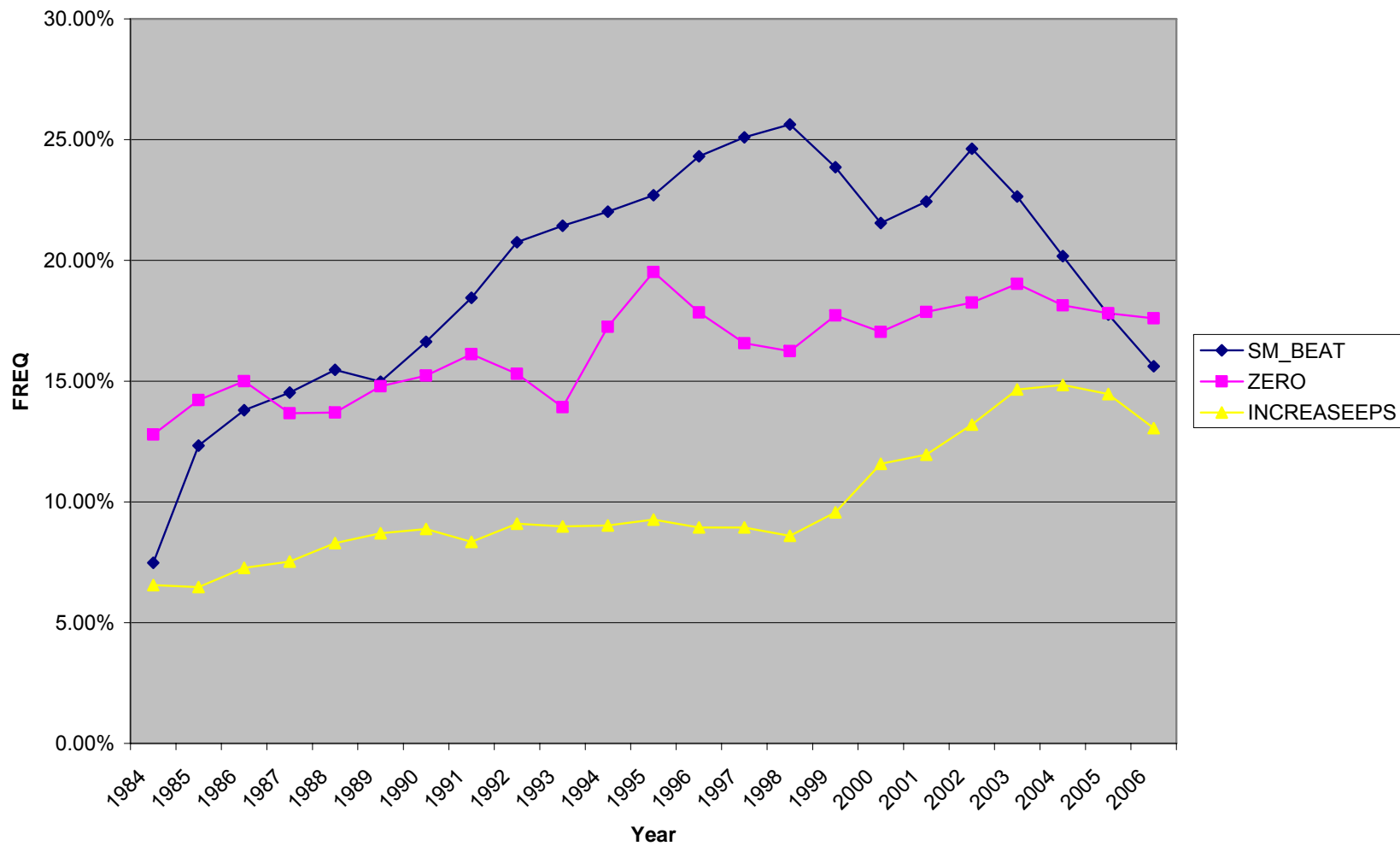


Figure 4: IPOs and SEOs over time, 1984-2006

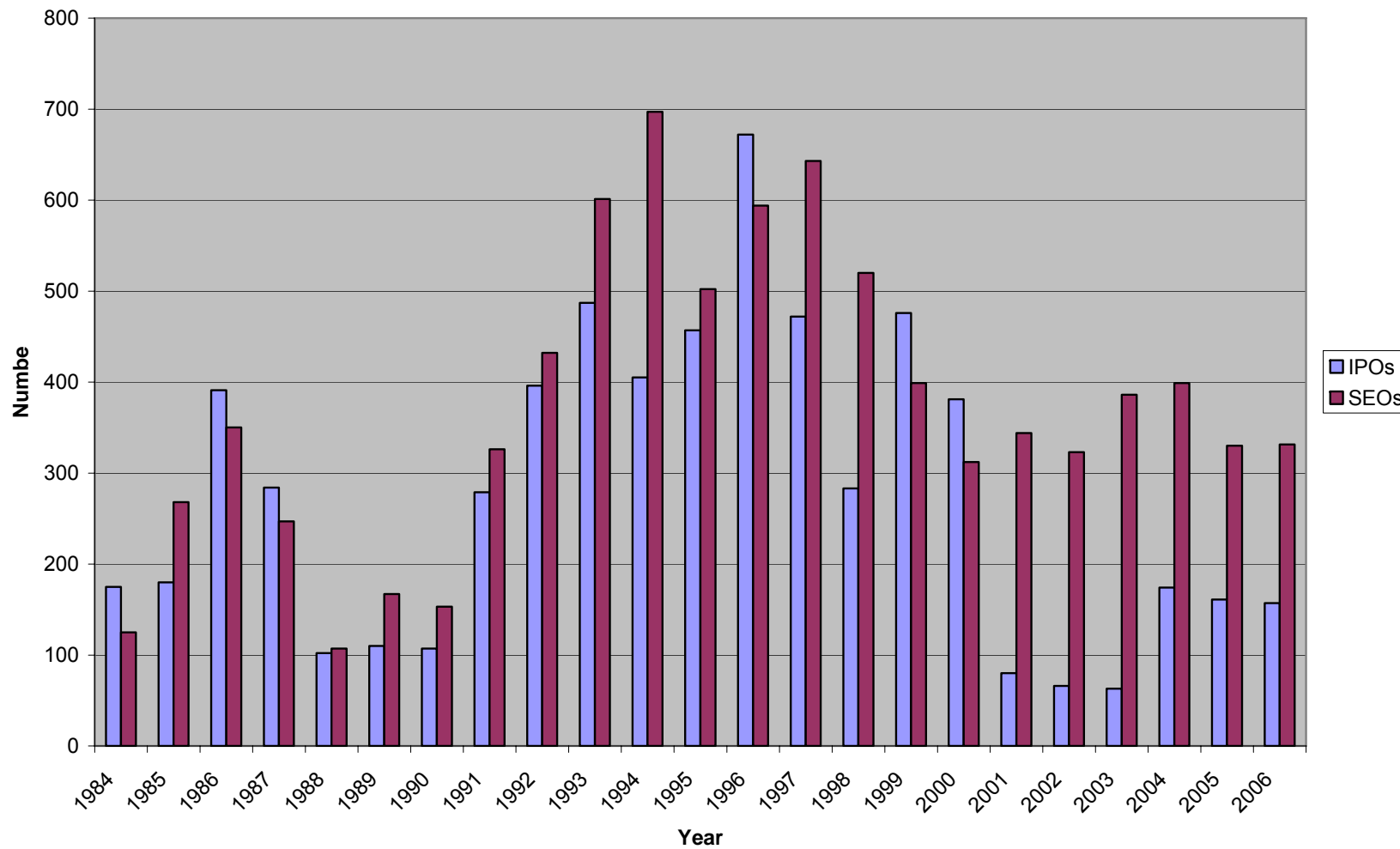


Table 1. Summary Statistics for Economic Conditions

YEAR	P/E Market	Percent Change Real GDP (%)	Percent Change in Industrial Production (%)	Recession/Expansion Classification	SENT1	SENT2
1984	8.226	7.19 %	11.30 %	E	0.81	1.22
1985	10.281	4.13 %	2.90 %	E	0.07	0.60
1986	12.961	3.47 %	2.39 %	E	0.54	1.06
1987	14.562	3.38 %	0.64 %	E	0.21	0.24
1988	11.457	4.13 %	7.54 %	E	-0.33	-0.10
1989	12.173	3.54 %	3.15 %	E	-0.64	-0.59
1990	12.282	1.88 %	-0.85 %	R	-0.65	-0.67
1991	14.195	-0.17 %	-1.09 %	R	0.01	-0.41
1992	15.338	3.32 %	0.90 %	E	-0.29	0.03
1993	16.791	2.67 %	4.98 %	E	-0.15	0.11
1994	16.659	4.02 %	3.69 %	E	0.22	0.27
1995	15.991	2.50 %	6.96 %	E	0.02	0.16
1996	16.978	3.70 %	1.68 %	E	1.00	0.74
1997	19.092	4.50 %	6.89 %	E	0.67	0.59
1998	21.451	4.18 %	8.61 %	E	-0.07	0.11
1999	24.126	4.45 %	3.96 %	E	0.81	0.45
2000	24.036	3.66 %	5.46 %	E	1.99	1.67
2001	21.459	0.75 %	0.37 %	R	0.73	0.85
2002	18.814	1.60 %	-4.25 %	E	0.21	-0.27
2003	17.233	2.51 %	2.85 %	E	-0.33	-0.45
2004	16.945	3.91 %	1.22 %	E	-0.11	-0.26
2005	14.991	3.22 %	3.23 %	E	-0.02	-0.35
2006	15.396	3.32 %	3.33 %	E	N.A.	N.A.
All Years						
Mean	16.145	3.30 %	3.30 %		0.21	0.23
Std. Dev.	0.249	3.50 %	3.48 %		0.61	0.62
Max.	26.913	7.20 %	11.30 %		-0.65	-0.67
Min.	7.171	-0.20 %	-4.25 %		1.99	1.67

Notes to Table 1:

P/E Market is the aggregate market P/E ratio; the percent change in GDP and industrial production are retrieved from the Federal Reserve Bank of St. Louis website (<http://research.stlouisfed.org/fred2/>); Expansion and Recession periods are defined by the National Bureau of Economic Research (NBER), where expansions are from the trough to the peak of business growth and recessions are from the peak to trough of business growth; SENT1 and SENT2 are an investor sentiment index based on Baker and Wurgler (2006), obtained from Jeffrey Wurgler's website (<http://pages.stern.nyu.edu/~jwurgler/>).

Table 2. Summary Statistics for Meeting Earnings Benchmarks

YEAR	SM_BEAT (%)	ZERO (%)	INCR_EPS (%)	Number of Observations
1984	7.48 %	12.80 %	6.56 %	2261
1985	12.34 %	14.22 %	6.48 %	7841
1986	13.80 %	15.00 %	7.27 %	8148
1987	14.53 %	13.67 %	7.53 %	8458
1988	15.47 %	13.70 %	8.29 %	8586
1989	14.98 %	14.79 %	8.70 %	8880
1990	16.63 %	15.23 %	8.88 %	9026
1991	18.45 %	16.12 %	8.35 %	9048
1992	20.76 %	15.30 %	9.10 %	10311
1993	21.43 %	13.92 %	8.98 %	11964
1994	22.02 %	17.25 %	9.02 %	13088
1995	22.70 %	19.52 %	9.27 %	13976
1996	24.31 %	17.84 %	8.94 %	15519
1997	25.10 %	16.57 %	8.95 %	17251
1998	25.63 %	16.24 %	8.60 %	17748
1999	23.86 %	17.72 %	9.57 %	17342
2000	21.54 %	17.04 %	11.58 %	15115
2001	22.44 %	17.86 %	11.95 %	13824
2002	24.63 %	18.25 %	13.20 %	13274
2003	22.65 %	19.02 %	14.66 %	13184
2004	20.18 %	18.14 %	14.84 %	14385
2005	17.76 %	17.81 %	14.47 %	14729
2006	15.62 %	17.60 %	13.06 %	15257
All Years				279,215
Mean	19.32 %	16.33 %	9.92 %	12,140
Std. Dev.	4.76 %	1.89 %	2.56 %	3,858
Max.	25.63 %	19.52 %	14.84 %	17,748
Min.	7.48 %	12.80 %	6.48 %	2,261

Notes to Table 2: SM_BEAT (%) is the frequency of firm-quarter observations meeting or beating analyst forecasts by one cent per share or less;
ZERO (%) is the frequency of firm-quarter observations where net income scaled by total assets is greater or equal to zero but less than 0.5% of total assets;
INCR_EPS (%) is the frequency of firm-quarter observations where the change in earnings per share for the current quarter compared to the same quarter last year is between zero and a cent per share.

Table 3. Correlation Matrix for Variables of Interest

	SM_BEAT	ZERO	INCR_EPS	PE	SENT	%GDP	SEO	IPO	IPROD	TIME	SE
SM_BEAT	1	0.651***	0.381***	0.805***	-0.008	-0.070	0.518***	-0.017	0.066	0.671***	0.232***
ZERO	0.616***	1	0.588***	0.527***	-0.042	-0.181*	0.281***	-0.199**	-0.100	0.757***	0.198*
INCR_EPS	0.429***	0.608***	1	0.411***	-0.142	-0.153	0.094*	-0.483***	-0.146	0.843***	0.165
PE	0.833***	0.544***	0.519***	1	0.292***	-0.075	0.418***	-0.001	0.035	0.656***	0.322***
SENT	0.085	-0.061	-0.173*	0.275***	1	0.128	0.022	0.300	-0.067	-0.011	0.165
%GDP	-0.014	-0.185*	-0.208**	-0.301	0.172	1	0.059	0.251**	0.521	-0.121	0.166
SEO	0.491***	0.335***	0.154	0.509***	0.171	0.115	1	0.438***	0.217	0.359***	0.167
IPO	0.007	-0.232**	-0.466***	0.013	0.472***	0.276***	0.457***	1	0.321***	-0.388***	0.098
IPROD	0.115	-0.074	-0.139	0.018	0.168	0.467***	0.217***	0.375***	1	-0.043	-0.087
TIME	0.628***	0.754***	0.846***	0.674***	-0.063	-0.139	0.399***	-0.401***	-0.038	1	-0.124
SE	0.169	0.168	0.175*	0.259**	0.138	-0.146	0.197**	0.142	-0.172	0.261***	1

Notes to Table 3:

SM_BEAT is the frequency of firms meeting/beating analyst forecasts in a given quarter by a cent per share or less; ZERO is the frequency of firms in a given quarter where net income divide by total assets is between zero and 0.5 percent; INCR_EPS is the frequency of firms in a given quarter where the change in reported earnings per share compared to the same quarter last year is between zero and one cent per share; PE is the aggregate P/E ratio; SENT is the investor sentiment index based on Baker and Wurgler (2006); %GDP is the percentage change in quarterly GDP; SEO is the number of seasoned equity offerings in a given quarter divided by the number of firms in that quarter; IPO is the number of new initial public offerings in a given quarter; IPROD is the percentage change in quarterly industrial production; TIME is a time trend variable taking the value of 1 to 92 (the overall number of quarters in the sample); SE is overall share of equity issues in total equity and debt issues in a given quarter.

Table 4. Meeting Earnings Benchmarks and Economic Conditions

	SM_BEAT	ZERO	INCR_EPS	SM_BEAT	ZERO	INCR_EPS	SM_BEAT	ZERO	INCR_EPS
Intercept	0.0715 (6.18)***	0.138 (22.06)***	0.085 (14.29)***	0.141 (14.88)***	0.139 (36.69)***	0.061 (14.79)***	0.141 (17.99)***	0.137 (43.42)***	0.060 (17.57)***
PE	0.006 (6.72)***	0.002 (0.44)	0.001 (5.04)***						
TIME	0.000 (3.66)***	0.006 (7.71)***	0.000 (11.58)***	0.001 (8.10)***	0.000 (10.44)***	0.000 (14.40)	0.001 (8.20)***	0.000 (10.43)***	0.000 (14.50)***
% GDP				0.072 (0.41)	-0.085 (-1.21)	-0.095 (-1.23)			
IPROD							0.384 (1.14)	-0.101 (-0.74)	-0.232 (-1.58)
R- Square	0.689	0.774	0.647	0.433	0.567	0.721	0.441	0.562	0.721
F- Statistic	93.42	143.79	77.04	32.85	56.24	106.13	33.86	55.21	107.89
No. of Obs.	92	92	92	92	92	92	92	92	92

Notes to Table 4:

SM_BEAT is the frequency of firms meeting/beating analyst forecasts in a given quarter by a cent per share or less; ZERO is the frequency of firms in a given quarter where net income divide by total assets is between zero and 0.5 percent; INCR_EPS is the frequency of firms in a given quarter where the change in reported earnings per share compared to the same quarter last year is between zero and one cent per share; PE is the aggregate P/E ratio; %GDP is the percentage change in quarterly GDP; IPROD is the percentage change in quarterly industrial production; TIME is a time trend variable taking the value of 1 to 92 (the overall number of quarters in the sample).

Table 5. Meeting Earnings Benchmarks and Economic Conditions

	SM_BEAT	ZERO	INCR_EPS	SM_BEAT	ZERO	INCR_EPS	SM_BEAT	ZERO	INCR_EPS
Intercept	0.065 (5.81)***	0.139 (18.83)***	0.087 (12.36)***	0.137 (14.82)***	0.139 (23.72)***	0.062 (14.42)***	0.137 (17.51)***	0.136 (37.83)***	0.062 (16.64)***
PE	0.005 (5.51)***	0.003 (0.50)	0.002 (4.36)***						
%GDP				0.177 (1.06)	-0.081 (-1.10)	-0.085 (-1.15)			
IPROD							0.798 (2.57)***	-0.085 (-0.60)	-0.309 (-1.11)
TIME	0.000 (3.80)***	0.000 (6.80)***	0.001 (13.02)***	0.000 (9.42)***	0.000 (13.68)***	0.000 (10.08)***	0.000 (9.72)***	0.000 (10.07)***	0.000 (13.97)***
SENT	-0.013 (-1.47)	-0.050 (-0.70)	0.024 (0.91)	0.007 (1.19)	0.001 (0.57)	0.007 (1.05)	0.006 (1.20)	0.001 (0.73)	0.006 (1.27)
SEO	0.036 (3.47)***	0.050 (1.21)	0.024 (3.97)***	0.116 (2.51)***	0.018 (2.23)***	0.027 (2.74)***	0.119 (2.63)***	0.045 (2.41)***	0.028 (2.67)***
R- Square	0.711	0.567	0.776	0.543	0.572	0.729	0.571	0.567	0.739
F- Statistic	51.50	27.85	72.31	27.98	27.92	74.29	27.34	26.93	58.03
No. of Obs.	88	88	88	88	88	88	88	88	88

Notes to Table 5:

SM_BEAT is the frequency of firms meeting/beating analyst forecasts in a given quarter by a cent per share or less; ZERO is the frequency of firms in a given quarter where net income divide by total assets is between zero and 0.5 percent; INCR_EPS is the frequency of firms in a given quarter where the change in reported earnings per share compared to the same quarter last year is between zero and one cent per share; PE is the aggregate P/E ratio; SENT is the investor sentiment index based on Baker and Wurgler (2006); %GDP is the percentage change in quarterly GDP; SEO is the number of seasoned equity offerings in a given quarter divided by the number of firms in that quarter; IPROD is the percentage change in quarterly industrial production; TIME is a time trend variable taking the value of 1 to 88.