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# International variation in sin stocks and its effects on equity valuation☆

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ABSTRACT

We examine the impact of differences in time varying social views towards sin stocks across G20 nations on firm valuation and excess returns. Sin stocks have an 8% lower equity valuation in countries where society is strongly against such industries. After controlling for other factors, sin stocks have excess returns of about 1–2% annually. However, these returns are largely arbitraged away in nations without capital and investment controls, but persist in countries with capital restrictions. These results are robust to proxies for litigation risk, transparency, growth opportunities, sin measures, and alternative measures of firm valuation.


## 1. Introduction

Does international heterogeneity in social attitudes impact equity markets? There is an on-going debate in the academic and practitioner literature as to what impact social disapproval of smoking, gambling, and drink has on the equity values of firms that engage in the business of producing these goods (e.g., Berman, 2002; Fabozzi et al., 2008; Hong and Kacperczyk, 2009, etc.). Past work has generally paid little attention to the underlying heterogeneity in social norms among countries. Understanding the effect that social norms have on equity valuations is important because of the large size of these industries worldwide, and the possibility that the magnitude of the effects is non-trivial.

This paper contributes to the existing literature on the economic importance of social norms and their behavioral effects in equity markets. Past work has generally examined sin stocks in only one nation, or has assumed that social norms are homogeneous across nations or completely defined by religious views. This has led past researchers to assume that all societies regard sin stocks similarly. This assumption is likely to be inaccurate given the vast differences among even developed nations around the world. We develop an empirical method to clearly distinguish among the attitudes of different nations, and then apply this method to show that differences in social attitudes result in varying valuation effects on sin stocks.

In order to examine this cross-country cultural heterogeneity in attitudes toward sin stocks, we develop a measure of time varying social norms pertaining to sin stocks in the G20 nations: a social sin measure. Using this measure (along with individual sin measures

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for smoking, gambling and alcohol), we report that while sin stocks are shunned in some nations, they are not shunned in others. As such, the sin firms in countries where society is against such firms, experience valuation losses relative to non-sin firms. Alternatively, where societal norms are not biased against sin firms, these firms are generally comparable to other firms and do not appear to have lower market valuations than non-sin firms. For example, in the US, sin stocks have roughly a 12% lower valuation than other stocks as measured by Tobin's Q, while in China, they actually have a 5% higher valuation than other stocks, after controlling for other factors that have been shown to affect firm valuation. Overall, we conclude based on our social sins measure that there is a significant relation between social views and equity market valuation of firms that do not conform to those social views. The results are consistent with these sin firms having lower equity valuations because society shuns these stocks in the equity markets.

These results are significant for a nation's economy because sin firms generally represent 3–7% of total GDP for the countries in our study, and so any factors that affect their equity valuations may create significant capital markets distortions. Moreover, these results are significant even for countries that have no significant conventional sin firm presence because most countries will have some firms that are likely to be viewed as immoral or shunned by some portion of the country's population. For example, Fabozzi et al. (2008) include both biotech stocks and defense stocks as sin stocks. Yet defense is an industry that is present in all major developed economies around the world, and in many nations (e.g. South Korea), biotech stocks are viewed as an important industry of the future. In this paper, we stay consistent with much of the past literature by including only tobacco, alcohol, and gambling as sin stocks, but our results demonstrate that social attitudes have the potential to significantly impact equity valuations for any set of firms that are subject to public disapproval.

The remainder of this paper is organized as follows. Section 2 reviews the past literature in the area. Section 3 discusses the methodology for identifying a sin stock, and Section 4 covers the data used, while Section 5 presents the empirical results and discusses their implications. Finally, Section 6 concludes.

## 2. Background and literature review

The idea of social objectives entering into decisions made by firms and investors is not a new concept, but it is one that has increasingly gained attention in academic research in the last decade.[2] Historically, economic or financial research, and sociological research have not been closely united. However, recent papers such as Chui et al. (2010), Hong and Kacperczyk (2009), and Kim and Nofsinger (2008) have begun to use past research and international cultural measures to examine new questions in financial research. One aspect of social norms that has begun to gain particular attention is the idea of vice or sin stocks (a common term in the literature). This interest in sin stocks has not been limited to academics. In 2002, the Vice Fund, a US investment fund was founded to focus on investments in the tobacco, alcohol, gambling, and defense industries.[3]

Merton (1987) provides the basis for the explanation underlying many of the results found in the research on sin stocks to date. Merton shows that when investors neglect firms, it has an effect on the firm's risk adjusted returns. This leads to the idea that neglect on moral grounds can impact a firm's equity returns.

Fabozzi et al. (2008) analyze the stock returns to firms in the alcohol, adult services, gaming, tobacco, weapons, and biotech industries. They find that a sin stock portfolio produces an annual return of 19%, which significantly outperforms common benchmarks and the market in terms of both risk and return. The authors suggest that there are at least two possible explanations for this; first, there may be an economic gain that comes from not abiding by social standards since these standards are costly, or second, the average investor may be biased against sin stocks due to disdain stemming from the firm's flouting of social convention.

Hong and Kacperczyk (2009) examine firms in the tobacco, alcohol, and gambling industry in the US and find that these firms appear to suffer from bias against them. They speculate that this bias may be due to these firms flouting social norms or to greater litigation risk for these firms. They also find that these firms are less followed by analysts, and have lower institutional ownership than comparable peers. Further, these sin firms outperform the market on a relative basis after accounting for well-known predictors of stock returns. Kim and Venkatachalam (2011) find superior performance for a sample of 111 tobacco, alcohol, and defense sin stocks, and that these firms have higher financial reporting quality than comparable peers. Papers from Lobe and Walkshausl (2011) and Salaber (2007) examine the returns to sin stocks in Europe and outside the US and find mixed evidence on abnormal returns, but neither paper distinguishes among the different cultural attitudes towards sin for similar nations beyond simple religious affiliation.

## 3. Methodology of identifying a "sin" stock

Past work on sin stocks in an international context has frequently assumed that a sin stock in one nation will also be a sin stock in another nation (see for example, Hong and Kacperczyk (2009), Statman and Glushkov (2009), Fabozzi et al. (2008); however more recent work by Roca and Wong (2010), Derwall et al. (2011), and Durand et al. (2013)). Stulz and Williamson (2003), Heinrichs et al. (2006), and Kumar et al. (2011) cast doubt on this assumption. As such, the status of being a "sin stock" is allowed to vary among nations, as well as over time in our sample. Thus a tobacco firm could be a sin stock in any nation, but it is only classified as an actual sin stock in those nations where social norms suggest that the population looks negatively on the production (and use) of tobacco.

Specifically, we designate countries as being a sin country based on two different measures. First, using data gathered from the World Values Survey (WVS), we create a social sin measure. This measure classifies each country as viewing tobacco, alcohol, and

[2] Relatively few academic papers on the subjects of either socially conscious investing or vice investing can be found prior to 2005. Since 2005 more than a dozen papers have been published on this area.

[3] See the Vice Fund Prospectus: http://www.usamutuals.com/vicefund/phil.aspx.