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ABSTRACT

Using alcohol, tobacco, and gaming consumption data and people's attitudes toward these sin products to proxy for social norm acceptance levels, we show a strong interaction effect between social norms and financial incentives, which significantly influence the behavior of market participants. Specifically, institutional investors' shareholdings and analyst coverage of sin companies increase with the degree of social norm acceptance. The association between shareholdings/coverage and social norm acceptance is less pronounced for firms with higher future expected performance. Our results show that social norms and financial incentives have a powerful interaction effect in determining the behavior of market participants, suggesting that social norms can be crossed when motive and opportunity exist.

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I. INTRODUCTION

Debate over the trade-off between private and social value of economic activities has continued for at least the past century. This debate reached a new climax in the past decade when a number of corporate scandals broke out due to the unethical behavior of economic agents. As a result, people began to re-think the ultimate objectives of agents and regulations (e.g., Pigou 2005, Cassidy 2009, Bayou, Reinstein, and Williams 2011). Extant literature shows that economic agents maximize short-term profits, but also suggests that socially responsible investors care about non-financial incentives. Since the financial crisis of 2007/2008, the public has increasingly voiced their strong interest in knowing whether the social value of economic activities are sacrificed due to the incentives of market participants chasing financial rewards.

Experimental studies in the accounting literature have explored the interaction effect of financial incentives with professional ethics (Blanthorne and Kaplan 2008, Thompson and Loewenstein 1992, Babcock, Loewenstein, Issacharoff, and Camerer 1995, Hunton and Rose 2008). However, to date few empirical studies directly address how financial incentives interact with social norms (defined as a collection of ethical standards) in determining the behavior of other economic agents, including investment decisions of institutional investors and coverage decisions of financial analysts. While the accounting profession has introduced significant guidance (or professional norms) on ethical behavior, we still see accountants/auditors/executives with economic incentives violating these norms and making self-serving decisions. Such evidence is not rare. For example, Hechter (2008), through an analysis of the rise and fall of the Arthur

Andersen accounting firm, shows that what appeared to have been an unshakable commitment to professional norms was highly contingent upon competing norms, macroeconomic conditions, and internal conflicts. Blanthorne and Kaplan (2008) find that taxpayers' ethical beliefs do not arise independently from economic considerations, but instead are strongly influenced by opportunities to evade income taxes, i.e., the opportunity to evade influences the formation of one's ethical beliefs, which, in turn, affects one's intentions and decisions to evade. Other papers, such as Thompson and Loewenstein (1992) and Babcock, Loewenstein, Issacharoff, and Camerer (1995), have also found an influence of self-interest on one's ethical beliefs. In a recent experiment, Hunton and Rose (2008) find that directors with multiple directorships are less willing to support required financial statements restatements due to the potential adverse effects of restatements on their reputation capital (namely, future income generating ability).

Motivated by the interests of both academics and regulators, in this paper we examine whether social norms and financial incentives have a substitution effect in influencing the behavior of market participants regarding those firms in the alcohol, tobacco and gaming industries. These firms are called sin firms because there are social norms attached to their products, i.e., excessive consumption of alcohol, tobacco, and gambling generates negative externalities to society. Specifically, we examine the following market participants and their behavior: 1) institutions and their stock ownership decisions, and 2) financial analysts and their coverage decisions. Hong and Kacperczyk (2009) suggest social norms are priced and show that sin stocks in the alcohol, tobacco and gaming industries, on average, have less institutional ownership and analyst coverage compared to other non-sin stocks. We assert that social norms may not be adhered to when financial rewards are too enticing for some market participants. In other words, we explore whether

"money talks" when market participants have the dilemma of choosing between social norms and financial rewards.

To answer our research questions, we first investigate how social norms evolve over time. We use the consumption of alcohol, tobacco, and gaming as the proxies for the acceptance levels of the sins related to these products. Using Gallup survey data, we find these proxies are highly correlated with people's attitude toward these sin products. We also find that the consumption of the sin products changes substantially over time and follow different evolution processes. Social norm acceptance levels for alcohol and tobacco have become lower while acceptance levels for gaming have increased. The dynamic nature of these proxies enables us to study the main effect of social norms and the interaction effect of social norms with the expected financial performance of sin firms on the investment decisions of institutional investors and the coverage decisions of financial analysts.

We then conduct both univariate and multivariate regression analyses. We show that institutional ownership and analyst coverage of sin stocks are positively associated with the strength of social norm acceptance, i.e., sin stocks are shunned more when social norm acceptance is low (consumption of sin products is low). Such calibration extends the finding in Hong and Kacperczyk (2009) that sin stocks, compared to the wide universe of stocks, are held less by institutions and followed less by financial analysts. Furthermore, our results suggest a strong interaction effect between social norms and financial incentives of market participants. When a stock is expected to perform poorly, the price of obeying social norms is relatively cheap, leading to additional shunning by institutions and analysts. In contrast, when the stock is expected to perform well and the relative price of obeying social norms becomes high, institutional investors and analysts are shown to choose financial rewards over social norms by shunning fewer sin firms.

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Our results survive from a number of additional robustness checks such as using time-varying sin exposure, alternative measures of expected financial performance, alternative proxies for social norms, and change analysis.

Our study contributes to both the economics and accounting literature. First, we provide strong empirical support for a substitution effect between financial and non-financial incentives among economic agents. We show that when social norms interact with financial considerations, market participants will sacrifice their adherence to social norms for financial rewards. While such a finding sounds intuitive, large sample empirical evidence is scarce in the literature outside of numerous experimental studies dealing mostly with accounting professionals, audit committee members, auditors, and taxpayers. This finding adds to the current debate on why there could be a gap between the investment practices of Wall Street and the ethical standards of Main Street. Some ethical standards consistent with corporate social responsibility considerations are not necessarily profitable to follow. As such, a gap between what is right to do (following ethical standards) versus what is profitable to do (investment practices) can form. Our finding is thus of particular interest to academics, investors, regulators, and various other stakeholders.

Second, we add a level of richness to the previous literature by investigating how social norms evolve over time through the adoption of social norm proxies. Our research design and results highlight the importance of having direct empirical measures of social norms. Our use of changes in consumption of sin products as a proxy for the evolution of social norms towards sin stocks overcomes the drawback of assuming a constant social norms level over time; and thus extends previous studies by showing how social norms are priced in a dynamic setting. Therefore, our results potentially shed light on why social norm effects are found to be weak, in aggregate, for certain periods in the previous literature (Hong and Kacperczyk 2009).

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Finally, our findings have significant implications and importance in practice, especially in view of the aftermath of the recent financial crisis in which numerous individuals and companies have been accused of sacrificing social standards for financial gains. Extending our hypotheses to a more general context, one may predict that when existing social norms are interacted with a strong counteracting force, i.e. financial considerations, a real risk exists that these "compromises" become part of acceptable future social norms (Prentice and Miller 1996). A "compromised" set of social norms may result in regulations and laws needing to be enforced to maintain social order. Such was the case with the failure of Arthur Andersen, and the subsequent passing of the Sarbanes-Oxley Act which was extremely expensive to both implement and enforce (Hechter 2008).

The remainder of the paper is organized as follows. Section II discusses the background and develops the hypotheses. Section III describes the sample selection and methodology. Section IV discusses the empirical results. Section V concludes.

II. BACKGROUND AND HYPOTHESES

Social norms are rules and standards understood by members of a group that guide and constrain social behavior. More precisely, there are two types of social norms: descriptive norms and injunctive norms. Descriptive norms refer to the prevalence of a given behavior (i.e. the number of people in a given population that smoke cigarettes) whereas injunctive norms refer to the degree of actual or perceived approval of a given behavior (Neighbors et al. 2007). Descriptive and injunctive norms should be highly correlated because a popular behavior implies that many people approve of the behavior. These social norms develop as a result of interaction with others. Sanctions for deviating from them come from social networks as opposed to the legal system (Cialdini and Trost 1998). In the economics literature, the impact of social norms on economic

behavior and market outcomes was first studied in the context of the labor market. In the discrimination model of Becker (1957), agents pay for the discretionary tastes arising from community norms. They bear financial costs from their decisions to not enter into contracts with particular types of people. In an unemployment setting, Akerlof (1980) examined social norms and claimed that although social norms can be costly, they continue to exist because of the perceived loss of reputation to followers for diverting from these norms.

Applied to socially responsible investing (SRI), it is generally understood that SRI encourages investors to avoid sin companies such as those companies involved in the production of alcohol, tobacco, and gaming. It is believed that investors with a socially responsible investing philosophy can somehow affect the practices of the firms in which they invest and thus improve "the efficiency of the economic system (in the broad sense of satisfaction of individual values)" (Elster 1989). As a result, shares of sin stocks should be held in smaller proportions by institutions subject to social norm pressures or with socially responsible investing objectives (Geczy, Stambaugh and Levin 2005). Moreover, since sell-side analysts who produce financial reports and analyses tend to cater to institutional investors, sin stocks should also be followed less by these analysts (Hong and Kacperczyk 2009).

Previous literature, through its use of a dummy variable to proxy for "sin", implicitly assumes that strong social norms against sin stocks are constant over time and across different sin types. However, as documented by the sociology and economics literature, through a process of adaptation, social norms are not constant. Rather, they evolve over time in several different dimensions, including age groups, social classes, and social groups (Ostrom 2000; Azar 2004; Kolstad 2007). To overcome this drawback, our study uses consumption data for sin products or services to proxy for the level of social norms in both cross-section and across time. The use of

consumption data to proxy for social norms is consistent with the definition of descriptive norms and the proxies are highly correlated with injunctive norms, as we show later. In addition to raw consumption being the definition of a descriptive norm, previous literature has shown, for example, that injunctive social norms are strong predictors of gambling behavior (i.e. descriptive norms) and gambling-related negative consequences (Larimer and Neighbors 2003; Moore and Ohtsuka 1997; Moore and Ohtsuka 1999; Takushi et al. 2004). Our choice of consumption data relies on the assertion that the undesirable social consequences of alcohol, tobacco, and gaming, when consumed excessively, reflect the consensus social norms against consuming these products. Indeed, we find that whereas social norms against gaming have moderated significantly over the period from 1980 to 2007, the opposite can be said about alcohol and tobacco usage. Such new direct proxies allow us to conduct our study within each sin industry, avoiding the difficulty in choosing the appropriate control group as in the previous literature.

Consistent with our support for the evolution of social norms, we argue that institutions and analysts have a lower demand for sin companies when social norms against the "sin" are stronger. Hong and Kacperczyk (2009) provide evidence that, on average, institutional ownership and analyst coverage are lower for sin companies than for non-sin companies in their full sample period. However, in several sub-periods, such a difference is not significant.[1] Our argument potentially sheds light on the reason: at the time when social norms are weak in aggregate, it is possible that sin is not priced. We thus have the following hypotheses:

Hypothesis 1A: Institutional ownership of sin stocks is associated positively with the strength of social norm acceptance.

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[1] For example, see Panel D of Table 3 in Hong and Kacperczyk (2009).

Hypothesis 1B: Analyst coverage of sin stocks is associated positively with the strength of social norm acceptance.

Previous studies on sin stocks implicitly assume that the effect of social norms is unconditional, i.e., it is independent of the firm's financial performance. Extant studies document that institutional ownership and analyst coverage have a strong positive correlation with financial performance (McNichols and O'Brien 1997; O'Brien and Bhushan 1990; Sias, Starks and Titman 2006). Specifically, institutional investors invest when expected stock returns are high (e.g., Griffin, Harris and Topaloglu 2003; Cai and Zheng 2004) and analysts are more likely to provide forecasts and recommendations for stocks about which their true expectations are favorable (McNichols and O'Brien 1997). Akerlof (1980) develops a model expressing utility as a function of consumption, reputation, obedience/disobedience of a community's code of behavior, and belief/disbelief in a community's code of behavior. He finds that a custom that is too costly to follow, in terms of lost utility, will not be followed; while a custom that is fairly costless to follow will, once established, continue to be followed because persons lose utility directly by disobeying the underlying social code and also because disobedience of social custom results in loss of reputation. Applied to sin stocks, social norms against investing in these stocks are relatively easy to follow when the financial performance of alternative investments is strong. However, when the financial performance of all other stocks is falling relative to stocks that promote vice, as was the case in the early 2000s, this custom of not holding sin stocks becomes expensive to obey and will not always be followed.

As Bayou et al. (2011) discuss at length, one of the critical roles of accounting is to provide corporations with the ability to assume a moral identity. To the extent that studies (already described) show that accounting professionals can succumb to financial incentives, it is not

surprising that the benefits of complying with social norms are sometimes insufficient to overcome the costs of foregone high expected future returns in sin stocks. The assertion that financial incentives can have a strong interaction effect with social norms for other financial market participants such as institutional investors and financial analysts, therefore, seems to be a reasonable conjecture.

These arguments lead to the following hypotheses, where we include financial incentives and hypothesize that the impact of sin varies with the relative expected financial performance of sin stocks.

Hypothesis 2A: When expected financial performance of sin companies is strong, institutional ownership of sin stocks is less likely to be associated with the level of social norms.

Hypothesis 2B: When expected financial performance of sin companies is strong, analyst coverage of sin stocks is less likely to be associated with the level of social norms.

III. SAMPLE SELECTION AND VARIABLES

3.1 Sample Selection

Following Hong and Kacperczyk (2009), we identify a list of sin firms that are publicly traded and are involved in the alcohol, tobacco, and gaming industries.[2] We start with the Fama and French (1997) classification of stocks based upon their SIC codes into 48 industries. Stocks in the Fama-French industry group 4 (beer and alcohol – SIC codes 2100-2199) and industry group 5 (smoke or tobacco – SIC codes 2080 – 2085) are classified as sin stocks. Firms with NAICS

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[2] Hong and Kacperczyk (2009) dataset is available up to 2003. We thank them for the use of their data set to verify our classification.

codes: 7132, 71312, 713210, 71329, 713290, 72112 and 721120 are identified as gaming stocks. In addition, we use Compustat Segments data to augment our sample by including firms that have segments operating in any of these SIC or NAICS groups. A company is identified as a sin stock if any of its segments has an SIC code in either the beer or the smoke group or an NAICS code in the gaming group. Since Compustat segments data are only available after 1985, our augmented search is limited to stocks still in existence as of 1985. For these stocks, we back-fill our sample, i.e., those firms with any segments operating in sin industries are characterized as sinful for the years before 1985 as well.

We obtain daily closing stock prices, daily shares outstanding and all other return-related data from CRSP. Annual information on a variety of accounting variables is obtained from Compustat. We restrict our study to companies with CRSP share codes of 10 and 11. Institutional ownership data is from Thomson Reuters' database of 13-F filings, including institutions that manage at least $100 million in assets. Analyst coverage data is obtained from IBES. Since institutional ownership and analyst coverage data only became available after 1980 and 1975 respectively, we restrict our analysis to the period commencing from 1980. GDP and unemployment data are obtained from the websites of the World Bank and the US Bureau of Labor Statistics respectively.

Unique to our paper is the construction of a social norm proxy for each of alcohol, tobacco, and gaming industries over time. Each proxy is based on per capita consumption data obtained from several different sources. Alcohol statistics are obtained from the National Institute on Alcohol Abuse and Alcoholism. Tobacco data is obtained from the United States Department of

Agriculture. Gaming data, based on visitor volume to Las Vegas as % of total US population, is obtained from the Las Vegas Convention and Visitors Authority.[3]

3.2 Variables

3.2.1 Measures of Social Norms

Berkowitz (2004), in a review paper of the social norm approach to changing undesirable social norms, argues that actual drinking/gambling/smoking behavior (i.e. consumption levels) are best predicted by perceptions of drinking/gambling/smoking attitudes (i.e. perceived injunctive norms). For example, Larimer and Neighbors (2003), in a college gambling setting, show that social norms are strong predictors of gambling behavior and gambling-related negative consequences. In this study, we assert that changes in consumption levels of alcohol, gaming, and tobacco over time serve as useful proxies for social norm acceptance of these activities. We also verify the close link between the consumption of these sin products and the attitude of survey participants toward these sins, based on survey data from Gallup Corporation, the Inter-University Consortium for Political and Social Research (ICPSR), and the American Gaming Association[4].

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[3] See Table 1 for the details of the sources. One might argue that the use of Las Vegas visitor volume is not an optimal measure as it does not consider % of visitors who are foreigners and it implicitly assumes that casinos are the only available gaming option as it excludes other gaming options such as on-line gambling. However, this is the only measure available over such an extensive period of time. Data for the average number of annual trips to casinos per US gambler, available for the sub period 1993 to 2007 from www.americangaming.org, reveals that our gambling data trends are highly correlated with the alternative measures in the shorter sub-periods.

[4] Gallup Corporation has studied human nature and behavior for more than 75 years and employs many of the world's leading scientists in management, economics, psychology, and sociology in identifying and monitoring behavioral economic indicators. The ICPSR is funded by the United States Department of Health and Human Services. There are two major ICPSR studies of interest in this paper: 1) the National Survey on Drug Use and Health (NSDUH) – this provides quarterly and annual estimates on the use of alcohol and tobacco among members of United States households aged 12 and older; and 2) Monitoring the Future (MTF) – this explores changes in important values, behaviors, and lifestyle orientations of contemporary American youth i.e. 12th-grade students. Finally, the American Gaming Association is the industry's first national information clearinghouse, providing the public with timely, accurate gaming industry data.

3.2.2 Variables of Interest

Institutional ownership and analyst coverage – institutional ownership is determined as of the end of the year and is calculated as the fraction of a firm's shares held by institutions. Analyst coverage is defined as the natural logarithm of one plus the number of analysts covering firm i at the end of year t. If a stock is missing from IBES or does not have analyst forecast data as of the end of the year, the firm is recorded as having no analyst following.

Expected financial performance – We measure firm expected financial performance as the market-adjusted return over a one-year period multiplied by negative one, measured from the end of year t to the end of year t+1. The market-adjusted return, which is calculated by subtracting market return from a firm's buy-and-hold return, is multiplied by negative one to construct a performance weakness measure. Higher values correspond to weaker financial performance. In robustness tests, we use analyst earnings forecasts and expected costs of capital as alternative proxies for expected financial performance.

3.2.3. Control Variables

Since our empirical tests are designed to capture the relationship between social norm strength and market participants' behavior, we control for firm characteristics that are known to be correlated with institutional ownership and analyst coverage in our multivariate tests. Consistent with Hong and Kacperczyk (2009) and based on evidence related to predictors of institutional ownership compiled by Del Guercio (1996) and Gompers and Metrick (2001), our control variables include size, market to book value, beta, stock price inverse, standard deviation of stock return, exchange dummy, and S&P 500 dummy. Moreover, following other previous literature (e.g. Bhushan 1989; Dechow and Dichev 2002; Kasznik 1999; Yu 2008), we also include lagged return on assets, growth rate of assets, external financing activities, a dividends dummy, interest rate and

market volatility. To control for factors affecting the macro economy and thus the consumption of sin products, we include variables for the unemployment rate and GDP growth. Finally, we also control for firm fixed effects. Definitions of all variables are provided in the Appendix.

IV. RESULTS

4.1. Social Norms and Consumption of Alcohol, Tobacco, and Gaming

We first examine the change in consumption of alcohol, tobacco, and gaming over time and then verify the correlation between the consumption of these products (descriptive norms) and the attitude of survey participants toward these products (injunctive norms). A good proxy for a social norm should indicate a high consistency between these two social norm types.

Figure 1 shows the differences in consumption/social norms for each of these three products for the period 1980 to 2007. Panels A, B, and C represent the results from alcohol, tobacco, and gaming, respectively. While the consumption measures for tobacco and alcohol have been decreasing for most of the period, there has been an uptrend for alcohol starting from the middle of the 1990s. With respect to gaming, it is clear that the social norm acceptance level has been increasing steadily over the years. Increasingly, the government has been advertising the benefits from gaming revenues on social programs and decreased unemployment (www.safeandsecureig.org). These different evolutionary processes highlight the dynamic nature of social norms and the importance of performing separate analyses on alcohol, tobacco, and gaming stocks. For comparison purposes, we also examine the time series of financial performance of sin stocks relative to market returns. Figure 1 shows the difference between the sin stock portfolio value weighted returns and market portfolio returns for the years 1980 to 2007. This figure suggests that the returns of all three sin stock subgroups are volatile. However, these returns

in general move closely together and perform better than the broader market. The only exception is the late 1990s when technology stocks were booming.

We next verify whether our measures of sin product consumption are reliable measures of social norms in two different ways. Using data from Gallup Corporation, the Inter-University Consortium for Political and Social Research (ICPSR), and the American Gaming Association, we obtain alternative measures for both descriptive and injunctive norms. As Table 1 illustrates, we collect survey results related to descriptive norms for the three sins as follows: 1) number of drinks in the last 7 days, 2) have had a drink within the past 30 days, 3) over the last two weeks, how many times have you had at least five drinks in a row, 4) % of people who have smoked cigarettes in the past week, 5) % of people who have smoked at least one pack per day, and 6) casino visitation (average number of annual trips to casinos per US gambler). Table 2, Panel A presents the correlation between the macro-consumption data (our social norm proxies) used in our main tests with these survey results of people's consumption of sin products. The high correlation between our macro-level consumption and the alternative sources of consumption related data (ranging from 0.73 to 0.96) suggests that our variables effectively capture the actual consumption of alcohol, tobacco, and gaming.

As Table 1 shows, we also collect survey results related to injunctive norms for alcohol, tobacco, and gaming companies as follows (all in % of respondents): 1) has drinking ever been a cause of problems in your family, 2) disapproval of people over age of 18 who try one or more drinks of an alcoholic beverage, 3) disapproval of people over age 18 who have five or more drinks once or twice each weekend, 4) harmfulness to try one or two drinks of an alcoholic beverage (% of respondents who say great risk), 5) harmfulness to have five or more drinks once or twice each weekend (% of respondents who say great risk), 6) perceived danger of second hand smoke, 7)

smoking should be made illegal, 8) risk if one smokes one or more packs of cigarettes per day, 9) disapproval of people over age 18 smoking one or more packs of cigarettes per day, and 10) how much do you think people risk harming themselves by smoking one or more packs of cigarettes per day (% of respondents who say great risk). Table 2, Panel B presents the correlation between the main consumption measures used and the survey results of people's attitude towards sin. Although the surveys do not cover our entire sample period, the correlation between our main macro-consumption data and the survey results of people's attitude towards sin is consistently negative and high, ranging from -0.42 to -0.93. This finding suggests that our consumption data reflects social norms toward sin products.

4.2. Descriptive Statistics

Table 3 presents the descriptive statistics for our variables of interest and control variables. The mean institutional ownership for alcohol, tobacco, and gaming stocks is 18%, 34% and 27% respectively. These results are comparable to the 28% documented previously by Hong and Kacperczyk (2009) for sin stocks as a group. The mean analyst following for these same stocks is 1.1, 2.0 and 1.5 respectively. Again, this finding is comparable to the 1.7 previously documented by Hong and Kacperczyk (2009). Also of note is the positive mean and abnormal positive returns realized by holding sin stocks (0.6%, 0.9%, and 0.1% for alcohol, tobacco, and gaming stocks respectively) as well as the relatively low market risk beta for alcohol and tobacco stocks (means of 0.657 and 0.741 respectively). Finally, in unreported analysis, the correlation between institutional ownership (analyst coverage) and size is high at 0.462 (0.750) as is the correlation between institutional ownership and analyst coverage (0.536). These observations are consistent with previous literature which shows that institutional investors tend to hold large firms and that analysts tend to cater to institutional investors by providing financial reports and analyses on

companies that have high institutional ownership. In each regression model, we winsorize variables at the 1st and 99th percentiles.

4.3. The Effect of Social Norms and Financial Incentives on Institutional Ownership and Analyst Coverage

4.3.1 The Primary Effect of Social Norms

To test hypotheses H1A and H1B, we estimate the following regressions within each of the three sin stock subgroups:

$$Dependent\_Variable_{it} = \alpha_0 + \alpha_1 SocialNorm_t + \alpha_2 Controls_{it} + \varepsilon_{it} \qquad (1)$$

where the dependent variables consists of institutional ownership and analyst coverage.[5] Social norm is defined as the raw consumption of alcohol, tobacco, or gaming. Unlike Hong and Kacperczyk (2009) and Kim and Venkatachalam (2011), who use non-sin stock firms as a control group, we run regressions within each sin stock subgroup. The benefits of our approach are two-fold: first, we avoid the controversy of choosing the appropriate control group; and second, this approach facilitates the investigation of our research question – how social norms and financial incentives interplay to determine the behavior of market participants. Such an innovation is necessary as Figure 1 shows the evolution process differs across the three sin stock subgroups and financial performance of sin stocks varies widely during our sample period. The effects of social norms on institutional ownership/analyst coverage may be cancelled out in a pooling regression.

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[5] For analyst coverage, we adopt a negative binomial regression model using maximum likelihood estimation (rather than an OLS regression) because analyst coverage consists of count data. In a negative binomial regression model, the variance is not constrained to equal the mean, which is consistent with our data where the variance is larger. An alternative is using a Poisson regression model, where the mean and variance are equal. These results, which yield the same inferences, are discussed in the robustness checks section.

We predict that institutional ownership and analyst coverage are higher when social norm acceptance levels are higher. Thus, the coefficient α_1 in the regression model (1) is expected to be significantly positive. Table 4, Model 1A presents the regression results for institutional ownership. It shows that, across all three sin subgroups, strong social norm acceptance levels have a significantly positive effect on institutional ownership, consistent with our predictions. The t-statistics for institutional ownership are 1.74, 3.05, and 5.32 for the social norms related to alcohol, tobacco, and gaming products, respectively. The coefficient on social norms implies that a one standard deviation increase in social norm acceptance results in a 7%, 17%, and 14% increase in institutional ownership for alcohol, tobacco, and gaming industries, respectively.

Table 4, Model 1B presents the regressions for analyst coverage. The z-statistics for analyst coverage are 2.30, 3.03, and 2.19 for social norms related to alcohol, tobacco, and gaming companies. In addition, size is significantly positive across all three subgroups, suggesting that institutional investors/analysts are more likely to invest/follow larger firms. Finally, stocks with higher standard deviation of return and stocks in the S&P 500 index have less institutional ownership, consistent with Falkenstein (1996) and Hong and Kacperczyk (2009).

4.3.2 The Interaction Effect of Social Norms and Financial Incentives

To test the interaction effect, we first conduct a univariate analysis followed by a multivariate analysis. Figure 2, Panels A and B show the results for institutional ownership and analyst coverage for alcohol, tobacco and gaming subgroups separately. Expected financial performance, rather than actual financial performance, is used in this analysis because institutions

and analysts presumably base their investment/coverage decisions primarily on future expectations. We use actual stock returns in the subsequent year to proxy for the expected financial performance.[6]

The first cluster of results in Figure 2 (Panels A and B) represent the sample firm-year observations that are subject to low social norm acceptance levels for sin stocks and where the firm's expected market-adjusted financial return is below the sample median (i.e. these firms are expected to underperform the benchmark in the future). In contrast, the last cluster of results contains firms that are subject to high social norm acceptance levels for sin stocks and where the firm's expected market-adjusted return is above the sample median. Of all four clusters, institutional ownership and analyst coverage are predicted to be the smallest (largest) in the first (last) cluster. This expectation is consistent with the results. The difference between institutional ownership (analyst coverage) between the first and last clusters is consistently negative across all three sin stock subgroups. With respect to institutional ownership, the decrease in ownership going from the last cluster to the first cluster is 8.5%, 19.0%, and 24.4% for alcohol, tobacco, and gaming stocks respectively. With respect to analyst coverage, going from cluster four to cluster one, the decrease in the number of analysts following a given firm is 1.05 for alcohol firms, 3.01 for tobacco firms, and 2.42 for gaming firms. The differences in institutional ownership and analyst coverage between the two subgroups are significantly different from zero at the 5% significance level for all three sin products except for analyst coverage for tobacco which is significant at the 10% level (t=1.94).

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[6] In robustness tests, we use a future return indicator variable, analyst earnings forecasts, and expected costs of capital as alternative proxies for expected financial performance.

For our multivariate analysis, we add the interaction term of *Social Norms *Performance Weakness* into regression equation (1). Performance weakness is defined as the market-adjusted expected return multiplied by negative one, and social norms is as defined previously. *Social Norms * Performance Weakness* is the main variable of interest, capturing the impact of social norms on institutional ownership and analyst coverage conditional on expected financial performance.

We predict that the positive impact of high social normal acceptance levels on institutional ownership (analyst coverage) is strengthened when expected financial performance is weak. Analogously, we predict that high social norm acceptance levels moderate the negative association between expected financial performance weakness and institutional ownership (analyst coverage). Thus, the coefficient of the interaction term *Social Norms * Performance Weakness* is expected to be significantly positive. The coefficient on *Social Norms* is expected to be significantly positive, consistent with hypotheses 1A and 1B; the coefficient on *Performance Weakness*, representing the impact of expected future performance weakness on institutional ownership (analyst coverage), is expected to be negative. A negative sign would indicate that institutions (analysts) avoid firms with weaker expected future performance.

Table 5, Models 2A and 2B report the results from the regression for institutional holdings and analyst coverage, respectively. Consistent with our expectations, the coefficients on *Social Norms* and the *Social Norms*Performance Weakness* interaction term are all significantly positive while the coefficients on *Performance Weakness* are all significantly negative. Since performance weakness is defined as market-adjusted return over a one-year period multiplied by minus one (measured from the end of year t to the end of year t+1), higher expected future performance translates into a more negative performance weakness measure. Thus, the results suggest that when a firm's future performance is expected to be good, institutional investors (analysts) will be less

concerned about social norms. Analogously, institutional investors (analysts) will be more concerned about social norms when a firm's future performance is expected to be weak.

To provide some clarity to the discussion above, we calculate that the marginal effect of social norms on institutional ownership is 32.9% for alcohol firms with poor financial performance (lower quartile) versus 27.5% for firms with good financial performance (upper quartile).[7] Analogously, we calculate that the marginal effect of performance weakness on institutional ownership is -3.5% for alcohol firms with low social norm acceptance levels (lower quartile) versus -1.8% for firms with high social norm acceptance levels (upper quartile). Similar directional results apply for tobacco and gaming firms as well as for analyst coverage across all sin stock types.[8] In addition to the main variables of interest noted above, Table 5, Models 2A and 2B show that institutional ownership (analyst coverage) is increasing in firm size. These results are consistent with those found in Table 4, Models 1A and 1B. Finally, the inclusion of the performance weakness and social norms/performance weakness interaction terms does not materially change the sign and significance of the other control/explanatory variables.

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[7] To calculate the marginal effect of social norms on institutional ownership for alcohol firms with poor financial performance, we use the mean of performance weakness for firms belong to that lower quartile (which equals 0.015) multiplied by the coefficient for "Social norms*performance weakness" in Table 5 (which equals 1.289), plus the coefficient for "Social norms" (i.e. 0.015*1.289+0.310=0.329). Similarly, the mean of performance weakness for firms belong to the upper quartile (which equals -0.027) is used to calculate the marginal effect of social norms on institutional ownership for alcohol firms with good financial performance (i.e. -0.027*1.289+0.310=0.275).

[8] For analyst coverage, the marginal effect of social norms on analyst coverage is calculated by holding independent variables at their mean (this is due to the fact that we adopt a negative binomial regression model using maximum likelihood estimation). The marginal effect of social norms for alcohol firms with poor (good) financial performance is 0.210 (0.144).

4.3.3. The Effect of Social Norms and Financial Incentives on Institutional Ownership: Subgroup Analysis

We strengthen our analyses using five different classes of institutions defined in the Thomson Financial 13F database. We expect type 3 (mutual funds) and type 4 (independent investment advisors) institutions, who are natural arbitrageurs in the market, to be less constrained by social norms than other types of institutions whose positions in stocks are public information, institutions with diverse constituents, and institutions that can be readily exposed to public scrutiny, i.e. type 1 (banks), type 2 (insurance companies) and type 5 (all other institutions, including universities, employee stock ownership plans, etc.). Therefore, we divide the institutions in our data set into two subgroups: we group types 1, 2 and 5 in one group; and types 3 and 4 in a second group. Panel A of Table 6 shows the regression results of institutional ownership on social norms and other control variables. For group 1 (types 1, 2 and 5), across all sin stock types, institutional ownership is increasing in social norm acceptance. The coefficients on social norms are statistically significant at two-tailed 5% (alcohol) and 1% (tobacco and gaming) levels. The coefficient on beta is significantly negative, indicating that more risky stocks are held less by banks, insurance companies, and other institutions. Institutional ownership of this group for alcohol, tobacco and gaming stocks is also associated negatively with inclusion in the S&P 500 and daily stock return standard deviation (except for alcohol). For group 2 (types 3 and 4), the impact of social norms on institutional ownership is insignificant for two out of three types of "sin" (alcohol and gaming). The t-test results on differences in coefficients on *Social Norms* between the two subgroups are reported at the bottom of Table 6, Panel A. For alcohol companies, the difference in regression coefficients on *Social Norms* between group 1 and group 2 is 0.262 with a t-statistic of 5.24. This t-statistic suggests a significantly different impact of social norms on institutional ownership for

these two groups. The results are similar for tobacco and gaming companies. These findings are consistent with our expectation that mutual funds and independent investment advisors are less concerned about social norms than other types of institutions and that they are more likely to play the role of arbitrageurs and buy sin stocks.

Table 6, Panel B presents the regression results of institutional ownership on social norms and performance weakness by subgroups of institutional ownership. Consistent with Hypothesis 2A and 2B, Panel B shows that type 1, 2, and 5 institutional investment decisions are more likely to be driven by a comprehensive consideration of social norms and financial incentives (compared to type 3 and 4 institutional investors). These results are confirmed by the significantly positive coefficients on *Social Norms* and the interaction term *Social Norms * Performance Weakness*, and a significantly negative coefficient on *Performance Weakness* for types 1, 2, and 5 but mostly insignificant coefficients for types 3 and 4. The sign and significance of all control/explanatory variables are consistent with the regressions in the previous section; namely, institutional ownership for types 1, 2, and 5 are increasing in firm size and social norms and decreasing in beta and standard deviation of return. The t-test results on differences in coefficients on *Social Norms* and on *Social Norms*Performance Weakness* between the two subgroups are reported at the bottom of Table 6, Panel B. Consistent with our predictions, there is a significant difference in coefficients between the two subgroups for all three sin industries.

In summary, our findings in subsection 4.3 suggest that the behavior of market participants (institutions and analysts) dynamically changes with the level of social norms and financial incentives. The evidence extends the insights provided by Hong and Kacperczyk (2009) that sin stocks have higher expected returns than otherwise comparable stocks. They attribute the finding to the fact that sin stocks are neglected by constrained investors and also face greater litigation risk

heightened by social norms. Focusing on sin stocks themselves, we avoid the measurement errors in the proxies for litigation risk and investor's attention which are different across sin and non-sin stocks. Our finding suggests social norm constrained investors may not neglect sin stocks; otherwise, they would not adjust their sin stock holdings and coverage dynamically in response to changes in social norms.

4.4. Additional Analyses and Robustness Checks

We conduct a set of additional analyses to test the robustness of our conclusions. Results discussed but not tabulated in this section are available upon request.

4.4.1 Time-Varying Measure of Firms' Sin Exposure

In the previous section, firms' exposure to sin is assumed to remain constant over time. While the social acceptance of sin is time-varying, firms' exposure to sin could also vary across time. We extend our analysis and further test whether the perception of sin companies varies with the revenue from sin products. We obtain historical segment data for each firm-year and construct a new indicator variable – *Sin Exposure*, which equals 1 if the firm's revenue generated by sin segments as a percentage of the firm's total revenue is greater than the industry median for the year; and 0 otherwise. The higher the proportion of a firm's revenue that is generated by sin segments, the more sin exposure it faces. We then include this new indicator variable *Sin Exposure* and the interaction terms of *Sin Exposure* with *Social Norms* and *Performance Weakness* measures into our regression models. The empirical results are reported in Table 7, Panels A and B. Our ex-ante prediction is that for firms which have above-median sin exposure (i.e., *Sin Exposure* = 1), social acceptance of sin has a stronger effect on institutional investors' shareholding/analyst coverage (hypothesis 1A/1B) as well as the relation between institutional investors' shareholding/analyst coverage and future expected performance (hypothesis 2A/2B). In other

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words, the coefficient on the interaction term *Social Norms * Sin Exposure* (Table 7, Panel A) and *Social Norms * Performance Weakness * Sin Exposure* (Table 7, Panel B) is expected to be significantly positive. Our empirical results are consistent with our predictions.

4.4.2 Correlation between Social Norms and Financial Performance

One potential issue with using consumption data as a social norm proxy is that consumption data can also be thought of as a primitive proxy for demand. Unexpected increases in demand should affect future cash flows, which in turn affects accounting and stock returns. As such, one may argue that our results will be affected by the following relationship: increased consumption leads to higher profits, which in turn leads to increased analyst following and institutional ownership. In our opinion, this relation cannot explain why financial performance goes up while consumption goes down, which has been generally the case for alcohol and tobacco industries, as Figure 1 illustrates. Figure 1 shows that the social norm and financial performance plots are not correlated. The correlations between ROA and our consumption based social norm proxies are only 0.126, 0.003, and -0.111 for alcohol, tobacco, and gaming industries respectively. In addition, to further address concerns that consumption data is nothing more than a primitive for demand/net income and that consumption data may be highly correlated with other macroeconomic factors (such as unemployment rate and GDP) which have nothing to do with social norm acceptance levels, we first regress the consumption data on unemployment rate, GDP and industry-level ROA as follows:

$$SocialNorm_t = \alpha_0 + \alpha_1 UnemploymentRate_t + \alpha_2 GDP_t + \alpha_3 IndustryROA_t + \varepsilon_t \tag{2}$$

where industry-level ROA is calculated as total earnings divided by total assets for alcohol, tobacco and gaming industries, respectively. We use the residuals from the above regression, which are

orthogonal to economic factors, to proxy for social norms. We then re-run our regressions presented in the previous sections. The results remain robust.

4.4.3 Alternative Proxies for Financial Performance

One potential concern about the performance weakness measure used in our regressions is whether realized return is a good proxy for ex ante expectations of future returns. To mitigate this concern, we adopt two alternative proxies to measure performance. First, we use analyst earnings forecasts as a proxy for ex ante expectations of future returns. The performance weakness measure is then calculated as the difference between the realized earnings in year t and one-year consensus median analyst forecast for year t+1, scaled by the stock price at the end of year t.

Second, we estimate firm-year beta using a rolling window of the past five years of monthly stock returns. Combining this firm-year beta estimate with expected market returns, equal to the past 10 year average equity return, and the current risk-free rate, we are able to use the CAPM model to generate expected future returns. Our results are robust to each of these alternative proxies and are available from the authors upon request.

Finally, we rerun our regressions using a binary measure of expected financial performance. Performance weakness is defined as a binary variable equal to 1 if the firm's realized return next year is below the industry median, and 0 otherwise. This choice not only helps interpret the interaction effects of social norms and financial performance on market participants' behaviour, it also mitigates the concern whether institutions can precisely predict a firm's future returns. The untabulated regression results are similar to the results when expected performance is a continuous measure.

4.4.4 Alternative Social Norm Proxies

In section 4.1, we verify that the consumption of sin products is associated with the attitude toward sin products by using survey results from Gallup Corporation and the Inter-University Consortium for Political and Social Research (ICPSR). While the time series availability of Gallup data, ICPSR data, and American Gaming Association data in some cases is not as extensive as the consumption data used in our main tables, the sixteen questions cover a wide variety of both injunctive and descriptive norm proxies. Because the time series correlation between these measures from Gallup Corporation, ICPSR, and the American Gaming Association are between 42% and 96% (average correlation of 77%), we include these new measures proxying social norms in lieu of our main proxies in each of our multivariate analyses. In most cases, our results are robust and significant.

4.4.5 Changes Analysis

Our main empirical analyses adopt a levels approach. To mitigate the concern of correlated omitted variables, we perform changes analyses for our main models. The empirical results of the changes analyses are reported in Table 8. Table 8, Panel A (changes analysis, hypothesis 1A/1B) is analogous to Table 4 (levels analysis, hypothesis 1A/1B). With the exception of tobacco for changes in institutional ownership, the inferences we draw from the changes analysis are the same as the levels analysis i.e. the coefficient on *Social Norms* is both positive and statistically significant. Table 8, Panel B (changes analysis, hypothesis 2A/2B) is analogous to Table 5 (levels analysis, hypothesis 2A/2B). Again, the inferences we draw from the changes analysis are the same as the levels analysis i.e. the coefficient on the *Social Norms * Performance Weakness* interaction term is both positive and statistically significant for all sin types and for both changes in institutional ownership and analyst coverage. In general, the signed statistical significance for

most control variables is also consistent with the levels analyses. The t-values/z-values associated with the coefficients, as well as the adjusted R-square/pseudo R-square values, are mostly smaller than the levels analysis equivalents. The lower levels of statistical significance associated with the changes analyses are consistent with other accounting studies.

4.4.6 Other Issues Related to Model Specifications

While we highlight the benefits of running regressions within each sin stock subgroup and examining the evolutionary process of social norms in Section 4.3, the approach may suffer from correlated omitted variables. To mitigate this concern, in addition to the analyses already performed in Section 4.4.5 above, we conduct a random sampling analysis. Specifically, we select a random sample of firms from non-sin industries where the number of non-sin firms equals the number of sin firms in each sin industry for each year. We then rerun our regressions. We repeat this random sampling regression 100 times for each sin industry. We calculate the mean of the coefficients and the t-values. Our analyses show that neither the coefficients on the social norm variable nor those on the interaction terms of social norms and performance weakness are significantly different from zero.

Following Hong and Kacperczyk (2009), we adopt a standard OLS regression model for our analysis on institutional ownership. However, as the institutional ownership variable is bounded at zero and one, there is no guarantee that the fitted values will always lie within the feasible range. As such, we also applied a generalized linear model with a logit link and the binomial family to our sample. The new model guarantees that the predicted value of the dependent variable (i.e., institutional ownership) is bounded between zero and one. The untabulated results show that the inferences we draw from the regression results remain the same.

Following previous literature, we adopt a log transformation of analyst coverage in an OLS framework for our analyses on analyst coverage. To check the robustness of our results, we also applied a Poisson model to our sample. The inferences remain the same.

V. CONCLUSION

Using alcohol, tobacco, and gaming consumption data and people's attitudes toward these sin products to proxy for the social norm acceptance level, we investigate how the investment decisions of institutional investors and the coverage decisions of financial analysts are affected by the financial performance of sin companies and related social norms. We find that institutional investors' shareholdings and analyst coverage of "sin" companies are increasing in the degree of social norm acceptance and that the association between shareholdings/coverage and social norm acceptance is less pronounced for firms with higher future expected performance.

While in the accounting profession, the interaction between financial incentives and ethics has been debated for many years, little research has been done in economics and finance due in part to the maintained assumption that economic agents are modeled as maximizing utilities based on economic gain. We provide strong empirical support for a substitution effect between financial and non-financial incentives among economic agents. We show that when social norms interact with financial considerations, market participants, namely institutional investors and financial analysts, will forego their adherence to social norms for financial rewards. This finding is important and should be of interest to academics, investors, standard setters, and various other stakeholders, given the recent financial crisis. Our research question, research design and findings highlight the importance of having empirical measures of social norms. By using changes in consumption of sin products as a proxy for the evolution of social norms towards sin stocks, we document the distinct

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evolutionary process of social norms related to different sin products (alcohol, tobacco, and gaming). We thus overcome the drawback of assuming a constant social norms level over time and extend previous studies by showing how social norms are priced in a dynamic setting.

Future research could examine whether financial and social norm considerations interact in a similar way in other countries, and explore the differential impact of ethics and financial incentives on behavior in an organizational versus an individual setting. Booth and Schulz (2004) have started to explore this line of research in an experimental setting, finding that regardless of their level of individual ethical reasoning, a strong ethical corporate environment may lead to a general tendency for managers to act in the interests of their organizations. In the current version of this paper, both social norms (consumption and survey based) and institutional ownership and analyst coverage are domestic variables. Due to this data limitation, we are not able to generalize our results to the global level. However, we strongly believe that identifying the boundary of social norms and its impact on market stakeholders is an emerging area of interest; one that will continue to provide useful insights to our society in the future.

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APPENDIX

Variable	Definition
Institutional ownership	The fraction of the shares of company i held by institutions at the end of year t. This is calculated by aggregating the shares held by all types of institutions at the end of the year and then dividing this amount by shares outstanding at the end of the year.
Analyst coverage	Logarithm of one plus the number of analyst estimates issued on a company at the end of the year t. Stocks that do not appear in IBES are assumed to have no analyst estimates.
Consumption (social norm proxy)	Alcohol consumption is the recorded adult (15+) per capita consumption of alcohol in gallons for the year t. Tobacco consumption is the domestic per capita consumption of tobacco in pieces for the year t. Gaming consumption is the number of gaming visitors to Las Vegas as a % of the total population for the year t.
Financial performance	Market-adjusted return over one-year calculated by subtracting market return from a firm's buy-and-hold return for the year t.
Performance weakness	The expected financial performance of the firm multiplied by negative one, where the expected financial performance is the market-adjusted return over year t+1 calculated by subtracting market return for year t+1 from a firm's buy-and-hold return for year t+1.
Size	Logarithm of the market value of equity of the company in year t.
Beta	Firm's systematic risk calculated using the past five years of monthly return.
Inverse of stock price	One over the stock price at the end of year t.
Std of return	Daily stock return standard deviation during the past fiscal year t.
NASD	One if the stock is listed on Nasdaq; and zero otherwise.

Variable	Definition
SP500	One if the stock is in the S&P 500 index; and zero otherwise.
Lagged return on assets	Net income for year t-1divided by the average of total assets for year t-1.
Growth rate of assets	Change in total assets from year t-1 to year t scaled by total assets for year t-1.
External financing activities	The sum of net proceeds from equity financing and debt financing in year t scaled by total assets of the year t. The proceeds from equity financing are measured as net cash received from the sale of common and preferred stock less cash dividends paid. The proceeds from debt financing are measured as net cash received from the issuance (and/or reduction) of short- and long-term debt.
Dividends	One if the firm issued a dividend in year t; and zero otherwise.
Interest rate	Interest rate reported by the Federal Reserve in year t.
Market volatility	Monthly value-adjusted stock market return volatility over year t.
GDP	US per capita GDP in thousands of dollars for the year t; adjusted for inflation.
Unemployment	US unemployment rate for the year t.
Sin exposure	One if the firm's revenue generated by sin segments over the firm's total revenue is greater than the industry median for the year t; and zero otherwise.

Table 1.
Descriptive Statistics of Social Norm Measures

	Mean	Median	Standard Deviation	Source and period
Alcohol				
Alcohol consumption (US per capita in gallons)	2.37	2.29	0.22	www.niaaa.nih.gov 1980-2007 Note: this is the primary measure used in regressions
Number of drinks in last 7 days (around date of survey)	4.03	4.00	0.21	www.gallup.com 1996-2007
Have had a drink within past 30 days (%)	59.50	58.00	3.63	Michigan,[*] NSDUH database 1982-2007
Over the last two weeks, how many times have you had at least five drinks in a row (% of respondents)	32.31	30.50	4.94	Michigan, MTF database 1980-2007
Has drinking ever been a cause of problem in your family (% of respondents)	26.14	23.50	5.96	www.gallup.com 1980-2007
Disapproval of people over age of 18 who try one or two drinks of an alcoholic beverage (% of respondents)	24.90	26.20	4.59	Michigan, MTF database 1980-2007
Disapproval of people over age 18 who have five or more drinks once or twice each weekend (% of respondents)	64.08	64.85	4.11	Michigan, MTF database 1980-2007
Harmfulness of trying one or two drinks of an alcoholic beverage (% of respondents who say great risk)	6.95	7.45	1.89	Michigan; MTF database 1980-2007
Harmfulness of having five or more drinks once or twice each weekend (% of respondents who say great risk)	43.44	43.30	3.77	Michigan, MTF database 1980-2007
Tobacco				
Tobacco consumption (US per capita in pieces)	2087.08	2033.22	444.35	www.usda.gov 1980-2007 Note: this is the primary measure used in regressions
% of people who smoked cigarettes in the past week	28.71	29.00	5.05	www.gallup.com 1980-2007
Smoke at least one pack per day (as % of those individuals who have smoked at least once in the past 30 days)	48.37	49.75	9.42	Michigan, NSDUH database 1982-2007

Perceived danger of second hand smoke (% of respondents)	49.36	51.50	6.36	www.gallup.com 1994-2007
Smoking should be made illegal (% of respondents)	13.22	13.00	1.70	www.gallup.com 1990-2007
Risk if smoke one or more pack of cigarettes per day (% of respondents who say little or no risk)**	8.42	8.55	1.85	Michigan, NSDUH database 1985-2007
Disapproval of people over age 18 smoking one or more packs of cigarettes per day (% of respondents)	72.45	71.95	3.72	Michigan, MTF database 1980-2007
How much do you think people risk harming themselves by smoking one or more packs of cigarettes per day (% of respondents who say great risk)	69.10	68.65	4.55	Michigan, MTF database 1980-2007

Gaming

Gaming consumption (visitor volume to Las Vegas as % of total US population)	9.46	10.71	2.95	www.lvcva.com 1980-2007 Note : this is primary measure used in regressions
Casino Visitation (average number of annual trips to casinos per US gambler)	5.45	5.70	0.97	www.americangaming.org 1993-2007

Note: * Source *Michigan* stands for www.icpsr.umich.edu/icpsrweb/SAMHDA/sda
             ** To be consistent with other questions, this measure is transferred to % of respondents who consider
             smoking risky by subtracting the percentage from 1 in correlation table 2, panel B.

Table 2.
Correlations between Consumption of Sin Products and Gallup/SAMHSA/American Gaming Association Survey Results

This table presents the correlation between the consumption of sin products (used as primary social norm measure) and the survey responses collected by Gallup Corporation, the Office of Applied Studies, Substance Abuse and Mental Health Services Administration (SAMHSA), of the United States Department of Health and Human Services, based at the Inter-University Consortium for Political and Social Research (ICPSR), and the American Gaming Association in different sample periods.

Panel A. Correlations between macro-consumption data and the survey results of people's consumption of sin products

Survey Questions	Sin products		
	Alcohol	Tobacco	Gaming
Number of drinks in last 7 days (around date of survey)	0.74		
Have had a drink within past 30 days (%)	0.73		
Over the last two weeks, how many times have you had at least five drinks in a row (% of respondents)	0.89		
% of people who smoked cigarettes in the past week		0.96	
Smoke at least one pack per day (as % of those individuals who have smoked at least once in the past 30 days)		0.93	
Average number of annual trips to casinos per US gambler			0.80

Panel B. Correlations between macro-consumption data and the survey results of people's attitude towards sin

Survey Questions	Sin products	
	Alcohol	Tobacco
Has drinking ever been a cause of problem in your family (% of respondents)	-0.66	
Disapproval of people over age of 18 who try one or two drinks of an alcoholic beverage (% of respondents)	-0.78	
Disapproval of people over age of 18 who have five or more drinks once or twice each weekend (% of respondents)	-0.71	
Harmfulness of trying one or two drinks of an alcoholic beverage (% of respondents who say great risk)	-0.76	
Harmfulness of having five or more drinks once or twice each weekend (% of respondents who say great risk)	-0.70	
Perceived danger of second hand smoke (% of respondents)		-0.77
Smoking should be made illegal (% of respondents)		-0.57
Risk if smoke one or more pack of cigarettes per day (% of respondents)		-0.93
Disapproval of people over age 18 smoking one or more packs of cigarettes per day (% of respondents)		-0.42
How much do you think people risk harming themselves by smoking one or more packs of cigarettes per day (% of respondents who say great risk)		-0.92

Table 3.
Summary Statistics
Institutional ownership is the fraction of shares of a firm held by institutions. Analyst coverage is the log of one plus the number of analyst estimates issued on a company at the end of the year. Alcohol consumption is the recorded adult (15+) per capita consumption of alcohol in gallons. Tobacco consumption is the domestic per capita consumption of tobacco in pieces. Gaming consumption is the number of gaming visitors to Las Vegas as a % of the total population. Financial performance is the market-adjusted return over one-year calculated by subtracting market return from a firm's buy-and-hold return. Size is the logarithm of the market capitalization of the company. Beta is the firm's industry market beta. Inverse of stock price is one over the stock price at the end of the year. Std of return is the daily stock return standard deviation during the year. Return on assets is calculated as earnings before extraordinary items, divided by lagged total assets. Growth rate of assets is calculated as the change in assets scaled by lagged assets. External financing activities are measured by the sum of net cash received from equity and debt issuance scaled by total assets.

Variable	Alcohol			Tobacco			Gaming		
	Mean	Median	StdDev	Mean	Median	StdDev	Mean	Median	StdDev
Institutional Ownership	0.181	0.175	0.237	0.341	0.412	0.298	0.274	0.289	0.298
Analyst Coverage	1.139	1.014	1.105	1.966	1.914	1.160	1.527	1.479	1.034
Consumption (Social norm proxy)	2.366	2.254	0.215	2087	2012	444	9.457	10.212	2.947
Financial performance	0.006	0.005	0.037	0.009	0.008	0.033	0.001	0.001	0.052
Size	12.619	11.241	2.065	14.391	13.699	2.261	12.409	12.763	1.717
Beta	0.657	0.621	0.280	0.741	0.845	0.315	1.339	1.219	0.497
Inverse of stock price	0.118	0.108	0.220	0.051	0.049	0.080	0.172	0.196	0.267
Std of return	0.026	0.033	0.015	0.021	0.023	0.011	0.036	0.038	0.016
Return on assets	0.053	0.047	0.074	0.103	0.124	0.113	0.033	0.029	0.151
Growth rate of assets	0.137	0.124	0.439	0.125	0.117	0.404	0.373	0.457	0.905
External financing activities	0.005	0.004	0.141	-0.045	-0.022	0.150	0.096	0.101	0.242

Table 4.
Regression Analyses of Institutional Ownership and Analyst Coverage on Social Norms

This table presents the OLS (negative binomial) regressions of institutional ownership (analyst coverage) on social norms and control variables for the full sample. The dependent variables in Model 1A and 1B are institutional ownership and analyst coverage, respectively. All variables are defined in the Appendix. Hypothesis 1A is tested in the first six columns. Hypothesis 1B is tested in the next six columns. The t-statistics (z-statistics) in all regression models are adjusted for firm-level clustering. ***, **, and * indicate statistical significance at one, five, and ten percent levels (two-tailed) respectively.

	1A						1B					
	Dependent Variable : Institutional ownership						Dependent Variable : Analyst coverage					
	Alcohol		Tobacco		Gaming		Alcohol		Tobacco		Gaming	
Variable	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	z-value	Estimate	z-value	Estimate	z-value
Social norms	0.322*	1.74	0.388***	3.05	0.049***	5.32	1.016**	2.30	0.742***	3.03	0.082**	2.19
Size	0.059***	2.77	0.051***	2.91	0.059**	2.53	0.487***	3.87	0.468***	3.92	0.461***	3.89
Beta	0.068	1.35	0.062	1.59	0.007	1.24	0.147	1.38	0.383	1.15	0.098*	1.76
Inverse of stock price	-0.040	-0.38	-0.262	-0.73	-0.086	-1.16	0.078	0.22	0.089	0.13	-0.228	-0.78
Std of return	-0.978***	-3.10	-6.838*	-1.89	-2.065**	-2.18	9.365	1.25	1.108	0.68	2.654	1.32
NASD	0.028	0.51	-0.189	-1.54	-0.070	-0.20	-0.575**	-2.39	-0.529	-1.41	-0.187	-1.53
SP500	-0.089***	-3.18	-0.030***	-3.30	-0.100*	-1.74	0.184***	2.85	0.490	1.54	0.129**	2.19
Lagged return on assets	0.049	0.81	0.120	0.77	0.104	1.21	0.084	0.99	0.765	0.97	0.378*	1.92
Growth rate of assets	-0.087	-1.32	-0.123*	-1.90	-0.030	-1.49	-0.210	-1.43	-0.281	-0.21	-0.119*	-1.90
External financing activities	0.041	0.29	0.332**	2.23	-0.021	-0.34	0.427	1.00	-0.777*	-1.86	-0.004	-0.02
Dividends	0.002***	4.27	0.017**	2.02	0.031***	3.70	0.109	0.18	0.365	0.71	0.176	0.89
Interest rate	0.001	0.28	0.002	0.33	0.001	0.31	0.018	1.22	0.276	1.45	0.162	0.76
Market volatility	0.029	1.12	0.035	0.99	0.022	1.19	-0.031	-1.36	-0.407	-1.05	-0.398	-0.96
GDP	0.000	1.40	0.000	1.01	0.000	0.97	0.000	1.02	0.000*	1.70	0.000	0.69
Unemployment	-0.057	-1.20	-0.041	-0.64	-0.029	-1.28	-0.283**	-2.36	-0.368*	-1.90	-0.582**	-2.22
Intercept	-1.938*	-1.76	-1.574***	-4.87	-1.193	-0.28	-0.365***	-4.81	-1.746***	-3.97	-2.490***	-3.10
Firm fixed effect	Yes		Yes		Yes		Yes		Yes		Yes	
N	452		222		585		452		222		585	
Adj R-Square/ Pseudo R-Square	0.260		0.583		0.372		0.441		0.780		0.717	

Table 5.

Regression Analyses of Institutional Ownership and Analyst Coverage on Social Norms and Performance Weakness

This table presents the OLS (negative binomial) regressions of institutional ownership (analyst coverage) on social norms, performance weakness and control variables for the full sample. The dependent variables in Model 2A and 2B are institutional ownership and analyst coverage, respectively. All variables are defined in the Appendix. Hypothesis 2A is tested in the first six columns. Hypothesis 2B is tested in the next six columns. The t-statistics (z-statistics) in all regression models are adjusted for firm-level clustering. ***, **, and * indicate statistical significance at one, five and ten percent levels (two-tailed) respectively.

	2A						2B					
	Dependent Variable : Institutional ownership						Dependent Variable : Analyst coverage					
	Alcohol		Tobacco		Gaming		Alcohol		Tobacco		Gaming	
Variable	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	z-value	Estimate	z-value	Estimate	z-value
Social norms	0.310**	2.37	0.461***	3.48	0.067***	5.11	1.183***	2.66	0.746***	3.81	0.127**	2.25
Performance weakness	-5.731***	-4.29	-5.837***	-11.21	-3.672***	-5.89	-3.849***	-2.78	-1.647**	-2.02	-0.650*	-1.64
Social norms *performance weakness	1.289***	7.28	0.462**	2.18	0.056**	2.35	0.273***	3.29	0.178*	1.72	0.038***	3.67
Size	0.110***	4.29	0.031**	2.18	0.102***	4.28	0.748***	7.31	0.628***	5.90	0.389***	3.54
Beta	0.070	1.43	0.067	1.07	-0.006	-0.29	0.181	0.84	0.338	1.58	-0.079	-0.68
Inverse of stock price	-0.034	-0.34	-0.276	-1.01	-0.014	-0.22	0.222	0.70	-0.516	-0.99	-0.482	-1.41
Std of return	-1.159*	-1.79	-7.283**	-2.01	-4.283***	-5.28	12.374**	2.06	-3.227	-0.49	-2.139	-0.49
NASD	-0.052	-0.81	-0.134	-1.41	-0.029	-0.29	-0.628**	-2.38	-0.709*	-1.89	-0.190*	-1.67
SP500	-0.099	-1.17	-0.218***	-2.60	-0.079	-1.63	0.190	0.61	0.320	1.05	0.040	0.36
Lagged return on assets	0.028	0.53	0.176	1.15	0.048	0.40	-0.098	-0.20	0.803	1.48	0.410*	1.83
Growth rate of assets	-0.070	-1.13	-0.110*	-1.78	-0.039*	-1.83	-0.221	-1.18	-0.067	-0.33	-0.109*	-1.77
External financing activities	0.067	0.51	0.390**	2.09	0.011	0.14	0.572	1.34	-0.520	-1.29	0.061	0.30
Dividends	0.013*	1.74	0.016**	2.00	0.047***	4.95	0.147	0.37	0.339	0.62	0.158	0.68
Interest rate	0.001	0.28	0.002	0.33	0.001	0.32	0.027	1.41	0.303	1.62	0.179	0.83
Market volatility	0.028	1.10	0.034	0.98	0.024	1.30	-0.056	-1.46	-0.399	-1.00	-0.467	-1.23
GDP	0.000	1.53	0.000	1.14	0.000	1.03	0.000	1.28	0.000*	1.67	0.000	0.72
Unemployment	-0.017	-1.31	-0.011	-0.71	-0.031	-1.55	-0.171***	-3.17	-0.374**	-2.37	-0.422***	-5.01
Intercept	-2.37***	-3.37	3.83***	8.37	2.98	1.08	-1.56	-1.33	-2.55***	-5.79	-3.67***	-6.90
Firm fixed effect	Yes		Yes		Yes		Yes		Yes		Yes	
N	447		220		554		447		220		554	
Adj R-Square/ Pseudo R-Square	0.259		0.590		0.396		0.447		0.779		0.745	

Table 6.

Regression Analyses of Institutional Ownership for Subgroups

This table presents the OLS regressions of institutional ownership on social norms, performance weakness, and control variables for two subgroups. For the first six columns, the dependent variable is the fraction of shares held by type 1 (banks), type 2 (insurance companies), and type 5 (others including pension plans, endowments, and employee-ownership plans) institutions. For the next six columns, the dependent variable is the fraction of shares held by type 3 (mutual funds) and type 4 (independent investment advisors) institutions. All variables are defined in the Appendix. The t-statistics in all regression models are adjusted for firm-level clustering. ***, **, and * indicate statistical significance at one, five and ten percent levels (two-tailed) respectively.

Panel A. OLS regressions of institutional ownership on social norms

| Variable | Dependent Variable : Institutional ownership (Type 1+2+5) | | | | | | Dependent Variable : Institutional ownership (Type 3+4) | | | | | |
| | Alcohol | | Tobacco | | Gaming | | Alcohol | | Tobacco | | Gaming | |
	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	t-value
Social norms	0.276**	2.20	0.689***	3.11	0.034***	3.74	0.014	0.22	0.147**	2.41	0.004	1.07
Size	0.059***	3.64	0.028	1.59	0.049***	3.20	0.010	1.37	0.080***	3.30	0.019	0.76
Beta	-0.021**	-2.00	-0.117	-1.63	-0.049**	-2.28	0.084**	2.28	0.192***	3.29	0.058***	3.67
Inverse of stock price	-0.026	-0.45	-0.048	-0.21	-0.019	-0.32	-0.047	-0.48	-0.213	-1.01	-0.054**	-2.39
Std of return	-0.987	-1.28	-5.320*	-1.78	-1.367**	-1.97	0.090	0.19	-0.721	-0.59	-0.765	-1.17
NASD	-0.004	-0.10	-0.127	-1.28	-0.005	-0.14	-0.029	-0.78	-0.038	-0.87	-0.031	-0.65
SP500	-0.048**	-2.11	-0.152**	-2.04	-0.033*	-1.92	-0.040	-1.15	-0.216***	-2.75	-0.019	-0.33
Lagged return on assets	0.029	0.37	-0.028	-0.19	0.100	1.42	0.020	1.19	0.154	1.44	0.006	0.15
Growth rate of assets	-0.098	-1.39	-0.029	-0.87	-0.009	-0.65	-0.036*	-1.78	-0.088**	-2.23	-0.017*	-1.66
External financing activities	0.049	0.39	0.196*	1.83	-0.064	-1.61	0.021	0.48	0.219**	2.30	0.028	1.10
Dividends	0.003***	5.89	0.021**	2.44	0.030***	3.18	0.001	1.58	0.014**	2.10	0.033***	3.41
Interest rate	0.001	0.27	0.002	0.34	0.001	0.30	0.001	0.49	0.002	1.10	0.001	0.34
Market volatility	0.034	1.37	0.041	1.10	0.049	1.29	0.026	1.16	0.033	1.17	0.018	0.89
GDP	0.000	1.49	0.000*	1.66	0.000	0.82	0.000	1.45	0.000	0.64	0.000	0.74
Unemployment	-0.095	-1.38	-0.038	-1.10	-0.041	-1.30	-0.026	-0.92	-0.010	-0.36	-0.026	-0.84
Intercept	2.647**	2.48	2.183***	3.64	1.173	0.38	2.913	0.29	1.986***	2.99	2.176	0.28
Firm fixed effect	Yes		Yes		Yes		Yes		Yes		Yes	
N	452		222		585		452		222		585	
Adj R-Square	0.302		0.574		0.391		0.111		0.415		0.127	
T-test of difference in coefficients (Social norms)	0.262***	5.24	0.542***	8.16	0.030***	7.03						

Table 6 (continued).

Panel B. OLS regressions of institutional ownership on social norms and performance weakness

| Variable | Dependent Variable : Institutional ownership (Type 1+2+5) | | | | | | Dependent Variable : Institutional ownership (Type 3+4) | | | | | |
| | Alcohol | | Tobacco | | Gaming | | Alcohol | | Tobacco | | Gaming | |
	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	t-value
Social norms	0.279**	2.22	0.365***	3.96	0.035***	3.29	0.015	0.27	0.042*	1.87	0.003	0.54
Performance weakness	-5.268**	-2.17	-3.765***	-3.27	-0.328***	-2.87	-2.453	-0.79	-0.521	-0.17	-0.165	-0.68
Social norms *performance weakness	1.367***	2.67	0.276*	1.83	0.048**	2.27	0.963	1.36	0.152	1.42	0.004	1.18
Size	0.060***	4.02	0.024***	3.11	0.038***	2.81	0.018	1.28	0.030***	2.95	0.006	0.52
Beta	-0.019*	-1.90	-0.110*	-1.91	-0.063***	-2.83	0.114***	2.75	0.170***	3.73	0.068***	3.92
Inverse of stock price	-0.017	0.27	-0.083	-0.48	0.011	0.29	-0.029	-0.54	-0.190	-1.03	-0.034	-1.37
Std of return	-1.156	-1.43	-5.295**	-2.01	-2.291***	-2.62	0.081	0.21	-0.890	-0.84	-1.349*	-1.94
NASD	-0.012	-0.39	-0.084	-1.03	-0.003	-0.09	-0.030	-0.91	-0.057	-1.28	-0.010	-0.49
SP500	-0.049***	-3.80	-0.161**	-2.02	-0.062	-0.44	-0.052	-1.41	-0.121**	-2.41	-0.020	-0.34
Lagged return on assets	0.015	0.31	-0.010	-0.12	0.079	0.79	0.025	1.08	0.164*	1.65	-0.011	-0.37
Growth rate of assets	-0.054	-1.38	-0.038	-0.85	-0.028	-1.26	-0.020	-0.68	-0.066**	-2.31	-0.017*	-1.75
External financing activities	0.061	0.58	0.231*	1.84	-0.048	-1.15	0.022	0.37	0.218**	2.19	0.060	1.31
Dividends	0.002***	2.71	0.016**	2.18	0.027***	2.82	0.021***	3.17	0.017**	2.21	0.056***	4.97
Interest rate	0.001	0.29	0.002	0.31	0.001	0.29	0.001	0.27	0.002	1.21	0.001	0.38
Market volatility	0.031	1.29	0.035	1.20	0.038	1.32	0.025	1.07	0.032	1.03	0.020	1.02
GDP	0.000	1.51	0.000*	1.73	0.000	1.09	0.000	1.60	0.000	0.79	0.000	0.54
Unemployment	-0.087	-1.55	-0.029	-1.14	-0.039	-1.48	-0.019	-1.02	-0.003	-0.22	-0.022	-1.01
Intercept	3.649***	2.90	2.364***	3.07	1.226	0.27	1.163	1.11	2.191*	1.90	1.922	0.28
Firm fixed effect	Yes		Yes		Yes		Yes		Yes		Yes	
N	447		220		554		447		220		554	
Adj R-Square	0.313		0.581		0.433		0.130		0.429		0.142	
T-test of difference in coefficients (Social norms)	0.264***	5.31	0.323***	4.20	0.032***	7.23						
T-test of difference in coefficients (Social norms* performance weakness)	0.404***	2.78	0.124**	2.10	0.044**	2.19						

Table 7.

Time-Varying Measure of Firms' Sin Exposure

This table presents the OLS (negative binomial) regressions of institutional ownership (analyst coverage) on social norms, performance weakness, firms' sin exposure and control variables for the full sample. *Sin Exposure* equals 1 if the firm's revenue generated by sin segments, as a percentage of the firm's total revenue, is greater than the industry median for the year; and 0 otherwise. The dependent variables in Models I and II are institutional ownership and analyst coverage, respectively. All variables are defined in the Appendix. The t-statistics (z-statistics) in all regression models are adjusted for firm-level clustering. ***, **, and * indicate statistical significance at one, five and ten percent levels (two-tailed) respectively.

Panel A. Regression analyses of institutional ownership and analyst coverage on social norms and sin exposure

	1A						1B					
	Dependent Variable : Institutional ownership						Dependent Variable : Analyst coverage					
	Alcohol		Tobacco		Gaming		Alcohol		Tobacco		Gaming	
Variable	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	z-value	Estimate	z-value	Estimate	z-value
Social norms	0.271*	1.65	0.322***	3.25	0.038***	3.28	0.812*	1.65	0.603**	2.38	0.072*	1.84
Sin exposure	-0.421***	-3.76	-0.288***	-4.89	-0.331**	-2.10	-0.267*	-1.77	-0.309***	-3.05	-0.288***	-2.87
Social norms*Sin exposure	0.389***	3.11	0.461***	4.01	0.067***	5.99	1.287**	2.18	0.868***	3.49	0.094**	2.16
Size	0.059***	2.77	0.050***	2.90	0.057***	2.51	0.494***	3.90	0.471***	3.95	0.472***	3.93
Beta	0.069	1.36	0.063	1.58	0.007	1.22	0.152	1.58	0.391	1.18	0.090*	1.77
Inverse of stock price	-0.042	-0.37	-0.258	-0.75	-0.085	-1.15	0.079	0.22	0.090	0.15	-0.231	-0.83
Std of return	-0.980***	-3.14	-6.841*	-1.92	-2.067**	-2.26	9.374	1.26	1.116	0.72	2.543	1.29
NASD	-0.029	-0.52	-0.188	-1.54	-0.080	-0.29	-0.577**	-2.41	-0.531	-1.42	-0.188	-1.54
SP500	-0.088***	-3.17	-0.030***	-3.32	-0.105*	-1.75	0.189***	2.89	0.490	1.55	0.141**	2.35
Lagged return on assets	0.049	0.81	0.123	0.78	0.106	1.29	0.085	0.99	0.768	0.99	0.384**	2.04
Growth rate of assets	-0.084	-1.33	-0.124*	-1.93	-0.030	-1.49	-0.216	-1.47	-0.281	-0.21	-0.129**	-1.98
External financing activities	0.042	0.30	0.331**	2.23	-0.020	-0.32	0.428	1.03	-0.782*	-1.95	-0.004	-0.02
Dividends	0.002***	4.29	0.018**	2.15	0.032***	3.73	0.117	0.26	0.365	0.71	0.176	0.89
Interest rate	0.001	0.31	0.002	0.35	0.001	0.31	0.019	1.23	0.276	1.45	0.162	0.76
Market volatility	0.030	1.14	0.036	0.98	0.026	1.24	-0.031	-1.36	-0.407	-1.05	-0.398	-0.97
GDP	0.000	1.42	0.000	1.01	0.000	0.97	0.000	1.05	0.000*	1.81	0.000	0.69
Unemployment	-0.058	-1.23	-0.045	-0.65	-0.030	-1.29	-0.284**	-2.39	-0.368*	-1.92	-0.588**	-2.24
Intercept	-1.919*	-1.82	1.562***	4.82	1.184	0.19	0.375***	4.91	-1.788***	-3.87	-2.512***	-3.41
Firm fixed effect	Yes		Yes		Yes		Yes		Yes		Yes	
N	452		222		585		452		222		585	
Adj R-Square/ Pseudo R-Square	0.262		0.586		0.375		0.442		0.782		0.719	

Table 7 (continued).

Panel B. Regression analyses of institutional ownership and analyst coverage on social norms, sin exposure and performance weakness

	2A						2B					
	Dependent Variable : Institutional ownership						Dependent Variable : Analyst coverage					
	Alcohol		Tobacco		Gaming		Alcohol		Tobacco		Gaming	
Variable	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	z-value	Estimate	z-value	Estimate	z-value
Social norms	0.465**	2.11	0.401***	3.02	0.054***	4.14	1.004***	2.07	0.615**	2.06	0.108**	2.01
Performance weakness	-5.062***	-4.05	-5.736***	-8.29	-3.619***	-3.09	-3.593**	-2.41	-1.322*	-1.87	-0.549	-1.52
Social norms*performance weakness	1.139***	5.16	0.449*	1.78	0.042*	1.92	0.231***	2.96	0.138*	1.71	0.028**	2.18
Sin exposure	-0.399**	-2.32	-0.251***	-2.65	-0.219**	-1.98	-0.201	-1.59	-0.216**	-2.17	-0.164*	-1.95
Social norms*Sin exposure	0.501**	2.11	0.529***	3.68	0.076***	4.26	1.292***	2.89	0.875***	3.93	0.145***	2.61
Performance weakness*Sin exposure	-6.387***	-5.95	-5.922***	-9.16	-3.717***	-3.59	-4.012***	-2.87	-1.921***	-2.98	-0.752*	-1.89
Social norms*performance weakness*Sin exposure	1.438***	4.82	0.471**	2.03	0.069**	2.41	0.297***	3.52	0.219***	2.77	0.049***	2.72
Size	0.111***	4.29	0.038**	2.44	0.138***	4.68	0.759***	7.82	0.636***	5.96	0.399***	3.61
Beta	0.093*	1.79	0.068	1.18	-0.006	-0.31	0.193	0.98	0.338	1.58	-0.079	-0.69
Inverse of stock price	-0.034	-0.42	-0.282	-1.28	-0.015	-0.23	0.225	0.72	-0.516	-0.99	-0.482	-1.41
Std of return	-1.168**	-1.99	-7.304**	-2.55	-4.276***	-5.18	12.362**	2.18	-3.187	-0.42	-2.287	-0.63
NASD	-0.053	-0.82	-0.136	-1.42	-0.026	-0.24	-0.639**	-2.55	-0.711*	-1.93	-0.229**	-2.06
SP500	-0.101	-1.27	-0.219***	-2.64	-0.085*	-1.84	0.192	0.62	0.320	1.05	0.044	0.38
Lagged return on assets	0.039	0.89	0.186	1.38	0.048	0.45	-0.098	-0.21	0.803	1.48	0.419*	1.87
Growth rate of assets	-0.070	-1.14	-0.128*	-1.82	-0.038*	-1.83	-0.227	-1.25	-0.067	-0.33	-0.109*	-1.79
External financing activities	0.068	0.52	0.395**	2.28	0.011	0.14	0.572	1.34	-0.520	-1.29	0.061	0.32
Dividends	0.014*	1.75	0.019**	2.18	0.048***	4.96	0.147	0.37	0.339	0.62	0.158	0.68
Interest rate	0.001	0.28	0.002	0.35	0.001	0.32	0.027	1.41	0.303	1.62	0.179	0.83
Market volatility	0.028	1.15	0.034	0.98	0.025	1.37	-0.056	-1.45	-0.399	-1.03	-0.467	-1.23
GDP	0.000	1.53	0.000	1.14	0.000	1.03	0.000	1.24	0.000*	1.68	0.000	0.72
Unemployment	-0.017	-1.32	-0.017	-0.96	-0.031	-1.56	-0.176***	-3.29	-0.395**	-2.46	-0.429***	-5.16
Intercept	-2.310***	-3.02	3.701***	8.27	2.510	1.36	1.489	1.28	-2.127***	-4.29	-3.091***	-6.37
Firm fixed effect	Yes		Yes		Yes		Yes		Yes		Yes	
N	447		220		554		447		220		554	
Adj R-Square/ Pseudo R-Square	0.261		0.591		0.397		0.447		0.781		0.746	

Table 8.

Changes Analyses

This table presents the OLS (negative binomial) regressions of change in institutional ownership (change in analyst coverage) on change in social norms, change in performance weakness, and change in control variables for the full sample. All variables are defined in the Appendix. The t-statistics (z-statistics) in all regression models are adjusted for firm-level clustering. ***, **, and * indicate statistical significance at one percent, five and ten percent levels (two-tailed) respectively.

Panel A. Regression analyses of change in institutional ownership and change in analyst coverage on change in social norms

	1A						1B					
	Dependent Variable : Change in institutional ownership						Dependent Variable : Change in analyst coverage					
	Alcohol		Tobacco		Gaming		Alcohol		Tobacco		Gaming	
Variable	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	z-value	Estimate	z-value	Estimate	z-value
ΔSocial norms	0.318*	1.64	0.100	1.33	0.024**	2.10	0.383*	1.90	0.273*	1.78	0.043*	1.86
ΔSize	0.078***	6.89	0.039**	2.19	0.037**	2.34	0.292**	2.19	0.273*	1.90	0.187**	2.36
Δbeta	0.021	1.01	0.036	1.41	0.004	1.19	0.072	1.05	0.372	0.98	0.087*	1.68
ΔInverse of stock price	-0.052	-0.61	-0.219	-0.62	-0.071	-1.26	0.054	0.18	0.067	0.11	-0.171	-0.37
ΔStd of return	-0.473**	-2.16	-1.038	-1.26	-0.732*	-1.83	3.092	0.78	0.938	0.37	1.728	1.01
ΔLagged return on assets	0.021	0.55	0.082	0.43	0.089	1.11	0.064	0.79	0.183	0.25	0.362	1.18
ΔGrowth rate of assets	-0.038	-1.12	-0.042	-1.61	-0.018	-1.20	-0.291	-1.10	-0.239	-0.18	-0.104*	-1.85
ΔExternal financing activities	0.020	0.16	0.102*	1.92	-0.014	-0.26	0.182	0.28	-0.435	-1.42	-0.002	-0.01
ΔDividends	0.036*	1.78	0.041**	2.01	0.010**	2.20	0.112	0.27	0.173	0.63	0.261*	1.78
ΔInterest rate	0.001	0.18	0.001	0.59	0.001	0.66	0.019	1.18	0.028	1.55	0.017	1.28
ΔMarket volatility	0.016	0.84	0.021	0.90	0.019	0.38	-0.029	-1.46	-0.025*	-1.66	-0.018	-1.57
ΔGDP	0.000	1.31	0.000	0.93	0.000	0.67	0.000	1.02	0.000	0.37	0.000	0.68
ΔUnemployment	-0.028	-0.97	-0.031	-0.38	-0.019	-1.17	-0.172*	-1.80	-0.436	-1.37	-0.253**	-1.99
Intercept	-0.156**	-2.33	0.173***	3.76	0.256	0.19	0.036**	2.30	-1.111***	-2.62	-0.361	-1.43
Firm fixed effect	Yes		Yes		Yes		Yes		Yes		Yes	
N	437		210		553		437		210		553	
Adj R-Square/ Pseudo R-Square	0.140		0.212		0.149		0.183		0.132		0.111	

Table 8 (continued).

Panel B. Regression analyses of change in institutional ownership and change in analyst coverage on change in social norms and change in performance weakness

	2A						2B					
	Dependent Variable : Change in institutional ownership						Dependent Variable : Change in analyst coverage					
	Alcohol		Tobacco		Gaming		Alcohol		Tobacco		Gaming	
Variable	Estimate	t-value	Estimate	t-value	Estimate	t-value	Estimate	z-value	Estimate	z-value	Estimate	z-value
ΔSocial norms	0.173*	1.71	0.110	1.43	0.018*	1.77	0.291	1.32	0.219*	1.69	0.040*	1.70
ΔPerformance weakness	-3.940**	-2.02	-2.841***	-3.85	-1.638***	-4.29	-1.384**	-2.16	-1.637**	-1.98	-0.638	-1.39
Δ(Social norms *Performance weakness)	1.040*	1.77	0.376**	2.05	0.060**	1.96	1.122**	2.14	0.102**	2.06	0.018*	1.90
ΔSize	0.069***	5.48	0.022*	1.72	0.028*	1.67	0.372***	3.07	0.326***	3.15	0.281***	2.67
Δbeta	0.018	0.94	0.059	1.22	-0.006	-0.29	0.092	1.26	0.317	1.47	-0.065	-1.39
ΔInverse of stock price	-0.027	-0.19	-0.173	-0.89	-0.017	-0.24	0.051	0.16	-0.365	-0.66	-0.110	-0.41
ΔStd of return	-0.283*	-1.76	-1.273*	-1.67	-1.029***	-2.77	3.917	0.62	-1.293	-0.38	-1.837	-1.21
ΔLagged return on assets	0.043	0.93	0.064	0.38	0.019	0.18	-0.036	-0.21	0.540	1.17	0.191	0.99
ΔGrowth rate of assets	-0.028	-0.89	-0.036	-1.51	-0.028*	-1.80	-0.286	-1.09	-0.054	-0.31	-0.091*	-1.79
ΔExternal financing activities	0.035	0.26	0.100*	1.88	0.006	0.12	0.101	0.18	-0.573	-1.21	0.053	0.41
ΔDividends	0.010	1.33	0.035	1.62	0.012**	2.38	0.103	0.28	0.288	1.24	0.317*	1.90
ΔInterest rate	0.001	0.17	0.001	0.53	0.001	0.41	0.029	1.30	0.038*	1.71	0.022	1.48
ΔMarket volatility	0.015	0.81	0.023	0.99	0.017	0.35	-0.019	-1.20	-0.020	-1.41	-0.026*	-1.73
ΔGDP	0.000	1.38	0.000	0.99	0.000	1.00	0.000	1.28	0.000	1.61	0.000	0.70
ΔUnemployment	-0.014	-0.67	-0.008	-0.27	-0.027	-1.49	-0.114*	-1.75	-0.547*	-1.73	-0.263***	-3.16
Intercept	-0.120***	-5.18	0.181***	3.83	0.026**	2.01	0.117***	2.59	-0.417	-1.56	-0.531*	-1.94
Firm fixed effect	Yes		Yes		Yes		Yes		Yes		Yes	
N	432		208		522		432		208		522	
Adj R-Square/ Pseudo R-Square	0.145		0.182		0.129		0.188		0.127		0.124	

Figure 1. Panel A: Alcohol
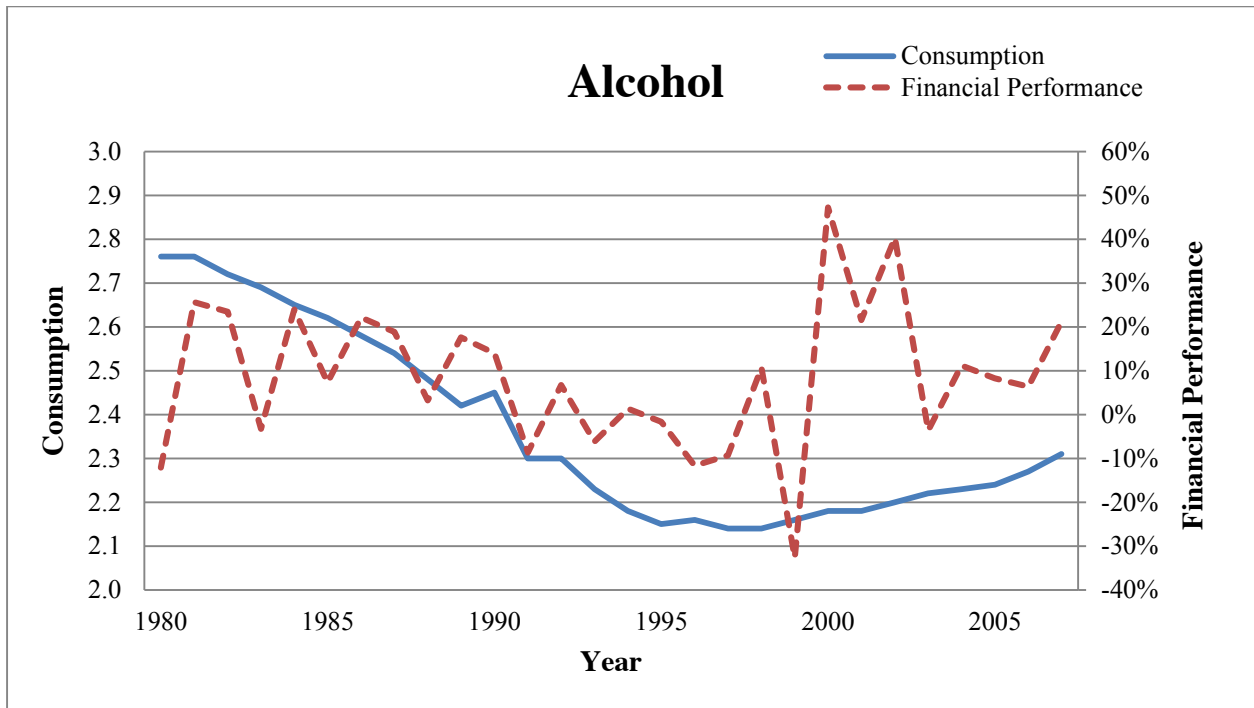

Alcohol
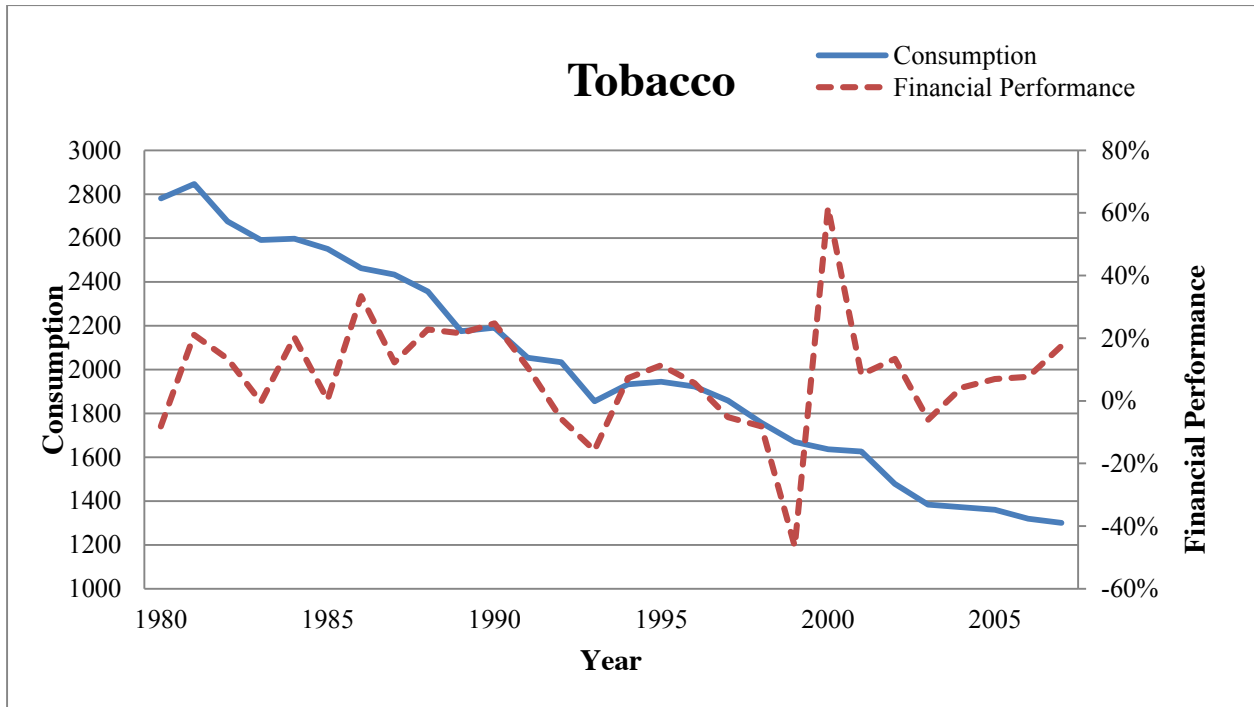
Figure 1. Panel B: Tobacco
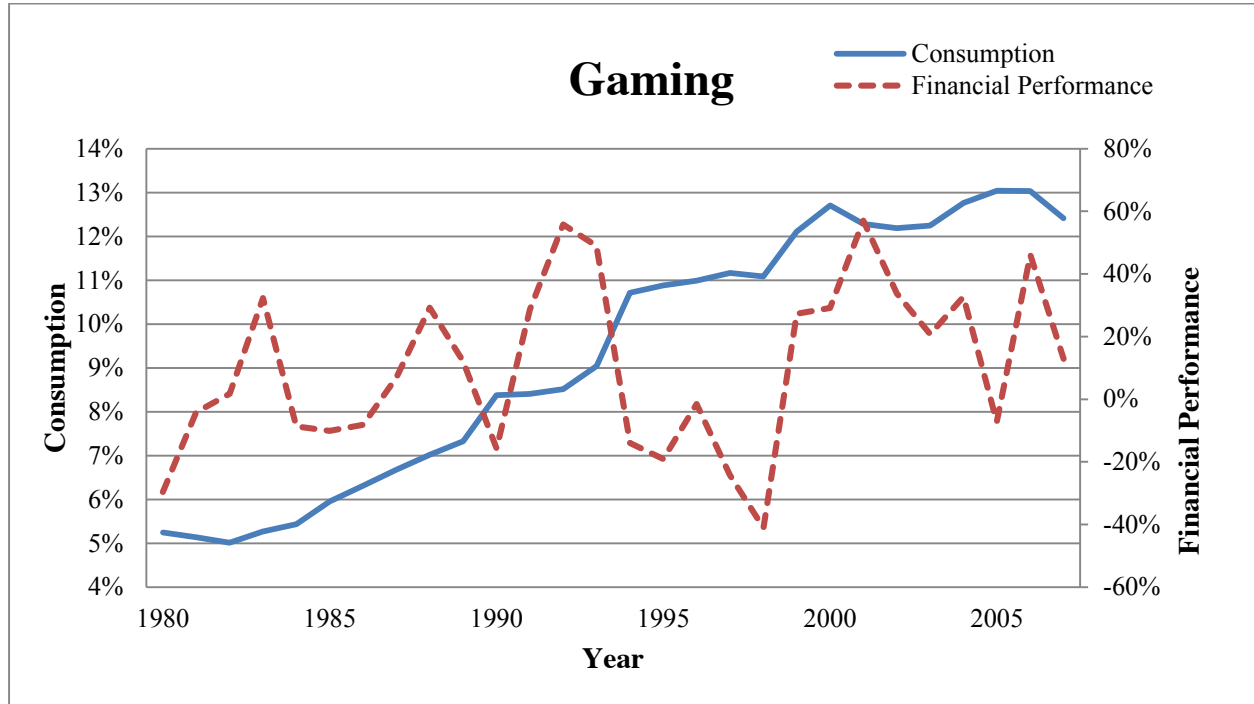

Tobacco

Figure 1. Panel C: Gaming

Figure 1. Plots of Social Norm Measures and Time Series of Financial Performance of Sin Stocks.
Alcohol consumption is the recorded adult (15+) per capita consumption of alcohol in gallons. Tobacco consumption is the domestic per capita consumption of tobacco in pieces. Gaming consumption is the number of gaming visitors to Las Vegas as a % of the total population. Financial performance is defined as the differences between the "sin" stock portfolio return and the market portfolio return. These plots cover the years 1980 to 2007.
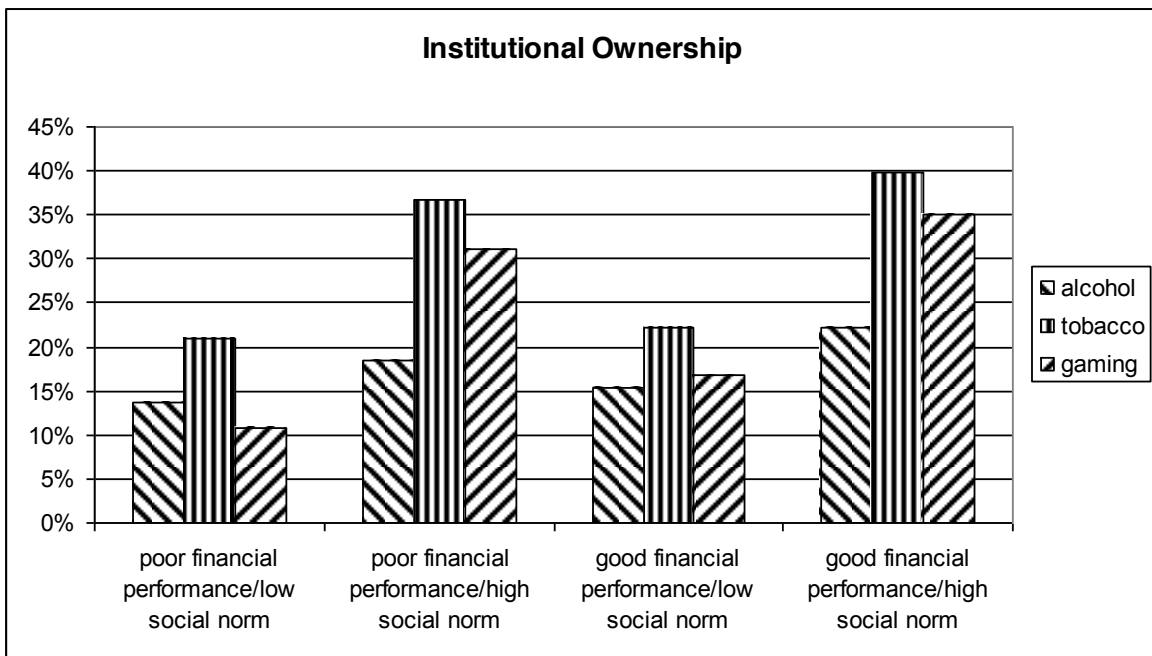
Figure 2. Panel A. Univariate Analysis – Institutional Ownership Partitioned by Social Norm Measure and Financial Performance. Institutional ownership is the fraction of shares of a firm held by institutions.
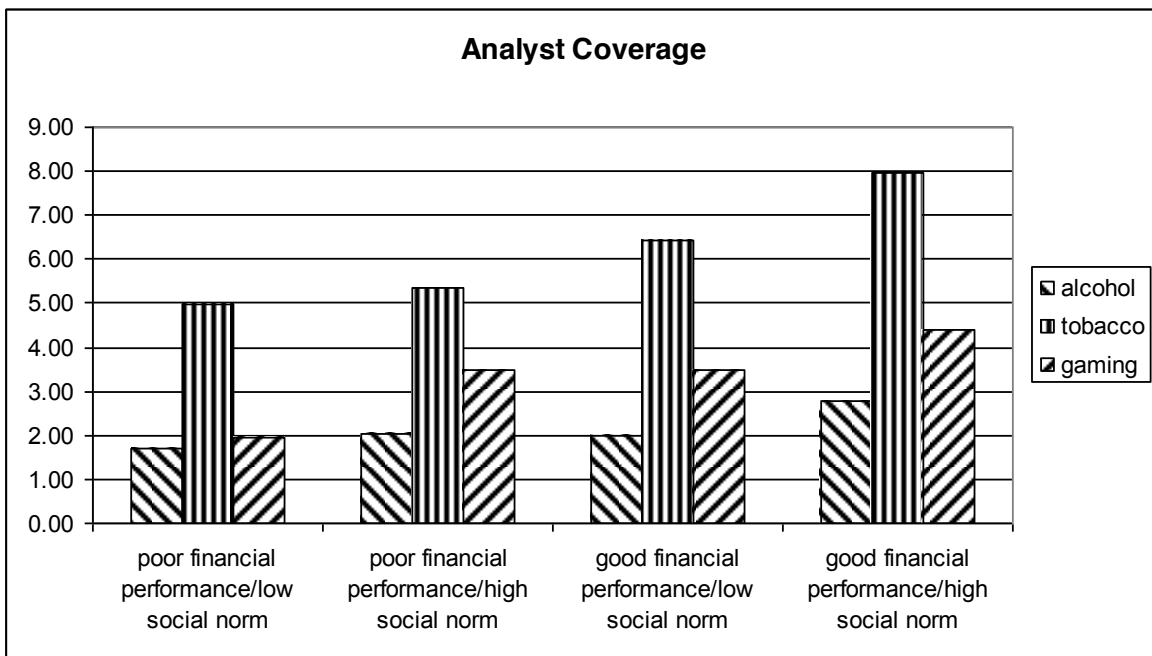

Figure 2. Panel B. Univariate Analysis – Analyst Coverage Partitioned by Social Norm Measure and Financial Performance. Analyst coverage is the number of analyst estimates issued on a company as of year-end.