PERCEPTIONS OF NON-PROFESSIONAL INVESTORS: THE CASE OF SIN STOCKS

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Abstract

In an experimental setting, we test claims that investors are less likely to invest in certain industries due to non-financial preferences. Specifically, we test whether non-professional investors are more likely to divest themselves of an investment in a sin stock than a non-sin stock. We find that non-professional investors are significantly more likely to trade away sin stocks in a controlled setting. More specifically, we find that non-professional investors are more inclined to trade away investments in pornography related industries than in alcohol or tobacco related industries. We also find that donations to charity by these firms appear to have no significant impact on the divestment decisions of investors. Finally, we find no evidence that investors are aware of their own aversion to investment in sin stocks.

INTRODUCTION

In this text, we test whether non-professional investors are more inclined to divest equity-based securities as a result of industry classification. Secondarily, we test the interactive impact of non-core business practices on non-professional investor perceptions. Specifically, we investigate whether non-professional investors are

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more likely to divest themselves of sin stocks than non-sin stocks. We also test for the moderating impact of charitable contributions.

In recent times, socially conscious investing has grown in popularity. The number of funds that specifically avoid sin stocks has grown considerably, both in terms of the number of funds and the amount of money invested in these funds. In fact, investment in socially conscious funds grew by 18% in 2005 and 2006 to a total of 2.7 trillion dollars (see Investment News 2009). As socially conscious investment has grown in popularity, it has attracted increased attention by the media, researchers and investors.

The performance of sin stocks has been debated, with sin stocks generally being regarded as producing a superior return. A recent article by the intelligent investing panel at Forbes claims that sin stocks are a way to "withstand the throes of a consumer recession" (Maiello and Serchuk 2009). Indeed, between January and June of 2009, the International Securities Exchange SINdex (SIN) increased by 30% (seeking alpha 2009).

Similarly, researchers have generally found that sin stocks are underpriced. Hong and Kacperczyk (2009) find that sin stocks trade at lower multiples than their non-sin counterparts, and are less likely to be held by institutional investors. In a follow-up study, Kim and Venkatachalam (2009) also conclude that the prices of sin stocks are depressed as a result of "non-financial tastes" by investors. Visaltanachoti et al. (2009) report that sin funds in Hong Kong outperformed their market index by over 29% during the period 1995-2007.

Depressed stock prices for these sin stocks is either the result of some variable not properly accounted for in the studies previously mentioned, or is in fact the result of an aversion by investors on the basis of cultural norms. Our paper addresses, for the case of non-professional investors, whether investors are in fact more likely to rid themselves of an investment solely as a result of these cultural norms.

We find that non-professional investors are more likely to divest themselves of stocks when they are labeled as sin stocks as

opposed to non-sin stocks. We also find that individuals' attitudes towards pornography related firms are particularly negative relative to non-sin stocks. We also find that whether a firm donates significantly to charity does not materially impact investors' decisions in whether or not to trade a stock.

BACKGROUND AND HYPOTHESES

Research (primarily from the social sciences) suggests that the desire to conform to societal norms plays a significant role in influencing individuals' behavior. This phenomenon has been used to explain a number of apparently suboptimal behaviors by humans (Becker 1957). Recently, however, the effect of social norms has been applied to investor behavior. The most obvious setting to apply the theoretical effect of social norms on investor behavior has been investment in sin stocks.

Hypothesizing that investors' desire to adhere to social norms may even supersede the profit motive, Hong and Kacperczyk (2009) find that fewer norm-constrained institutional investors hold a stake in sin stocks than mutual or hedge funds. They also find that sin stocks earn abnormally high returns even after controlling for determinants such as market beta, book to market, size and momentum. They conclude that these results are the result of 'neglect' by investors, and not the result of litigation risk.

Following up their work, Kim and Venkatachalam (2009) test for higher information risk as the underlying determinant behind abnormally high returns among sin stocks. They test the earnings quality of sin firms relative to their non-sin counterparts. They find, contrary to expectations, that sin firms have superior earnings quality than their non-sin counterparts. Specifically, compared to their control group, they find that sin firms' earnings are better predictors of future cash flows, exhibit greater persistence and that sin firms produce more timely loss recognition. They thus conclude that the apparent under-pricing of sin stocks may be driven by investors' aversion to socially undesirable investments.

However, proponents of the Efficient Market Hypothesis (EMH), or even Modern Portfolio Theory (MPT) claim that any under-pricing will be nearly instantaneously arbitraged away. A few investors could theoretically arbitrage away any inefficiency. Those favoring the EMH or MPT claim that the alleged under-pricing of sin stocks is likely to be the result of an excluded variable or poorly proxied variable, such as risk. Consistent with this argument, Renneboog et al. (2008) report in a multi-national study that in most cases, when adjusted for risk, differences in performance between portfolios that included sin stocks and portfolios that excluded sin stocks were insignificant. Other studies have led to similar conclusions (see Hamilton, Jo and Satman (1993) and Geczy, Stambaugh and Levin (2003)). Taken together, the question remains unclearly answered about whether sin stocks prices are depressed by investor aversion or by some other factor.

Nevertheless, relying on the conclusions of Hong and Kacperczyk (2009) and Kim and Venkatachalam (2009), we hypothesize that non-professional investors will divest themselves of investments in sin stocks more often than non-sin stocks, *ceteris paribus*.

H1: Non-professional investors will choose to trade away sin stocks more often than non-sin stocks.

In addition to testing for the effects of industry classification, we further introduce a potential moderating variable: Charitable contributions. The efforts of firms to alter negative perceptions of market participants and consumers have been well documented (Gupta and Pirsch 2008, Hutton et al. 2001). One possible method for firms to combat a negative perception by potential investors could be through donations to charitable causes (Cornwell and Coote 2005, Kitchen 2004, Liu and Zhou 2009). For example, in 1999 Philip Morris donated approximately 75 million dollars to charity, and promptly launched a 100 million dollar advertising campaign to publicize it (Porter and Kramer

2002). It seems reasonable to think that these donations could impact investor behavior, and potentially soften negative attitudes by investors. However, the success of these endeavors to alter perception through donation is not clear.

Our second hypothesis is therefore that charitable contributions will act as a moderating variable—that is, investors will be less likely to divest stocks of firms that donate to charity. We expect this effect to be especially pronounced in the case of firms that are otherwise likely to be perceived negatively, as may be the case with sin stocks. Furthermore, non-professional investors seem more likely to be influenced by these behaviors on an individual basis than professional investors. Thus:

H2: Non-professional Investors will be less likely to divest the stocks of firms that donate significantly to charity.

Our primary contribution is to test, in a controlled setting, whether an aversion to investment in sin stocks on the basis of industry in fact exists. In other words, do investors actually neglect sin stocks simply because of their industry? A carefully designed experimental setting offers the advantage of isolating industry classification as a variable while holding all else constant, and thus strengthens our ability to draw conclusions about the drivers of investor behavior. As a further differentiator, prior research has tended to focus on institutional investors, whereas our focus lies solely with non-professional investors. Finally, we introduce and test a potential moderating factor—charitable contributions.

RESEARCH METHOD

Participants

Students (both graduate and undergraduate) at two universities—one a public university in the Midwest, and the other a private university in the West, served as proxies for non-professional investors. A total of 159 students took part in the study; 80 participants from the public university and 79 participants from the private university—all students were from the college of business. At each location, one of the authors served as proctor for the experiment. There were 106 (67%) male participants and 53 (33%) female participants with a respective mean (standard deviation) age of 22.24 (2.8). All participants were pursuing a degree in the college of business. The selection of these participants is consistent with Libby et al. 2002, who argue that proxies for non-professional investors need only have basic investment and accounting knowledge. In fact, they discourage the use of market participants as subjects in settings such as these because "they are a valuable and scarce resource (see also Elliott et al. 2007)".

Procedures

The experiment involved a between-participants design with two randomized factors: (1) Sin or non-sin stock portfolio and (2) Charitable contributions, either present or absent. The participants were randomly given a packet from one of the four treatment groups. Participants were first asked to read the cover letter, and attached voluntary consent form. Afterwards, they were directed to read the case and follow the directions, which included responding to a dependent variable item. Then, participants were directed to complete manipulation checks and answer some debriefing and demographic questions.

The Case

Participants were told to consider a situation in which their retirement portfolio consisted of investment in the equity securities of three firms. They were given a one sentence description of each

firm's activities and the consolidated financial statements for each firm, including a footnote. Participants were then asked to rate their satisfaction with their investments and rate the firm's performance.

Independent Variables

Portfolio Type

For participants in the 'Sin stock portfolio' treatment groups, the descriptions included:

1. Porn, Inc. This company produces and distributes x-rated and unrated pornographic materials such as films and magazines.
2. Smooth Tobacco. This company is a leading tobacco manufacturer and distributer specializing in cigarettes and smokeless tobacco products.
3. Patrick McFadden Brewers and Subsidiaries. This company brews and distributes alcoholic beverages, specializing in low-calorie beer and 'smooth' vodka.

Participants in the 'Non-sin stock portfolio' treatment groups were offered these descriptions of their firms:

1. Comics 'R' us. This company produces and distributes a variety of monthly comics and licenses the rights to its characters for use in movies.
2. Wellagen Pharmaceuticals. This company is a leading developer, producer and marketer of drugs licensed for use in medication, specializing in headache remedies.
3. Best Bred Bread. This company grows, manufactures and distributes bread and related products, specializing in wheat bread and rolls.

The attached financial statements for the sin portfolio and non-sin portfolio were identical except for the firm's name.

Each of the non-sin firms were developed based on the guidance of several finance experts, including academics, and were designed to match, to the extent possible, the characteristics of the corresponding sin stock including distribution channels, capital structure and litigation risk.

Charitable Contributions

Charitable Contributions included in the case consisted of one footnote per firm, attached to end of the consolidated financial statements. For participants in the 'no charitable contribution' treatments, the footnotes appeared as:

1. Cost of goods sold includes raw materials, ink and other related costs of production.
2. We employ straight-line depreciation for financial reporting purposes and Declining Balance as required by applicable laws.
3. Note: Inventories are valued at lower-of cost or market and uses the LIFO method of depreciation.

For participants in the 'charitable contributions' treatment, the footnotes consisted of the following statements:

1. Porn Inc (Comics 'R' Us) pledges to donate 1$ to AIDS prevention for every 300$ of earned income.
2. Smooth Tobacco (Wellagen Pharmaceuticals) has committed to donate 50 Million dollars to keep our teens from abusing prescription drugs, in accordance with relevant laws.
3. Patrick McFadden (Best Bred Bread) has committed to donate 3% of its 2009 Net Income to charitable causes.

The level of charitable contributions, if actual, would place each of these firms among the most generous firms in the country (Forbes 2008).

Dependent Variable

Trade

After reviewing their initial portfolio, participants were introduced to a fourth firm, Refreshya Soft Drinks. As with their initial firms, they were provided with a one sentence description of Refreshya's activities and consolidated financial statements for the firm, including a footnote. Participants, after reviewing the information for Refreshya soft drinks, were then asked if they would like to trade their stake in one of their initial stocks in exchange for shares in Refreshya Soft Drinks. Thereafter,

participants were asked to indicate which stock from their initial portfolio they would like to divest in exchange for shares in Refreshya, and a number of debriefing and demographic items followed.

RESULTS

Manipulation checks

As a manipulation check for the Portfolio Type treatment, participants were given a list of six company names and asked to circle the three that were in their original investment portfolio. Two of the participants responded incorrectly to this manipulation check. However, their exclusion did not qualitatively alter the results. These two responses have thus been included in the final analysis. Five participants did not respond to the trade question. Please note that results testing the effect of gender and location were insignificant and thus excluded from the results.

The main results are presented in table 1. Consistent with H1, participants in the sin conditions were significantly more likely to divest one of their original investments than their non-sin counter parts ($F = 4.18$, $p < .05$). However, inconsistent with H2, the participants were not less likely to divest themselves of an original investment if the firms donated to charity ($F = .05$, $p > .8$). The interaction between the two factors was also statistically insignificant ($F=2.51$, $p < .15$). Taken together, these results suggest that non-professional investors may indeed be deterred from investment in sin stocks simply because of the name appearing on the financial statements. However, efforts to moderate non-professional investor aversion through charitable donations appear to be ineffectual (see figure 1).

Table 1
Choice to divest shares in initial portfolio

Panel A: *Trade decisions by Cell*

	Non-charitable	Charitable	Total
Sin stock	n=40	n=37	n=77
Portfolio	chose to divest: 70%	chose to divest: 75.70%	chose to divest: 72.74%
Non-sin stock	n=38	n=39	n=77
Portfolio	chose to divest: 57.90%	chose to divest: 56.40%	chose to divest: 57.14%
Total	n=78	n=76	n=154
	chose to divest: 64.11%	chose to divest: 65.80%	chose to divest: 64.94%

Source	S.S.	d.f.	M.S.	F-Value	P-Value
Panel B: *ANOVA results*					
Sin Stock	0.935	1	0.935	4.18	0.04
Charitable	0.012	1	0.011	0.05	0.88
Interaction	0.562	1	0.562	2.51	0.11
Error	33.56	150	0.224		

Figure 1. Percentage of participants by cell that chose to divest shares in their original investment for shares in Refreshya.

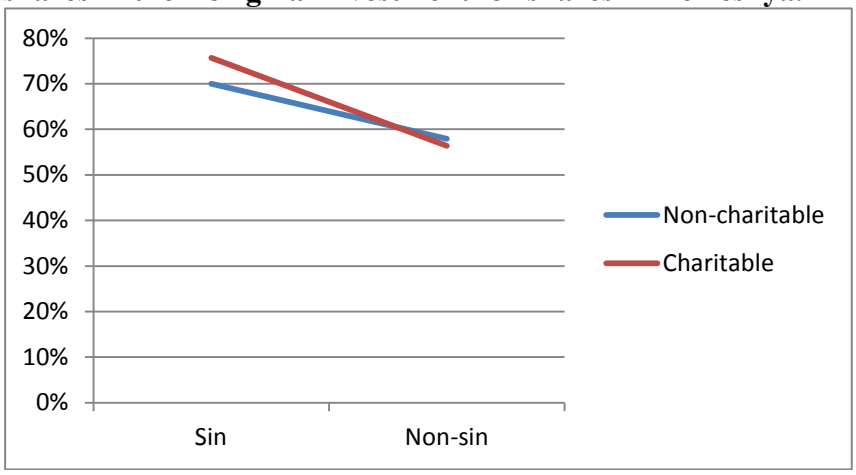

Table 2 presents the results of relevant debriefing items. The first question asked participants about their satisfaction with their investment in the pornography firm or its identical non-sin counterpart. The mean responses indicate that individuals were significantly less satisfied with their investment in the pornography company than the non-sin counterpart (T=2.34, p < .05). Furthermore, participants indicated that they were significantly more likely to sell the pornography stock than the non-sin counterpart (T=-3.39, p <.01). These results suggest that individuals are less inclined to maintain investment in a pornography stock than a corresponding non-sin investment.

Participants were also asked to respond to questions about their investment in a tobacco company or its non-sin counterpart. The first question again asked participants to rate their satisfaction with their investment. The responses between these two groups were statistically insignificant (T=1.26, p >.2). When asked to rate the likelihood of divestment, participants did not indicate that they would be more likely to sell in the sin condition (T=1.42, p>.15). These results do not suggest that the aversion to investment in sin stocks shown in table 1 is driven by attitudes about investment in tobacco.

Finally, participants were asked to rate their satisfaction with their investment in either their investment in an alcohol-related firm, or its non-sin counterpart. As with tobacco, the mean response was not statistically significant between the two groups (T=-.43, p >.6). In rating the likelihood of divestment, the differences was again insignificant (T=-.14, p >.8). These results suggest that attitudes about investment in alcohol may not differ significantly from attitudes about investment in similar, non-sin industries.

Taken together, the results from tables 1 and 2 suggest that non-professional investors may in fact be less likely to maintain investment in a firm, simply because of the connotation of investment in a sin stock. Specifically, attitudes about investment in pornography may drive the results seen here. Donations to charity by the firm did not appear to have a material impact on the investment decisions of participants.

Table 2
Response
Items

		Non-sin counterpart	Pornography
1.Satisfaction with your investment in __ (1= extremely unsatisfied, 9=extremely satisfied)	Mean	4.95	4.27
	stdev	1.59	2.03
	t stat		2.34
	p-value		0.02
2.How likely would you be to sell your shares of __ (1=extremely unlikely, 9=extremely likely)	Mean	5.44	6.56
	stdev	2.02	2.15
	t stat		-3.39
	p-value		0.00

Table 2
Cont'd.

		Non-sin counterpart	Tobacco
3.Satisfaction with your investment in __ (1= extremely unsatisfied, 9=extremely satisfied)	Mean	6.87	6.53
	stdev	1.55	1.84
	t stat		1.26
	p-value		0.21
4.How likely would you be to sell your shares of __ (1=extremely unlikely, 9=extremely likely)	Mean	4.14	4.62
	stdev	2.08	2.15
	t stat		-1.42
	p-value		0.16
		Non-sin counterpart	Alcohol
5.Satisfaction with your investment in __ (1= extremely unsatisfied, 9=extremely satisfied)	Mean	6.63	6.74
	stdev	1.66	1.63
	t stat		-0.43
	p-value		0.67
6.How likely would you be to sell your shares of __ (1=extremely unlikely, 9=extremely likely)	Mean	4.31	4.36
	stdev	2.17	2.04
	t statc		-0.14
	p-value		0.89

Social Desirability Checks

In an effort to control for the impact of participants' potential desire to behave in a socially acceptable way during an experiment, we employed a number of debriefing items. Each of these items was carefully selected in order to capture the potential 'pleasing' behavior of participants within the given time

constraints. In this experiment, 'pleasing behavior' by participants would likely be manifest by a dissatisfaction or discomfort in investment in sin stocks. The first item asked respondents to rate their comfort in investing in sin stocks. As reported in Table 3, no significant difference exists in the average response by participants between the sin treatment groups and the non-sin treatment groups ((*T*=-.40, *p* >.6). The second item, "How concerned were you about the industries of the firms in your portfolio?" was a more specific query designed to tease out pleasing behavior. The results were again insignificant (*T*=-.68, *p*>.4). The third social desirability item asked participants to rate their satisfaction with their final investment portfolio. No significant difference exists between the sin and non-sin treatment groups (*T*=.11, *p*>.9).

The fourth response item in this section asked respondents to describe the most important factor in their divestment (non-divestment) decision. Approximately 4 percent of those in the non-sin treatments indicated that industry was the primary determinant in their decision, compared to approximately 6 percent of those in the sin treatment groups. This difference is statistically insignificant (*T*=-.67, *p*>.45). Finally, participants were asked to rate their ethics level on a scale ranging from 1 to 9, where 1 indicates a self evaluation of extremely unethical and 9 indicates a self evaluation of extremely ethical. Those in the sin stock treatment groups reported an average score of 6.86 compared with 7.90 for those in the non sin stock treatment groups. This difference is statistically significant (*T*=4.10, *p*<.01).

Table 3
Additional Response Items

		Non-sin counterpart	Sin Stock Treatment
1.Comfort investing in sin stocks __ (1= extremely uncomfortable, 9=extremely comfortable)	Mean	6.21	6.38
	stdev	2.87	2.62
	t test		-0.40
	p-value		0.69
2.How concerned were you about the industries of the firms in your portfolio? (1=extremely uncomfortable, 9=extremely comfortable)	Mean	5.99	6.23
	stdev	2.34	1.96
	t test		-0.68
	p-value		0.49
3.Satisfaction with your final investment portfolio (1= extremely unsatisfied, 9=extremely satisfied)	Mean	6.71	6.68
	stdev	1.26	1.38
	t test		0.11
	p-value		0.92
4.Percent of participants indicating that industry was the most important factor in their divestment decision	Pct	0.04	0.06
	stdev	0.19	0.24
	t test		-0.67
	p-value		0.50

Table 3
Cont'd.

5.How ethical are you? (1= extremely unethical, 9=extremely ethical)	Mean	7.90	6.86
	stdev	0.95	2.02
	t test		4.10
	p-value		<0.01

Given these responses, it seems unlikely that the significant difference in divestment frequency by participants was driven by pleasing behavior. In fact, the lower average ethics score among sin treatments, should bias results *against* divestment by these participants on the basis of industry. Furthermore, based these results imply that participants' may not be cognizant of their aversion to sin stocks. This is consistent with Greenwald and Benaji (2002) who report that social behavior by individuals is often the result of subconscious attitudes and stereotypes.

CONCLUSION

Socially conscious investing has become an area of particular interest in the recent history, growing in notoriety and in popularity. These investments appear, in some specifications to outperform their non-socially conscious counterparts, and underperform in other specifications. Regardless of their actual performance, however, it appears that individuals are more likely to divest themselves of sin-stocks than non-sin stocks even when the underlying financial information is identical. Furthermore, it appears that participants' strongest negative attitudes are associated with investment in pornography related firms. Firms' attempts to alter firm perception through charitable donations appeared to be ineffectual in this setting. Finally, participants showed no indication of being aware of any aversion to investment on the basis of industry, including sin stocks.

Future researchers may more directly test whether the investor aversion exhibited here is the result of an unconscious stereotype. They might also profitably measure more specifically the degree of investor aversion to pornography related firms, as well as explore other industries to which investors may be averse.

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