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Do Sin Firms Commit Accounting Sins?

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Abstract

Social norms deter socially responsible investors from investing in sin firms, i.e., firms that sell unethical products and profit from human vice. Existing literature documents that sin firms are less held by institutional investors and less followed by analysts, and this neglect effect leads to higher expected returns than in other firms. Our study explores the earnings management behavior of sin firms. Our empirical findings suggest that compared to others, sin firms are more likely to report small earrings surprises and small earnings increases, but less likely to report superior earnings. Sin firms' earnings management behavior is exacerbated by lower non-transient institutional ownership, lower analyst coverage, and greater litigation risks. Additional analyses document that sin firms use both accrual-based management and real activity manipulation to report earnings that just meet earnings thresholds. The overall findings suggest that sin firms' opportunistic behavior likely increases the information risks and contributes to the documented higher expected returns.

Keywords: earnings management, corporate governance, institutional ownership, real activity manipulation, sin firms, socially responsible investing.

I. INTRODUCTION

This study analyzes the earnings reporting pattern of "sin firms," i.e., firms that sell products or provide services that violate social norms. Sin firms include firms in the tobacco, alcohol, casino, and adult entertainment services industries (Hong & Kacperczyk, 2009; Kim & Venkatachalam 2011). Although these firms do not sell illegal products, they bring a negative social image to their investors. For example, former director of the U.S. Centers for Disease Control and Prevention, Frenda Fitzgerald, resigned from her position in February 2018 after politico reported that she had traded tobacco shares even after taking the position at the public health agency.

There are three major driving forces of individual and group behavior: economic rationality, legal compliance, and social norms. Sin firms are clearly operating against social norms. Therefore, financial market participants, such as individual and institutional investors and financial analysts, have largely "neglected" sin firms. The neglect effect of sin firms draws attention to research especially on investors' decisions regarding the trade-off between economic rationality and social norms. Economics and finance literature has extensively documented that sin firms yield higher risk-adjusted abnormal returns than conventional stocks (Hong & Kacperczyk, 2009; El Ghoul et al., 2011). However, market participants are willing to sacrifice superior financial rewards in order to comply with social norms (Hong & Kacperczyk, 2009; Liu et al., 2014; and Borgers et al., 2015). In the past century, social responsibility has been playing an increasingly important role in the investment regime, as evidenced by the growing investment in

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environmental, social, and governance (ESG) stocks. The rise of ESG stocks likely will exacerbate the neglect effect of sin firms.

Empirical findings suggest that the abnormal returns of sin firms can be attributed to high litigation risks, intensive regulatory scrutiny, and social neglect, but not to information asymmetry. Specifically, Kim and Venkatachalam (2011) examine the financial reporting quality of sin firms and find that the earnings quality reported by sin firms is superior to that reported by comparable firms. In another study, Zhang (2012) investigates the discretionary accruals component of earnings and finds that sin firms report smaller absolute discretionary accruals and less positive discretionary accruals than conventional firms. Overall, the existing literature indicates that the abnormal returns in sin firms are predominantly caused by the social neglect of the sinful products. In summary, abiding by social norms is costly.

Our study extends previous research and examines the financial reporting quality of sin firms from a different perspective. Instead of focusing on the predictability of earnings, we explore the earnings management behavior of sin firms and examine three research questions. Firstly, do sin firms manage earnings? Secondly, if sin firms manage earnings, do they manage earnings to a similar extent to comparable firms? Lastly, if sin firms manage earnings, how do they do that? Specifically, we investigate sin firms' earnings management behavior at two earnings thresholds: consensus analyst forecasts and earnings increases. Our empirical results are mostly consistent across these two thresholds, and our findings suggest that sin firms manipulate their reported earnings. Compared to other firms, sin firms are more likely to report earnings numbers that slightly exceed analyst earnings forecasts and last year's earnings. Moreover, our findings show that due to higher litigation risk, sin firms are less likely to report superior earnings than non-sin firms.

In addition to our main findings, we further explore three factors that induce sin firms to manipulate their earnings: non-transient institutional ownership, analyst coverage, and litigation risk. Our empirical results suggest that sin firms are more likely to manipulate earnings when they have less non-transient institutional ownership, lower analyst coverage, and greater litigation risk. Lastly, we investigate which accounting and/or real activity management measures sin firms use to manipulate their reported earnings. The overall findings suggest that while sin firms mainly use discretionary accruals to narrowly meet last year's earnings, they use both accrual-based management and real activity manipulation to report small earnings surprises.

Our study contributes to the literature in two ways. Firstly, existing literature on sin firms largely focuses on capital market effects: such as stock returns and the type of investors that invest in sin firms. Our study extends the research by exploring an important managerial behavior, i.e. opportunistic earnings management. The results indicate that sin firms manage their reported earnings to just meet earnings thresholds. This opportunistic earnings management behavior might further increase sin firms' information risks and contribute to their abnormal stock returns. Secondly, we contribute to the literature by demonstrating that due to significant regulatory scrutiny and litigation risks, sin firms are less likely to report superior earnings than non-sin firms. Combined with the previous findings, the overall results suggest that sin firms have two earnings management goals. On the one hand, sin firms have incentives to manage their earnings upward to report small earnings surprises and small earnings increases. On the other hand, they also have incentives to manage their earnings downward to avoid reporting superior earnings. This result is consistent with the conclusions of Kim and Venkatachalam (2011) on the timelier loss recognition in sin firms. Overall, the

documented opportunistic earnings management behavior in sin firms could help investors and other market participants better understand sin firms' reported earnings and make informed decisions. The results also provide insights to regulators with regard to the financial reporting quality in sin industry.

To the best of our knowledge, there are two prior studies that investigate sin firms' earning management behavior. Zhang (2012) examines sin firms' discretionary accruals and finds that sin firms report smaller absolute discretionary accruals and less positive discretionary accruals than non-sin firms. Ogilby et al. (2020) focus on sin firms' real activity management and document that sin firms do not cut discretionary spending or manipulate cost of goods sold to report positive earnings and small earnings increases. However, the exclusive reliance on individual earnings management tools to capture earnings management is subject to a few limitations. First, the extensive literature on earnings management has well documented that firms use a portfolio of various accounting and real activity tools that includes both accrual-based management and real activity manipulation to manage their reported earnings (Cohen et al., 2008, Cohen et al., 2019). Thus, the empirical study investigating one mechanism at a time may not capture the whole picture of sin firms' earnings management behavior. In addition, the measurement of discretionary accruals, abnormal production and discretionary spending cut all relies on a meaningful prediction model, while the analysis of the distribution of earnings relative to earnings benchmarks does not. Therefore, we adopt an alternative research design and examine the distribution of earnings reported by sin firms. The distribution approach does not require an estimate of the normal accruals in the absence of discretion. More importantly, it can capture the combined effect of multiple earnings management measures, including both accrual-based management and real activity manipulation.

The rest of the paper proceeds as follows. We review the related literature and develop our hypotheses in section two. The research methodology is discussed in section three. In section four, we present the empirical findings, followed by additional discussion in section six. Lastly, we conclude the paper in section seven.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Social scientists have long documented that social norms, i.e., the social forces that are not outcome-oriented, play an important role in economic behavior and market movements (Elster, 1989). The capital market effect of social norms is reflected in socially responsible investing. In general, socially responsible investors aim to maximize both financial returns and social good, which includes social justice, economic development, and ethical and environmental concerns (Haigh & Hazelton 2004). Elster (1989) indicates that investors—especially mutual funds and pension funds that adopt a socially responsible investing philosophy—can affect firms' business behavior and further improve the overall economic system. Anecdotal evidence suggests that the growth of investments in socially responsible firms have steadily outpaced those in conventional ones in the past two decades.

An integral part of the process of socially responsible investing is social screening (Michelson et al., 2004). There are two types of social screening, positive screening and negative screening. Positive screening applies the "only if" mechanism, and informs potential investors of the companies that are engaged in ethical practices, such as leadership in products, improvements in human rights, and maintaining peaceful and healthy environments. Negative screening, on the other side, takes the "never if" process that follows an easier and less involved process. During this process, investors avoid

certain businesses that promote human vice, or "sin" firms that are involved in the production of alcohol, gambling, tobacco, adult entertainment, and weapons (Statman & Glushkov, 2009).

Due to the popularity of negative screening, sin firms have attracted a lot of interests in financial research. For example, a seminal paper by Hong and Kacperczyk (2009) documents that despite sin firms have higher expected stock returns than comparable firms, fewer institutional investors invest in sin firms and fewer analysts choose to follow them. Hong and Kacperczyk (2009) also provide some evidence that the higher expected returns could be attributed to the greater litigation risk associated with sin firms. Moreover, prior literature suggests that the inferior information quality may contribute to the higher stock returns that are associated with sin firms. Kim and Venkatachalam (2011) examine the hypothesis that the excess returns of sin firms may be a result of the higher capital costs required by investors to compensate for sin firms' lower financial reporting quality. Contrary to their hypothesis, Kim and Venkatachalam find that sin firms have better reporting quality than comparable firms. In particular, the reported earnings of sin firms have stronger predictive power for future cash flows, and sin firms report losses in a more timelier manner than the control group. Extending Kim and Venkatachalam's conclusion that sin firms have better-quality earnings, our study explores the earnings management behavior of sin firms and examines three research questions. Firstly, do sin firms manage earnings? Secondly, if sin firms manage earnings, do they manage earnings to a similar extent to comparable firms? Lastly, if sin firms manage earnings, how do they do that?

Prior studies suggest that investors exhibit a "threshold mentality" when individuals perceive continuous data in discrete form (Degeorge et al., 1999). The identified thresholds include zero earnings, last year's earnings, and analyst earnings forecasts (Burgstahler & Dichev, 1997; Degeorge et al., 1999). Recent studies further document that since the mid-1990s, reporting earnings that meet analyst forecasts and increases from last year's earnings become more important than reporting positive earnings (Brown & Caylor, 2005; Herrmann et al., 2011). Following prior literature, we focus on two earnings thresholds: consensus analyst forecasts and last year's earnings and investigate whether sin firms manage earnings to meet these thresholds.

As a result of the neglect effect, sin firms suffer from lower stock liquidity. This lower liquidity leads to a higher expected return or higher cost of capital (Amihud & Mendelson, 1986). According to the supply-side argument, in order to expand the investor pool and lower the cost of capital, sin firms face excessive pressure to entice existing and potential investors. An effective way to do so is by reporting satisfying earnings figures that exceed various thresholds. Chen et al. (2020) find a negative association between stock trading liquidity and firms' earnings management, and this negative association is more evident in firms with low stock liquidity. Consequently, we expect that sin firms exhibit earnings management behavior to attract investors' attention and gain more access to the capital market.

In addition, existing studies have demonstrated that sin firms have lower institutional ownership, and the reduced number of institutional inventors further decreases the demand of analyst coverage. Both institutional ownership and analyst coverage are negatively correlated with information asymmetry (Lang & Lundholm, 1996; Frankel & Li, 2004). Because high information asymmetry can be directly linked to the excessive cost of capital, sin firms should have incentives to mitigate this detrimental effect and disclose their private information to the market. Prior studies suggest that firms have several channels through which to convey information about future prospects

to investors, and earnings management is one example (Gul et al., 2003; Gunny, 2010). Therefore, the information asymmetry associated with sin firms as a result of the lack of institutional investors and analysts following should provide sin firms with additional incentives to manipulate earnings.

Furthermore, previous research has found that when firms have limited access to the equity market, they suffer from increased equity costs and tend to rely on the debt market when financing needs arise (Chang et al., 2006; Lipson & Mortal, 2009). Moreover, Chang et al. (2006) find that firms with lower analyst coverage are more likely to issue debt and less likely to issue equity. Thus, their limited access to the equity market and increased information asymmetry cause sin firms to move toward debt financing, especially private placements. Since consistently exceeding earnings thresholds can help companies to improve creditworthiness, issue new debts, refinance existing loans, and lower the cost of borrowing (Alissa et al., 2013; Crabtree et al., 2014; and Fields et al., 2018), the reliance on debt financing should further encourage sin firms to manipulate earnings.

Finally, institutional investors and analysts are both important monitors of firms' financial reporting behavior. Due to the investment size and the use of buy-side analysts, institutional investors have concentrated ownership and work closely with the management team. This monitoring effect mitigates managers' incentives to opportunistically manage earnings (Bushee, 1998; Chung et al., 2002). Specifically, analysts' sophisticated financial knowledge and active participation in the information distribution process make them effective external monitors of managers (Yu, 2008; Degeorge et al., 2013). Since sin firms do not have as many institutional investors and financial analysts as non-sin firms, they are subject to less effective external monitoring. Such limited monitoring makes sin firms less constrained in their earnings management and more flexible in reporting aggressive earnings. Therefore, we summarize our first hypothesis as follows:

H_1: compared to others, sin firms are more likely to manage their earnings to just meet earnings thresholds.

While sin firms have more incentives to report satisfactory earnings, we expect that they are less likely to report significantly high income because of the greater scrutiny and higher litigation risks that accompany it. Because of the nature of their products and services, sin firms clearly receive more scrutiny and regulatory monitoring than others. Since strong financial performance can attract extra attention, sin firms have an incentive to intentionally avoid reporting superior earnings in order to minimize the possibility of additional scrutiny from activists, communities, and governments.

Moreover, the "deep pockets" theory in the litigation literature suggests that firms with superior earnings are more capable of paying larger amounts if lawsuits against them have unfavorable resolutions, e.g., when firms agree to settle cases rather than go to trial (Gande & Lewis, 2009). Therefore, firms with extensive financial resources are more likely to attract attention from both plaintiffs and co-defendants (Khurana & Raman, 2004; Habib et al., 2014). The heightened litigation risk of sin firms could further encourage them to intentionally depress their reported earnings through income-decreasing earnings manipulation. The above arguments thus lead to our second hypothesis:

H_2: compared to others, sin firms are less likely to report superior earnings.

Next, we explore factors that induce sin firms to manipulate their earnings. The first factor we explore is the information asymmetry in sin firms. Prior studies find that sin firms are less likely to be held by institutional investors and less likely to be followed

by financial analysts. The lack of institutional investors and financial analysts in sin firms may impair their information environment and exacerbate information asymmetry. As a result, sin firms have more incentives to report satisfying financial performance to attract investors' attention. At the same time, institutional investors and analysts also serve as effective external monitors of firms, as they actively engage in private information production to uncover managerial misbehavior. Thus, the less involvement of institutional investors and analysts provides additional opportunities for managers to manipulate earnings. These arguments lead to our third and fourth hypotheses, as follows:

H_3: sin firms with lower institutional ownership are more likely to manage their reported earnings to meet earnings thresholds.

H_4: sin firms with lower analyst coverage are more likely to manage their reported earnings to meet earnings thresholds.

The second factor we explore is the intensity of litigation risk. Sin firms are constantly "under siege from lawyers, politicians, and public opinions" (Edgecliffe-Johnson, 2001). For instance, the tobacco industry faced a significant amount of litigation risk until it reached a multistate settlement with the U.S. government in 1997. According to O'Connell (2003), this $206 billion settlement resulted in numerous further lawsuits. The class action literature has found that large firms with strong financial performance and perceived extensive funds can attract the attention of potential plaintiffs and co-defendants. Therefore, sin firms with increased litigation risk have incentives to disguise their performance. Thus, we state our fifth hypothesis as follows:

H_5: sin firms with higher litigation risks are less likely to report superior earnings.

III. RESEARCH METHODOLOGY

Since we hypothesize that sin firms are more likely to manage earnings to just meet the thresholds but not significantly exceed them, we use two alternative sets of dependent variables to examine opportunistic reporting behavior. In addition, we follow Degeorge et al. (1999) and calculate the "bin width" of the areas that are adjacent to the benchmark in both directions (the "just meet" and "just miss" areas).[1] Our first set of dependent variables, Beat, SmBeat, and LgBeat, explores the threshold of consensus analyst forecasts. Beat is a dichotomous variable that equals one if firms' earnings meet or exceed analyst forecasts in year t where analyst forecast is measured by the latest median earnings per share (EPS) before the earnings announcement date; zero otherwise. SmBeat is a dichotomous variable that equals one if firms' analyst forecast error (actual EPS minus median EPS estimate) scaled by stock price at the end of year t is between 0 and 0.00027 (the first bin right next to zero); zero otherwise. LgBeat is a dichotomous variable that equals one if firms' analyst forecast error is in the top quartile of analyst forecast errors for firms of the same size rank in the same year, and zero otherwise. Similarly, our second set of dependent variables, i.e., Increase, SmIncrease, and LgIncrease, focuses on the threshold of last year's earnings. In particular, Increase is a dichotomous variable that equals one if firms' change in earnings in year t scaled by market value at the beginning of year t-1 is positive; zero otherwise. SmInrease is a dichotomous variable that equals one if firms' scaled change in earnings is small (between 0 and 0.0038, the first bin right next to zero); zero otherwise. LgIncrease is a dichotomous variable that equals one if

[1] Following Degeorge et al. (1999), we calculate the bin widths as $2(IQR)n^{-1/3}$, where IQR is the interquartile range of three earnings variables. The calculated bin widths for analyst forecast errors and scaled changes in earnings are 0.00027 and 0.0038, respectively.

firms' scaled change in earnings is in the top quartile of scaled changes in earnings reported by firms of the same size rank in the same year, and zero otherwise.

Following Hong and Kacperczyk (2009), we define sin firms to be those that supply their final products against social norms, i.e., alcohol, tobacco, and gambling. We first compile a sample with all firms in SIC codes 2100-2199 (tobacco firms) and SIC codes 2080-2085 (alcohol firms). We then complement this sample with firms in the gambling industry, which are identified using NAICS codes of 7132, 71312, 713210, 713290, 72112, and 721120. Lastly, consistent with Kim and Venkatachalam (2011), we add four firms that belong to the adult entertainment industry, namely Playboy Enterprises; Rick's Cabaret International, Inc.; Church & Dwight Co., Inc.; and New Frontier Media, Inc.

We test the differentiated earnings management behavior between sin firms and others (H_1) using the following logit regressions:

$$\textbf{Beat/SmBeat}= \beta_0+\beta_1\textbf{Sin}+\beta_2\textbf{LnMVE}+\beta_3\textbf{LnAge}+\beta_4\textbf{LEV}+\beta_5\textbf{MTB}+\beta_6\textbf{Big4}+\beta_7\textbf{Volume}+\textbf{YearFixedEffect}+\varepsilon \quad (1)$$

$$\textbf{Increase/SmIncrease}= \beta_0+\beta_1\textbf{Sin}+\beta_2\textbf{LnMVE}+\beta_3\textbf{LnAge}+\beta_4\textbf{LEV}+\beta_5\textbf{MTB}+\beta_6\textbf{Big4}+\beta_7\textbf{Volume}+\textbf{YearFixedEffect}+\varepsilon \quad (2)$$

Our main variable of interest is the coefficient for the Sin (β_1) indicator variable. We argue that compared to their peers, sin firms have more incentives to manage their reported numbers to exceed thresholds by a small amount (H_1). Therefore, we predict a positive coefficient for Sin when dependent variables capture beating thresholds by a small amount, i.e., SmBeat and SmIncrease. However, we do not have a prediction on the coefficient of β_1 when the dependent variables capture all cases with earnings that exceed thresholds, i.e., Beat and Increase.

In addition, we include a set of control variables in the regression models to capture some cross-sectional differences other than the effect of sin firms (Healy & Wahlen, 1999). Specifically, LnMVE is the natural logarithm of lagged market value of equity. LnAge is the natural log of firm age, measured as the number of years that the firm has been included in the Compustat database. LEV is the sum of short-term debt and long-term debt at the end of year t divided by total assets at the end of year t. MTB is the Market-to-Book ratio at the end of year t. Big 4 is an indicator variable that equals one if the firm is audited by a big four auditors; zero otherwise. Lastly, Volume is the shares transaction volume deflated by the number of outstanding shares at the end of year t.

To test H_2, we use the following logit model:

$$\textbf{LgBeat/LgIncrease}= \beta_0+\beta_1\textbf{Sin}+\beta_2\textbf{LnMVE}+\beta_3\textbf{LnAge}+\beta_4\textbf{LEV}+\beta_5\textbf{MTB}+\beta_6\textbf{Big4}+\textbf{YearFixedEffects}+\varepsilon \quad (3)$$

The above logit model (3) is regressed using two dependent variables to capture superior earnings based on two thresholds: LgBeat and LgIncrease. Our main variable of interest is the coefficient of Sin (β_1). H_2 predicts that due to heightened regulation and litigation risk, sin firms are less likely to report superior earnings compared to peers. Thus, we expect β_1 to be negative. In addition, we include the same set of control variables as those in regressions (1) and (2) to capture other managerial incentives and constraints on earnings management.

To explore the effects of information asymmetry (H_3 and H_4) on sin firms' earnings management, we use the following expanded regressions:

$$\textbf{Sm/SmIncrease}= \beta_0+\beta_1\textbf{Sin}+\beta_2\textbf{LInsOwn}+\beta_3\textbf{Sin*LInsOwn}+\beta_4\textbf{LnMVE}+\beta_5\textbf{LnAge}+\beta_6\textbf{LEV}+\beta_7\textbf{MTB}+\beta_8\textbf{Big4}+\beta_9\textbf{Volume}+\textbf{YearFixedEffects}+\varepsilon \quad (4)$$

$$\mathbf{Sm/SmIncrease} = \beta_0+\beta_1\mathbf{Sin}+\beta_2\mathbf{LInsOwn}+\beta_3\mathbf{Sin*LAnalyst}+\beta_4\mathbf{LnMVE}+\beta_5\mathbf{LnAge}+\beta_6\mathbf{LEV}+\beta_7\mathbf{MTB}+\beta_8\mathbf{Big4}+\beta_9\mathbf{Volume}+\mathbf{YearFixedEffects}+\varepsilon \quad (5)$$

We measure firms' information asymmetry using their non-transient institutional ownership and analyst coverage. LInsOwn is a dichotomous variable that equals one if a firm's non-transient institutional holdings percentage is in the bottom quartile of all firms in the same year and same industry, identified by two-digit SIC codes; zero if the firm's non-transient institutional holdings percentage is in the top quartile. Sin*LInsOwn is the interactive term of Sin and LInsOwn. Similarly, LAnalyst is a dichotomous variable that equals one if the number of analyst forecasts that a firm receives is in the bottom quartile of all firms in the same year and same industry, identified by two-digit SIC codes; zero if the number of analysts is in the top quartile. Sin*LAnalyst is the interactive term of Sin and LAnalyst. Our main variables of interest are two interactive variables: Sin*LInsOwn and Sin*LAnalyst. Since we hypothesize that sin firms with lower institutional ownership and lower analyst coverage are more likely to manipulate earnings, we predict positive coefficients of the interaction terms.

To explore the effect of litigation risk on sin firms' earnings management (H_5), we use the following regression:

$$\mathbf{LgBeat/LgIncrease} = \beta_0+\beta_1\mathbf{Sin}+\beta_2\mathbf{HLit}+\beta_3\mathbf{Sin*HLit}+\beta_4\mathbf{LnMVE}+\beta_5\mathbf{LnAge}+\beta_6\mathbf{LEV}+\beta_7\mathbf{MTB}+\beta_8\mathbf{Big4}+\beta_9\mathbf{Volume}+\mathbf{YearFixedEffects}+\varepsilon \quad (6)$$

We use cash holdings as a proxy to firms' litigation risk. HLit is a dichotomous variable that equals one if a firm's cash and cash equivalent deflated by total assets are in the top quartile of all firms in the same year and same industry, identified by two-digit SIC codes; zero if the firm's cash holdings are in the bottom quartile. Sin*HLit is the interactive term of Sin and HLit. Our main variable of interest is the interactive variable, Sin*HLit. Since we hypothesize that sin firms with higher litigation risks (or those with abundant financial resources) are less likely to report extraordinarily high earnings, we predict a negative sign for the coefficient.

Our sample selection process begins with the sin firms that we identify in the research design section. We first obtain the financial statement information of these sin firms from 2003 to 2016 from the Compustat database and the analyst forecasts for the same period from the Institutional Brokers Estimate System (I/B/E/S) database. This initial sample includes 473 firm-year observations from 74 unique sin firms.

Next, we construct a control group following Kim and Venkatachalam (2011). We first identify the two-digit SIC codes of the sin firms in our sample. We then obtain all non-sin firms in the same industries of these two-digit SIC codes and use these firms as our control group. Since small firms have different incentives and reporting behavior, and sin firms are generally large firms, we drop the control firms with total sales or total assets worth less than $50 million.[2] The final sample includes 2,123 unique control firms across 15 two-digit SIC codes with 13,258 firm-year observations. The final pooled sample contains 13,731 firm-year observations.

Table 1 presents the industry distribution of the final sample at two-digit SIC level.

Table 2 presents the descriptive statistics for 13,731 firm-year observations, among which 473 observations are identified as sin firms and remaining are included in the control group.[3]

[2] The empirical results are robust to the size filter used in the sample selection process.

[3] *, **, and *** indicate statistically significant differences at the 10%, 5%, and 1% levels (two-tailed), respectively.

Table 1
Industry Distribution

SIC Code	Description	Sin Firms	Control Firms
20	Food and Kindred Products	128	688
21	Tobacco Products	60	0
26	Paper and Allied Products	6	357
28	Chemicals and Allied Products	16	2,262
29	Petroleum and Coal Products	8	269
35	Industrial Machinery and Equipment	8	2,073
37	Transportation Equipment	3	925
39	Miscellaneous Manufacturing Industries	3	296
48	Communications	18	1,123
51	Wholesale Trade - Nondurable Goods	7	434
58	Eating and Drinking Places	9	450
70	Hotels and Other Lodging Places	2	107
73	Business Services	1	3,468
79	Amusement and Recreation Services	191	103
87	Engineering and Management Services	12	624
99	Nonclassifiable Establishments	1	79
Total		**473**	**13,258**

Table 2
Descriptive Statistics

Variable	Pooled		Sin Firms	Control Firms	
	Mean	Std. Dev			
Earnings	0.009	0.178	0.020	0.009	
Analyst Forecast Errors	-0.019	0.267	-0.021	-0.019	
Beat	0.657	0.475	0.599	0.659	**
SmBeat	0.139	0.346	0.183	0.138	**
LgBeat	0.256	0.437	0.161	0.260	***
Change in Earnings	0.019	0.185	0.015	0.019	
Increase	0.603	0.489	0.594	0.603	
SmIncrease	0.060	0.237	0.085	0.059	**
LgIncrease	0.259	0.438	0.216	0.261	**
Sin	0.034	0.182	1.000	0.000	
MVE ($Bil)	9.903	32.809	15.579	9.700	***
LnMVE	7.095	1.985	7.561	7.078	***
Age	24.415	16.172	26.562	24.339	***
LnAge	2.988	0.646	3.112	2.984	***
LEV	0.228	0.220	0.396	0.222	***
MTB	3.028	6.263	2.849	3.035	
Big4	0.872	0.335	0.873	0.871	
Volume	9.456	1.123	9.340	9.460	**
IntOwn	0.556	0.258	0.483	0.559	***
LIntOwn	0.495	0.500	0.503	0.495	
Analysts	7.579	7.432	7.353	7.587	
LAnalysts	0.490	0.500	0.406	0.493	***
HLit	0.504	0.500	0.571	0.502	**

The descriptive statistics suggest that sin firms are significantly different from control firms in several firm characteristics. On average, sin firms are larger, more mature and more profitable than those in the control group. Sin firms also have stronger market position, more cash and higher leverage than their peers. Consistent with the findings in prior literature, sin firms in our sample have lower trading volume (volume, p-value < 0.01) and fewer non-transient institutional owners (IntOwn, p-value < 0.01). The descriptive statistics also suggest that sin firms are less likely to report large earnings increases (LgIncrease, p-value= 0.019). Similarly, the results indicate that sin firms are less likely to exceed analyst forecasts in general (Beat, p-value < 0.05), particularly by significant amount (LgBeat, p-value < 0.01). However, they are more likely to exceed analyst forecasts by a small amount (SmBeat, p-value < 0.05).

IV. RESULTS AND DISCUSSIONS

Figure 1 presents the histogram of analyst forecast errors for sin firms from 2003 to 2016. The forecast errors are measured as the differences between actual EPS and the latest median forecasted EPS before the earnings announcement date. The distribution interval bin width is 0.00027. The figure shows a single-peaked, bell-shaped distribution with a sudden rise in the first interval to the right of the bin of zero, which contains all analyst forecast errors in the interval [0.00, 0.00027]. This finding indicates that forecast errors that are slightly less than zero occur less frequently than expected, given the smoothness of the remainder of the distribution, and that the forecast errors slightly greater than zero occur more frequently than would be expected. It is consistent with the tendency of earnings management to report small earnings surprises.

Figure 1

Distribution of Analyst Forecast Errors Reported by Sin Firms

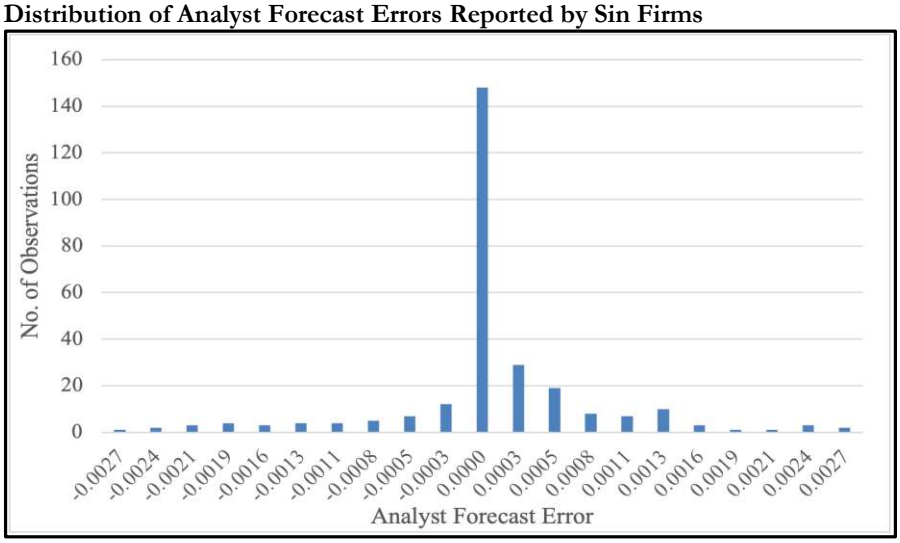
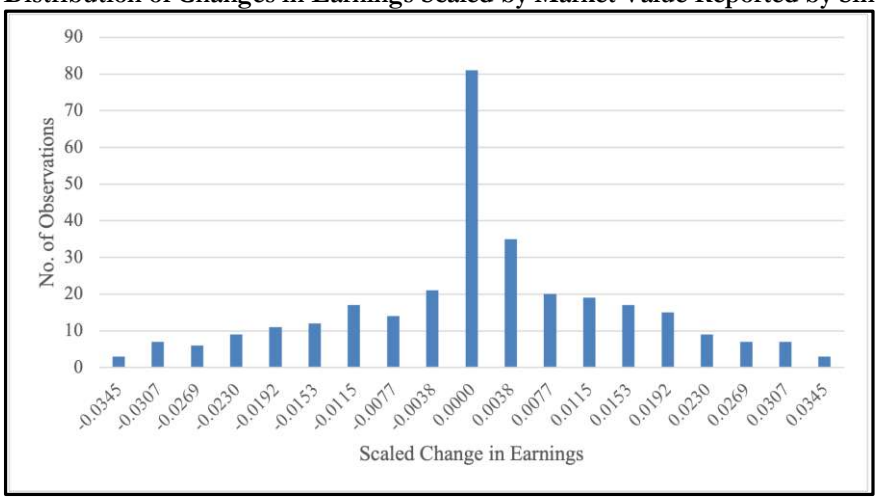


Figure 2 presents the histogram of scaled changes in the earnings of sin firms from 2003 to 2016. The histogram interval width is 0.0038. The figure is similar to the one presented in Panel A, with a bell-shaped distribution and irregularity in the first interval to the right of zero. It is consistent with our prediction that sin firms have incentives to report earnings that exceed last year's earnings by a small amount.

Figure 2
Distribution of Changes in Earnings Scaled by Market Value Reported by Sin Firms



Next, we report the regression results for empirical models (1) and (2). All of the models are estimated using logit regressions with fixed year effects,[4] and standard errors are clustered at firm level.

In Table 3, we present the results for the differential earnings management between sin firms and control firms toward meeting analyst forecasts using regression model (1). We hypothesize that compared to other firms, sin firms have more incentives to just meet analyst forecasts (H_1). Thus, we predict a positive coefficient of Sin in the model using small positive analyst forecast errors as the dependent variable (SmBeat), and we have no prediction on the coefficient if we include all positive forecast errors (Beat), both small and large. The results are consistent with the predictions. In particular, the coefficient of Sin in the first specification with all positive analyst forecast errors (Beat) is negative, but insignificant. However, if we capture the earnings management using only small forecast errors, the coefficient of Sin becomes significantly positive (0.37 with a p-value of 0.05). The findings indicate that compared to their peers, sin firms are more likely to report earnings that slightly exceed analyst forecasts. Most of the control variables also carry the expected signs.

Insert Table 3 here.

Table 4 presents the regression results for empirical model (2). We predict a positive coefficient of Sin in the model with a dependent variable of SmIncrease and we have no prediction for the coefficient in the model with Increase as the dependent variable. The empirical result of the SmIncrease model is consistent with our prediction. Specifically, we find that when we measure the earnings manipulation using small increases in earnings from the previous year, the coefficient of Sin is positive (0.37), with a two-tailed p-value smaller than 0.05. However, if we investigate the effect of sin firms on all cases with increases in earnings, the coefficient is not statistically significant. The overall findings in Table 3 and Table 4 support our prediction that sin firms are more likely to report small earnings surprises and small earnings increases than other firms.

[4] Ideally, we would like to estimate the empirical models with both fixed year and fixed industry effects. However, in many instances, including fixed industry effects results in a complete separation problem.

Table 3
Earnings Management to Exceed Analyst Forecast[5]

	Increase			SmBeat		
	Estimate	**p-value**		**Estimate**	**p-value**	
Intercept	-2.425	<.0001	***	-4.531	<.0001	***
Sin	-0.140	0.345		0.364	0.047	**
LnMVE	0.160	<.0001	***	0.207	<.0001	***
LnAge	-0.067	0.131		0.058	0.349	
LEV	-0.998	<.0001	***	-0.795	<.0001	***
MTB	0.000	0.892		0.022	<.0001	***
Big4	0.026	0.733		-0.098	0.404	
Volume	0.244	<.0001	***	0.114	0.001	***
N	12,165			12,165		
Pseudo-R²	0.04			0.03		

Table 4
Earnings Management to Report Increase in Earnings

	Increase			SmIncrease		
	Estimate	**p-value**		**Estimate**	**p-value**	
Intercept	-0.055	0.755		-4.073	<.0001	***
Sin	0.037	0.712		0.372	0.013	**
LnMVE	0.122	<.0001	***	0.228	<.0001	***
LnAge	-0.059	0.046	**	-0.009	0.889	
LEV	-0.629	<.0001	***	-0.787	0.000	***
MTB	0.015	<.0001	***	0.012	0.107	
Big4	-0.058	0.278		0.180	0.297	
Volume	-0.008	0.613		-0.046	0.147	
N	13,731			13,731		
Pseudo-R²	0.04			0.02		

Next, we test our second hypothesis on the likelihood for sin firms to report superior earnings using a logit model (3). Superior earnings are proxied by dependent variables LgBeat and LgIncrease. The empirical results are presented in Table 5. We expect the coefficient of our main variable of interest, i.e., Sin, to be negative. The results are consistent with our expectations. Specifically, the coefficient of Sin is significantly negative at 1% and 5% in the models that use LgBeat and LgIncrease as dependent variables, respectively. The results confirm our predictions that compared to control firms, sin firms are less likely to report significant increases in earnings and less likely to report earnings that significantly exceed earnings forecasts.

Insert Table 5 here.

The empirical findings of our main analyses suggest that sin firms manage their reported earnings to narrowly meet earnings benchmarks and to avoid reporting superior earnings. These results confirm the conclusions of Kim and Venkatachalam (2011) on the timelier loss recognition of sin firms. Next, we present the empirical results investigating three factors that induce sin firms to manipulate their earnings.

[5] The regression models are estimated using logit regressions with fixed year effects and standard errors are clustered at firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels (two-tailed), respectively. All variables are winsorized at 1% and 99%.

Table 5
Earnings Management to Avoid Reporting Superior Earnings

	LgBeat			LgIncrease		
	Estimate	**p-value**		**Estimate**	**p-value**	
Intercept	-0.574	0.092	*	-1.019	<.0001	***
Sin	**-0.603**	**0.002**	***	**-0.323**	**0.017**	**
LnMVE	-0.128	<.0001	***	-0.076	<.0001	***
LnAge	-0.037	0.451		-0.070	0.095	*
LEV	0.359	0.003	***	0.645	<.0001	***
MTB	-0.022	<.0001	***	0.000	0.930	
Big4	0.158	0.052	*	-0.025	0.717	
Volume	0.042	0.188		0.063	0.003	***
N	12,165			13,731		
Pseudo-R^2	0.02			0.01		

We start by examining the effect of institutional ownership on sin firms' earnings management behavior using regression model (4). The empirical results are presented in Table 6. We predict that sin firms with lower institutional ownership have more incentives to manipulate earnings. Thus, the interactive variable, Sin*LInsOwn, is predicted to be positive. In the first model specification, we target consensus analyst forecasts as the threshold. As predicted, the coefficient of the interactive term Sin*LInsOwn is significantly positive (1.13, with p-value = 0.05), suggesting that sin firms with lower non-transient institutional ownership report small earnings surprises more frequently than other firms. When we use last year's earnings as the threshold in the second model, the coefficient of Sin*LInsOwn is insignificant. The overall results are consistent with our hypothesis, and indicate that compare to non-sin firms, sin firms with lower institutional ownership are more likely to manipulate earnings and report earnings that slightly exceed analyst forecasts.

Table 6
Effect of Institutional Ownership on Sin Firms' Earnings Management

	SmBeat			SmIncrease		
	Estimate	**p-value**		**Estimate**	**p-value**	
Intercept$_t$	-3.322	0.000	***	-2.086	0.026	**
Sin$_t$	-0.168	0.662		0.832	0.039	**
LInsOwn$_t$	-0.400	0.017	**	-0.523	0.010	**
Sin$_t$*LInsOwn$_t$	**1.329**	**0.021**	**	-0.475	0.463	
LnMVE	0.170	<.0001	***	0.186	<.0001	***
LnAge	-0.099	0.375		-0.100	0.465	
LEV	-0.963	0.003	***	-1.034	0.006	***
MTB	0.031	0.000	***	-0.003	0.862	
Big4	-0.295	0.081	*	0.035	0.904	
Volume	0.093	0.151		-0.161	0.013	**
N	4,466			5,146		
Pseudo-Rsq	0.03			0.02		

Second, we test the effect of analyst coverage on sin firms' earnings management using regression model (5). The results are presented in Table 7. We hypothesize that sin firms with lower analyst coverage have more incentives and opportunities to report satisfying earnings. Thus, the coefficient of the interactive term Sin*LAnalyst is predicted to be positive. The empirical results are largely consistent with our prediction. Specifically, the coefficient of Sin*LAnalyst is significantly positive, with p-value lower

than 0.01 in the first model with SmBeat as the dependent variable. When we use last year's earnings as the threshold, the coefficient becomes insignificant.[6] The results confirm our prediction and demonstrate that sin firms with lower analyst coverage are more likely to report earnings that only exceed analyst forecasts by a small amount.

Table 7
Effect of Analyst Coverage on Sin Firms' Earnings Management

	SmBeat			SmIncrease		
	Estimate	**p-value**		**Estimate**	**p-value**	
Intercept	-0.872	0.237		-2.206	0.010	***
Sin	-0.070	0.822		0.542	0.010	**
LAnalyst	-1.120	<.0001	***	-0.604	0.005	***
Sin*LAnalyst	**1.390**	**0.006**	***	-0.921	0.147	
LnMVE	0.129	0.001	***	0.149	<.0001	***
LnAge	0.050	0.569		-0.067	0.453	
LEV	-0.686	0.012	**	-0.766	0.009	***
MTB	0.029	0.001	***	0.010	0.428	
Big4	-0.281	0.109		0.593	0.015	**
Volume	-0.144	0.012	**	-0.170	0.003	***
N	5,216			6,712		
Pseudo-R^2	0.06			0.03		

Lastly, we explore the effect of litigation risk on sin firms' earnings management (H_5) using regression model (6) and present the empirical results in Table 8. Sin firms with higher litigation risks have incentives to reduce the perceived image that they possess abundant financial resources. As such, we predict that they are less likely to report superior earnings. Our main variable of interest, Sin*HLit, is therefore predicted to be negative. The empirical results are largely consistent with this prediction. Specifically, the coefficient of Sin*HLit is insignificant in the first model, when we use LgBeat as the threshold. However, the coefficient becomes significantly negative (-0.97 with p-value smaller than 0.01) when LgIncrease is the dependent variable. The results suggest that higher litigation risk provides sin firms with more incentives to avoid reporting earnings that largely exceed last year's performance.

Table 8
Litigation Risk and Sin Firms' Earnings Management

	LgBeat			LgIncrease		
	Estimate	**p-value**		**Estimate**	**p-value**	
Intercept	-0.288	0.516		-1.308	0.000	***
Sin	-0.481	0.144		0.208	0.344	
HLit	0.356	<.0001	***	0.206	0.005	***
Sin*HLit	-0.330	0.525		**-0.966**	**0.005**	***
LnMVE	-0.164	<.0001	***	-0.089	<.0001	***
LnAge	-0.003	0.961		-0.023	0.705	
LEV	0.529	0.001	***	0.735	<.0001	***
MTB	-0.017	0.001	***	0.002	0.615	
Big4	0.053	0.600		-0.068	0.470	
Volume	0.011	0.796		0.076	0.022	**

[6] The insignificant result in the second model with SmIncrease as the dependent variable is not surprising. Existing literature has found that for firms with analyst coverage, reporting earnings that beat analyst forecasts is at the top of the earnings benchmark hierarchy.

To be continued Table 8.

	LgBeat		LgIncrease	
	Estimate	**p-value**	**Estimate**	**p-value**
N	5,938		6,755	
Pseudo-R^2	0.03		0.01	

4.1. Discussion

Our main empirical findings indicate that sin firms are more likely to report earnings that narrowly meet earnings benchmarks, i.e. consensus analyst forecasts and last year's earnings. The extensive literature on earnings management has long identified two major channels to meet earnings targets: accrual-based management and real activity manipulation (Cohen et al., 2008; Zang, 2012). In additional analysis, we explore the potential ways in which sin firms manipulate their earnings to just beat earnings benchmarks. Specifically, following Kothari et al. (2005) and Cohen et al. (2019), we examine three performance-matched earnings management measures, including discretionary accruals, overproduction and discretionary spending cut. We predict that sin firms use one or more accounting and real activity measures to manipulation their earnings so that they can narrowly meet earnings benchmarks. The empirical findings (untabulated) suggest that sin firms use both discretionary accruals and abnormal discretionary spending cut to narrowly meet analyst earnings forecasts. The findings also suggest that sin firms adopt accruals management, but not real-activity manipulation, to meet last year's earnings. Overall, the results further support our main hypothesis that sins firms are more likely to manipulate their earnings to narrowly meet earnings benchmarks than non-sin firms.

V. CONCLUSION

Social norms deter socially responsible investors from investing in sin firms that supply unethical products or services and profit from human vice. As a result of such neglect effect, Hong and Kacperczyk (2009) find that sin firms have abnormal stock returns. In addition, Kim and Venkatachalam (2011) find that sin firms have better financial reporting qualities than others. Therefore, social norms seem to cause different returns on investments for sin firms.

Our study expands the existing research by exploring an important managerial behavior: earnings management. We hypothesize that although sin firms may have higher reporting quality as a result of the "neglect effect," sin firms are still incentivized to opportunistically manipulate earnings. On the one hand, due to stock illiquidity, information asymmetry, reliance on debt financing, and a lack of external monitoring, sin firms have more incentives and less constraints to report satisfying earnings. On the other hand, compared to other firms, greater litigation risks prevent sin firms from producing superior earnings. Our empirical results are consistent with the predictions. Specifically, we demonstrate that compared to the control group, sin firms are more likely to report small earnings surprises and small earnings increases. The findings also suggest that due to regulatory scrutiny and litigation risk, sin firms are less likely to report superior earnings than others. Next, we examine three factors that might induce sin firms to manipulate their earnings. The results indicate that sin firms' opportunistic earnings management is exacerbated by less non-transient institutional ownership, lower analyst coverage, and greater litigation risks. Lastly, we investigate how sin firms manage their earnings. The overall findings suggest that sin firms use both accrual-based management and real activity manipulation to narrowly meet earnings benchmarks.

Our study extends the research by exploring the important managerial behavior of opportunistic earnings management. Secondly, we contribute to literature by documenting that in addition to the traditional earnings targets, sin firms also have incentives to avoid reporting superior earnings due to high litigation risks and regulatory scrutiny. Overall, the documented opportunistic earnings management behavior in sin firms could enhance market participants' understanding of sin firms' earnings and make better decisions. The results also shed some lights to regulators with regard to the financial reporting quality in sin industry.

Future studies can build on our findings by further investigating sin firms' earnings management frequency and magnitude. Additional studies can also investigate the consequences of sin firms' earnings management and its effects on investors, analysts, auditors and other market participants.

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