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The Myth of the Sin Premium: Evidence from U.S. Sin Stocks During Periods of Economic Uncertainty

Ogochukwu Sandra Nwaizugbo *

Swansea University, UK.

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Abstract

This paper examines the performance and resilience of sin stocks in the U.S. market, focusing on the traditional sin industries of tobacco, alcohol, firearms, and gambling from January 2006 to June 2023. Prior studies often suggest that sin stocks generate abnormal returns and provide defensive benefits during economic downturns; however, evidence on their long-term risk-adjusted performance remains inconclusive. This study addresses this gap by analysing sin stock behaviour across major recessionary periods using t-statistics, the Capital Asset Pricing Model (CAPM), rolling window regression, and event study analysis. The findings challenge the existence of a persistent sin premium. Sin stocks underperform the broader market and show no significant return advantage over ethical investments. Although sin stocks remain relatively volatile, their risk has declined over time to below estimated market risk levels. In addition, their defensive characteristics weaken during periods of economic instability, as both recessionary periods examined produced negative abnormal returns. Overall, the study finds no evidence that investors are compensated for reputational risk or that sin stocks provide reliable protection during market downturns.

Keywords: Sin stocks; Ethical investing; Portfolio diversification; CAPM; Event study; Recession; Volatility; U.S. stock market

1. Introduction

Sin stocks, commonly associated with industries such as alcohol, tobacco, gambling, and firearms, have long attracted investor attention because of their perceived ability to generate strong and resilient returns. These firms are often characterised by high barriers to entry, addictive products with relatively inelastic demand, global market access, high profit margins, and strong cash flow generation, which contribute to their reputation as profitable investments (USA Mutuals, 2023). Beyond their financial appeal, however, sin stocks remain controversial because their activities are linked to ethical, moral, and societal concerns. Consequently, investment decisions regarding sin stocks are influenced not only by financial considerations but also by reputational and social factors.

The inclusion of sin stocks in investment portfolios has increasingly been challenged as investors become more conscious of the social implications of their investments. Companies operating within sin industries are often criticised for profiting from activities that exploit human weaknesses, leading many investors to exclude such stocks from their portfolios for non-financial reasons (Blitz & Swinkels, 2021). This exclusion contributed to the development of the "shunned stock hypothesis" proposed by Hong and Kacperczyk (2009), which argues that socially controversial stocks may generate higher returns because they are avoided by ethically motivated investors, resulting in lower stock prices (Killins et al., 2020). According to this view, the underpricing of sin stocks creates opportunities for abnormal returns and market outperformance. Earlier studies supported this argument by suggesting that investors incur a financial cost when excluding sin stocks from their portfolios (Belghitar et al., 2014).

* Corresponding author: Ogochukwu Sandra Nwaizugbo

In addition to their perceived profitability, sin stocks have often been regarded as defensive investments capable of performing well during periods of economic instability. Their products are typically considered recession-resistant because consumer demand for alcohol, tobacco, gambling, and similar products tends to remain relatively stable even during economic downturns. As a result, sin stocks have historically been associated with higher returns, stronger Sharpe ratios, and lower sensitivity to market risk (Richey, 2020). However, the growing prominence of socially responsible investing and Environmental, Social, and Governance (ESG) considerations has altered the investment landscape. Firms within sin industries have increasingly adapted to changing social expectations through innovations such as e-cigarettes and zero-alcohol beverages in an attempt to align more closely with responsible investment standards. This shift has raised questions regarding whether the traditional advantages associated with sin stocks still persist in modern financial markets.

Recent literature presents mixed evidence regarding the continued outperformance of sin stocks. For example, Lobe and Walkshausl (2014) found no significant difference between the returns of sin portfolios and market benchmarks, concluding that the historical outperformance of sin stocks in the United States was largely confined to the 1960s and 1970s. Similarly, Humphrey and Tan (2013) argued that there is no significant difference between the returns of sin stocks and socially responsible investments. Furthermore, despite their profitability, sin stocks remain exposed to substantial reputational, regulatory, and ESG-related risks. Blitz and Fabozzi (2017) argued that there is little evidence that sin stocks provide a premium for reputational risk, while Paradis and Schiehll (2021) contended that sin firms are particularly vulnerable to ESG-related controversies and often fail to implement sufficient measures to address these concerns. Such challenges may have important implications for the long-term profitability and stability of sin investments.

Against this background, this study investigates the robustness of sin stocks in portfolio investment within the United States stock market. Specifically, the research examines whether sin stocks outperform ethical investments in terms of risk-adjusted returns, whether they provide stable returns over time, and whether they maintain defensive characteristics during periods of economic recession. The study focuses on the traditional sin industries of tobacco, alcohol, gambling, and firearms using daily trading data from January 2006 to June 2023. Data from USA mutual funds focusing on traditional sin stocks and the FTSE4Good Index representing responsible investments were employed, while the Fama and French market factor was used as the market benchmark to represent U.S.-listed stocks across NYSE, AMEX, and NASDAQ.

To address the research objectives, the study employs t-tests and the Capital Asset Pricing Model (CAPM) to compare the returns of sin stocks, ethical investments, and the broader market. In addition, rolling window regression analysis is used to assess the stability of sin stock returns over time, while event study analysis evaluates the cumulative abnormal returns of sin stocks during the Global Financial Crisis and the COVID-19 recession. By combining these approaches, the study provides a comprehensive assessment of the profitability, volatility, and defensive characteristics of sin investments in contemporary financial markets.

The findings indicate that there is no significant difference between the profitability of sin stocks and responsible investments. Although sin stocks continue to exhibit volatility, the level of risk has declined over time compared to earlier periods, suggesting reduced abnormality in their performance. Furthermore, the results show that the defensive nature traditionally associated with sin stocks has weakened considerably, as these investments experienced significant declines during both recessionary periods examined. These findings support the arguments of Areal et al. (2013) and contradict claims by USA Vice Mutual Fund that sin investments provide strong protection during periods of economic downturn. While the volatility of sin stocks was lower than that of the broader market, they failed to outperform the market and no longer displayed the abnormal returns identified in earlier literature, thereby supporting the conclusions of Lobe and Walkshausl (2014).

This study contributes to the growing body of literature on sin investing and responsible investment practices by providing updated evidence on the performance of sin stocks in the context of rising ESG awareness. Unlike many earlier studies, this research evaluates sin stock behaviour across two major economic crises, thereby offering a broader understanding of their defensive capabilities under different forms of economic stress. The findings provide important insights for investors, portfolio managers, academics, and policymakers regarding the existence of a sin premium, the stability of sin stock returns over time, and the ability of these investments to maintain profitability during periods of market instability. Ultimately, the study contributes to ongoing debates concerning the role of controversial industries in modern investment portfolios and the evolving relationship between ethics and financial performance.

2. Literature Review

Sin stocks refer to investments in companies engaged in activities widely regarded as unethical or controversial, including alcohol, tobacco, gambling, adult entertainment, and weapons production (Robecco, 2023). Traditionally described as vice, controversial, or shunned stocks, the concept has recently expanded to include firms with poor Environmental, Social, and Governance (ESG) performance, weak alignment with the United Nations Sustainable Development Goals (UN SDGs), or significant contributions to climate change (Blitz & Swinkels, 2021). However, unlike traditional sin industries, these newer categories of "sin" have not consistently outperformed the market (Sagbakken & Zhang, 2021). Traditional sin stocks continue to attract attention because of their distinctive characteristics, including high barriers to entry, addictive products with inelastic demand, global market access, strong profit margins, and substantial cash flow generation (USA Mutuals, 2023). These features have often been linked to their historical market outperformance. The outperformance of sin stocks has been extensively debated in financial literature. Hong and Kacperczyk (2009) developed the "shunned stock hypothesis," arguing that socially controversial stocks generate higher returns because ethically conscious investors avoid them, thereby depressing their prices. This argument is reinforced by the relatively low analyst coverage of sin stocks, which may contribute to market inefficiencies and undervaluation. Several studies support the existence of abnormal returns in sin investing (Fabozzi et al., 2008; Derwall et al., 2011; Richey, 2012; Durand et al., 2013; Richey, 2017; Han et al., 2021). Similarly, the trade-off theory suggests that excluding sin stocks from portfolios leads to under-diversification and imposes a financial cost on socially responsible investors (Blitz & Swinkels, 2021). Empirical evidence from Belghitar et al. (2014), Auer and Schuhmacher (2016), and Colonnello et al. (2019) further supports the argument that socially responsible investing may reduce portfolio returns. Colonnello et al. (2019) additionally argue that investors in ethical funds demand compensation for bearing ESG-related constraints and risks.

Despite this evidence, recent studies question whether sin stocks still provide abnormal returns. Richey (2016) found that individual sin industries produced insignificant excess returns, supporting the principles of Modern Portfolio Theory, which emphasises diversification rather than isolated asset performance (Markowitz, 1991). Similarly, Borgers et al. (2015) and Sagbakken and Zhang (2021) observed that broader classifications of sin stocks produce insignificant abnormal returns due to incomplete diversification. Other researchers argue that ethical investments may outperform controversial stocks. Derwall et al. (2011) proposed the "errors-in-expectations hypothesis," suggesting that markets underestimate the long-term value of socially responsible firms. Although Derwall et al. (2011) found limited long-run support for this theory, studies by Statman and Glushkov (2009), Humphrey and Tan (2013), and Paradis and Schiehll (2021) reported stronger performance for ethical investments relative to sin stocks.

Further evidence challenges the notion of a persistent sin premium. Blitz and Fabozzi (2017) found that the abnormal returns associated with sin stocks disappear after controlling for profitability and investment factors within the Fama-French five-factor model. Likewise, Richey (2017) showed that the significance of sin stock returns diminishes once more advanced asset pricing models are applied. Lobe and Walkshäusl (2014) also found no significant return difference between sin portfolios and market benchmarks, concluding that the historical outperformance of sin stocks was largely confined to the 1960s and 1970s. However, Han et al. (2021) argued that the sin stock anomaly strengthened between 2009 and 2018 as ethical investing became more prominent, suggesting that the performance of sin stocks may vary over time and across market conditions. These conflicting findings indicate that the stability of sin stock returns remains unresolved.

The defensive nature of sin stocks during economic downturns has also attracted considerable attention. Salaber (2009a) found that sin stocks outperform other equities during recessions due to stronger earnings resilience. Durand et al. (2013) argued that the addictive and recession-resistant nature of sin products contributes to this performance, while Richey (2020) showed that sin portfolios generate higher returns and Sharpe ratios than the broader market. However, more recent evidence during the COVID-19 crisis challenges these findings. Husse and Pippo (2021) and Karam et al. (2022) concluded that ethical investments outperformed controversial investments during the pandemic because responsible firms exhibited stronger management practices and lower market risk.

The relationship between ESG performance and sin stocks further complicates the debate. Although sin investing is often contrasted with socially responsible investing, the two are not necessarily opposites (Blitz & Fabozzi, 2017). Some sin firms maintain ESG initiatives despite operating within controversial industries. Cayón and Gutierrez (2021) found a positive relationship between current and future ESG performance among sin companies, while Cai et al. (2011) showed that socially responsible activities in vice industries may enhance corporate value through improved transparency and reputation. Similarly, Kim and Venkatachalam (2011) observed strong financial reporting practices among sin firms despite their controversial nature. Nevertheless, Paradis and Schiehll (2021) argued that sin firms remain highly exposed to ESG-related risks and often fail to implement meaningful sustainability measures. Cayón and

Gutierrez (2021) further warned against "social cleansing," where firms adopt ESG activities primarily to reduce reputational risk without substantial operational change.

Additional factors such as culture, religion, litigation risk, and investor sentiment have also been shown to influence sin stock returns. Salaber (2009b) demonstrated that religious beliefs, excise taxes, and litigation concerns significantly affect the performance of European sin stocks. Fauver and McDonald (2014) similarly found that the valuation of sin firms differs between "sin" and "non-sin" countries, with the United States and United Kingdom hosting the largest concentration of sin firms. Investor sentiment also plays a significant role, as Liston (2016) found that abnormal sin stock returns disappear once investor sentiment is controlled for, a finding further supported by Zerbib (2022).

Overall, existing literature provides mixed and inconclusive evidence regarding the profitability, stability, and defensive nature of sin stocks. Results often depend on model specification, sample period, and portfolio composition (Junkus & Berry, 2015). Many studies also rely on broader definitions of sin stocks or synthetic portfolios, which may distort findings (Borgers et al., 2015). This study contributes to the literature by focusing specifically on traditional sin industries, tobacco, alcohol, gambling, and weapons, within the U.S. market, which Fauver and McDonald (2014) classify as a major "sin country." Using data from the USA Mutual Vice Fund, the FTSE4Good US Select Index, and the Fama-French market benchmark, the study examines the profitability, stability, and recessionary performance of sin stocks between 2006 and 2023. In addition, rolling window regression and event study analysis are employed to assess the stability of returns and the reactions of sin stocks during both the Global Financial Crisis and the COVID-19 pandemic, an approach that remains relatively underexplored in existing literature.

3. Methodology

This research adopts an empirical research design with a quantitative approach which employs historical data and statistical techniques to analyze the variables of interest. This analysis was carried out using the STATA statistical software. The research design bases investigations on a comparative analysis, event study and rolling window analysis time-varying parametric approach, which follows a time series type of regression analysis to test the generated hypotheses:

Hypothesis 1

H1: Sin stocks are more profitable than responsible investments.

Hypothesis 2

H2: Other things being equal, the returns of sin stocks do not exhibit stability over time.

Hypothesis 3

H3: Other things being equal, sin stocks exhibit distinct effects and profitability in variations of recessions.

The ordinary least squares regression technique employed in this research follows certain assumptions of normality in distributions, homogeneity of variances and independence of observations. The fulfilment of these assumptions would be conducted to prevent spurious regressions and boost the dependency of the results.

3.1. Comparative Analysis

The evaluation of hypothesis 1 involves a comprehensive comparative analysis between the Vice fund and FTSE for good portfolios. The t-test is in the first instance employed as a comparison technique to compare both returns for the ethical and sin portfolios as well as the returns of the sin stock and that of the market. To assess the risk-adjusted performance of these portfolios, the Capital Asset Pricing Model (CAPM) technique was employed as the primary analytical framework. This was because it is a widely used analytical method for estimating the abnormal returns of a portfolio. This further follows the argument of Belghitar et al. (2014) that mean-variance techniques used by past research are simplistic and as such, generate insignificant results. Thus, the CAPM with the varying factors captures the distinguishing features of a portfolio.

3.2. Rolling Window Time-Series Analysis

The rolling window time series was conducted to test the stability of returns in the second hypothesis. Many of the models and research assume the parameters are constant mainly for simplicity's sake, but the economic environment changes considerably, therefore, it is not right to assume constant parameters as they are time-varying. This time-varying effect of the parameters is tested on this basis to highlight the changes over time as well as offer analyst insights into the behaviours of the portfolio returns in future periods.

3.3. Event Study Analysis

The third hypothesis employs event study analysis. The major focus of event studies is the evaluation of anomalous changes in sample stock prices (or abnormal returns) that follow a particular event. Out of the three models for computing these anomalous returns, the average adjusted return rate model, the market index adjusted return rate model, and the market model, I employed the market model. This is because the market models are the most popular and have a high predictive potential (He et al., 2020). When a bull or bear market occurs on the event day, the average adjusted rate of return model deviates significantly whereas the market index adjusted return model makes a strong relationship assumption that is not always true.

3.4. Event Window

The two recession periods in this study were the financial recession and the COVID-19 pandemic. This is indicated in the NBER graph below:

Source: (NBER, 2022); The red marked area on the graph indicates the period under analysis (2006-2023) which considers two recessions shaded grey. The recessionary period indicated starts from the trough and ends at the peak.

Figure 1 Recession in the United States of America

From the graph, there has been a record of two major recessions within the period of analysis covered; the Great Recession from December 2007 to June 2009 which lasted for 18 months, and the COVID-19 pandemic which lasted for two months, March to April 2020 (NBER, 2022).

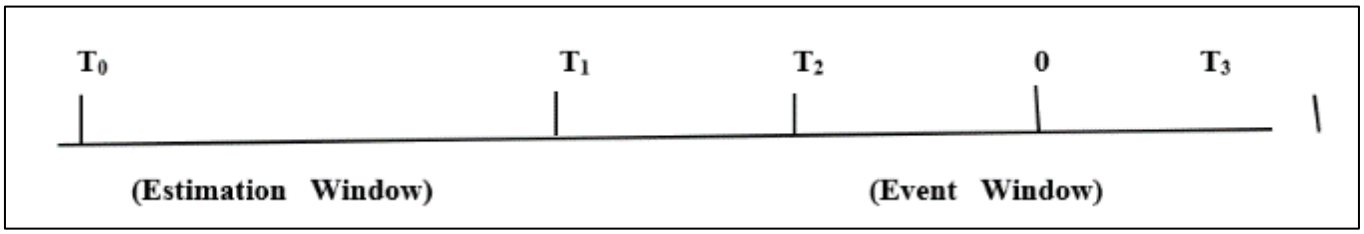
3.5. The Financial Crisis

The financial crisis began its first wave in September 2007 with Northern Rock in distress and savers withdrawing their funds after the news of the bank receiving emergency financial support filtered into the markets. This event and several other distress factors as well as the financial support of several financial houses by the federal government plummeted to the most significant event of the financial crisis, The Lehman Brothers bankruptcy on 15th September 2008 as reported by BBC (2009). I have thus chosen this date as the event date for the financial crisis.

3.6. The Covid 19 Pandemic

The coronavirus pandemic which was declared COVID-19 by the World Health Organization, WHO had first been detected in China in December and had spread to other European countries. However, the first detected case in the United States was on 6 February 2020 (CNN, 2022). This spread fear and panic across the country and eventually led to a series of lockdowns beginning in areas that were worse hit. The first reaction of the Federal Reserve as an emergency response to the pandemic which involved slashing interest rates in half occurred on 3 March 2020. This act was, according to the updated report of CNN (2022), the biggest one-time interest rate cut since the financial crisis of 2008 as such, was like an unscheduled reaction to the first bite of the recession. Based on the build of the events and the reactions to the news, I chose 3 March 2020 as the event day for the COVID-19 pandemic.

For both events, I used 160 trading days before the event date as the estimation window and chose every 5 trading days around the event as the event window period. This was based on the event selection technique used in He et al. (2020). Given that the results will be biased if the estimation window is too small and the forecast structure could alter if the estimating window is too long, the selection of the prediction period attempts to maximize the accuracy of the forecast.



Source: Adapted from He et al. (2020)
$T_0 – T_1$ is the estimation window, $T_2 – T_3$ is the event window and 0 represents the event day.

Figure 2 Event Window

4. Results

This section presents the outcomes of the empirical investigation into the robustness of sin stocks in portfolio investment, with a focus on testing the research hypotheses related to their profitability, stability over time, and performance during recessions.

4.1. Variable Description

The variables used in this research is presented in the table below:

Table 1 Variable description

Variable	Represents	Description
Date	Trading days	Weekdays minus holidays and weekends
VICEX	Sin stock portfolio	The closing price for the USA mutual vice fund (Ticker: ViceX) portfolio
Rt-v	sin stock returns	Natural logarithm of prices (Ln (New price)-Ln (old price)) x 100
Zv	Excess returns of portfolio	Sin returns minus the risk-free rate. Rt-v – rf
FTSE4G	Ethical Stock portfolio	The closing price for FTSE for Good index
Rt-g	Returns for ethical portfolio	Natural logarithm of prices (Ln (New price)-Ln (old price)) x 100
Zg	Excess returns of portfolio	Ethical stock returns minus the risk-free rate Rt-g – rf
Rf	Risk-free rate	Continuously compounded daily return of 30-day US treasury bills.

Mkt-rf	Excess market returns	Value weight return of firms incorporated in the US and listed on NYSE, AMEX, or NASDAQ)
SMB	Size	Small minus Big companies
HML	Value/ Book to market	High minus Low
Mom	Momentum	Strength of trend
RMW	Operating Profitability	Robust minus Weak
CMA	Investment	Conservative minus Aggressive

Source: Author's adaption

4.2. Descriptive Statistics

Descriptive statistics were computed for both sin and non-sin stock portfolios to provide an initial overview of their performance characteristics.

Table 2 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Rtv	4403	0.008	1.108	-17.641	9.584
Zv	4403	0.004	1.108	-17.642	9.58
Rtg	4403	0.031	1.45	-31.289	30.215
Zg	4403	0.027	1.45	-31.296	30.208
RF	4403	0.005	.006	0	.022
MktRF	4403	0.04	1.275	-12	11.35
SMB	4403	0.001	0.632	-4.55	5.71
HML	4403	-0.007	0.833	-5	6.74
Mom	4403	0.001	1.096	-14.37	7.12
RMW	4403	0.016	0.456	-2.72	4.21
CMA	4403	0.004	0.385	-2.79	2.46
Source: Author's estimation on Stata					

The total number of samples for this study is 4,403 given that is a total number of daily trading data from 3 January 2006 to 30 June 2023 that has been adapted to generate returns for the portfolios. The means for the variables all revolve around zero. This shows that the variables all conform to the Ordinary Least squares assumption of zero mean. Furthermore, the means for the variables are all positive apart from HML, the book-to-market variable, which shows a negative mean. The standard deviations as well also display minimum variation with very low results all of which are below 2. The variables are homogeneously distributed over the entire sample as there is no distinct gap between the minimum and maximum values for each of the variables. The differences between the minimum and maximum values for all the variables range from 0 and 1 except for the returns and excess returns for the sin portfolio. However, the differences are not far apart from each other, thus the data is normally distributed.

Even though daily data was employed in this research, which is usually susceptible to extreme values, there was no experience of such in this sample. Therefore, there was no requirement for winsorization.

4.3. Correlation Analysis

To assess the relationship between sin and non-sin stocks, a correlation analysis was conducted. The correlation analysis was used to seek established relationships among the variables as well as test for the problems of multicollinearity. Based on the conclusion of multicollinearity between variables correlating greater than 0.9. If this occurs, then one variable can pass for the other so it would result in the dropping of either or both, to avoid the event of spurious regressions.

Table 3 Pairwise Correlations

Variables	Rtv	Zv	Rtg	Zg	MktRF	SMB	HML	Mom	RMW	CMA
Rtv	1.000									
Zv	1.000	1.000								
Rtg	0.666	0.666	1.000							
Zg	0.666	0.666	1.000	1.000						
MktRF	0.774	0.775	0.871	0.871	1.000					
SMB	0.210	0.210	0.135	0.135	0.239	1.000				
HML	0.178	0.178	0.168	0.168	0.185	0.196	1.000			
Mom	-0.204	-0.204	-0.262	-0.263	-0.288	-0.198	-0.440	1.000		
RMW	-0.172	-0.172	-0.209	-0.209	-0.276	-0.259	0.030	0.115	1.000	
CMA	-0.099	-0.099	-0.182	-0.182	-0.215	-0.004	0.469	0.077	0.220	1.000
Source: Author's computation on Stata										

The figure above represents the pairwise correlation results of the variables for this study. It explains the relationships the variables have with each other and how well their movements can be explained by another.

The overall results indicate a relatively strong positive correlation between the portfolio returns and market premium. This is seen as the correlation between the returns and excess returns of sin and the market is 0.774 and 0.775 respectively while that of the ethical stock is 0.871 for both returns and excess returns. The correlation of the portfolio returns and the rest of the Fama and French factors however indicate a weaker relationship which did not surpass 0.3. Furthermore, the direction of this relationship varies for each factor. Where SMB and HML exhibit a relationship, the momentum factor, profitability, and investment all show a negative relationship indicating an inverse direction between the factors and the portfolio returns.

The problem of multicollinearity would not be seen to occur in any of the relationships above as none of the correlations is as strong as 0.9. Thus, the case of replacing one variable with another on account of multicollinearity would not be seen to occur in this analysis.

5. Discussion

This study examined the robustness of sin stocks by analysing their profitability, stability, and behaviour during recessionary periods. Overall, the findings challenge the traditional belief that sin stocks consistently generate abnormal returns and provide defensive benefits during market downturns. The profitability analysis revealed no statistically significant difference between the returns of sin stocks and ethical investments, contradicting Hypothesis 1. These findings align with Lobe and Walkshäusl (2014), Belghitar et al. (2014), Borgers et al. (2015), Blitz and Swinkels (2021), and Sagbakken and Zhang (2021), all of whom questioned the long-held assumption that sin stocks outperform ethical investments. The results further support the argument by Lobe and Walkshäusl (2014) that the superior performance of sin stocks was largely limited to the 1960s and 1970s. Moreover, sin stocks significantly underperformed the broader market, suggesting that investors may no longer receive compensation for the reputational risks associated with controversial investments. The CAPM analysis reinforced this conclusion, as sin stocks exhibited a negative and statistically significant Jensen's alpha, indicating underperformance after adjusting for market risk. This finding contradicts the "shunned stock hypothesis" proposed by Hong and Kacperczyk (2009) and supports the arguments of Blitz and Fabozzi (2017) and Richey (2017) that abnormal sin returns disappear once broader risk factors are considered. Although sin stocks displayed lower market sensitivity, with beta values generally below one, this defensive characteristic did not translate into superior returns. Further analysis using the Fama-French and Carhart models showed that the returns of sin stocks were largely explained by traditional factors such as size, value, profitability, investment, and momentum. This supports the argument that the historical performance of sin stocks is attributable to factor exposure rather than a unique "sin premium" (Blitz & Fabozzi, 2017).

The rolling window regression analysis demonstrated that sin stock returns remain unstable over time. Although their market sensitivity was generally lower than that of the broader market, volatility fluctuated considerably throughout the sample period. This suggests that while sin stocks may appear less sensitive to market movements, they do not necessarily provide stable or predictable returns for investors. However, the findings also indicate that the volatility of sin stocks has declined in more recent years, consistent with the observations of Lobe and Walkshäusl (2014).

The recession analysis further challenged the perception of sin stocks as defensive investments. During both the Global Financial Crisis and the COVID-19 pandemic, sin stocks generated significant negative cumulative abnormal returns. While the COVID-19 period showed a temporary rebound following government stimulus measures, this recovery was short-lived. These findings support Areal et al. (2013), who argued that sin stocks underperform during periods of heightened volatility, and Salaber (2009a), who concluded that sin stocks are no more recession-proof than other industries. Although sin stocks exhibited lower volatility than the broader market, they failed to protect investors from losses during economic downturns. This contradicts the findings of Richey (2020) and suggests that the defensive nature of sin stocks is weaker than previously assumed. Overall, the findings indicate that sin stocks no longer provide persistent abnormal returns, superior stability, or reliable protection during recessions. Instead, their performance appears increasingly similar to that of conventional investments, reflecting the changing dynamics of financial markets and the growing influence of ESG and responsible investing practices.

6. Conclusion

In conclusion, the empirical analysis of sin stocks in this study provides valuable insights into their profitability, stability, and performance during recessions. Sin stocks did not significantly outperform ethical stocks in terms of returns and underperformed the broader market when adjusted for risk. Their returns were influenced by various factors, including size, value, momentum, profitability, and investment, making them a complex asset class.

Furthermore, this research challenges conventional wisdom about sin stocks, highlighting their complex and nuanced behaviour in different economic scenarios. Sin stocks exhibited high volatility and instability in returns over the study period, indicating the need for caution when considering them as investment options. Their performance during recessions varied, suggesting that they may not consistently serve as defensive assets during economic downturns.

Summarizing the findings of this research based on the tested hypothesis, hypothesis 1 is negated as sin stocks are not more profitable than responsible investments. Responsible investments pose as a more profitable investment based on the results of the one-tailed t-test conducted and supported by the phrase, “the higher the risk the higher the returns”. This is evidenced by the higher volatility shown by the responsible investment in this research.

The second hypothesis was supported in this research as findings indicate the instability in the returns of sin stocks. However, the beta, which was seen to be about the same as that of the market in the earlier period of 2006 had been observed to diminish and stay well below the market beta range. This could follow the recent adoption of ethically supported variations of sin products like the adoption of zero-alcohol beers and e-cigarettes by sin industries, thus, reducing the number of regulatory risks initially faced.

Based on the third hypothesis on the distinct responses of vice stocks to the happenstances of recessions, the conclusion drawn from the findings agrees with the hypothesis. This is because each recession is caused by unique activities and as a result, the magnitude of response as well as the speed of rebound differs across the recessionary periods for the sin stocks. What is certain is that the sin stocks do not pose as defensive stocks in periods of recession as they experienced great drops in returns as well as slow rebounds.

Investors, policymakers, and financial analysts should take these findings into account when making investment decisions and formulating strategies. Investors considering sin stocks should carefully weigh their potential for profit against their risk and volatility. It is essential to diversify a portfolio to mitigate the risks associated with investing in sin stocks. Additionally, the performance of sin stocks during economic downturns can be influenced by specific events and government policies, making them less predictable as defensive assets.

The financial landscape is dynamic, and a deeper understanding of sin stocks can help individuals and institutions make more informed choices in managing their investments. Investors interested in sin stocks should carefully assess their risk tolerance and investment goals, as these stocks may introduce significant fluctuations into a portfolio. Additionally, the specific nature of the sin industry and the drivers of economic downturns should be considered when evaluating their performance during recessions. Ultimately, the decision to invest in sin stocks should align with an investor's financial goals, risk tolerance, and ethical considerations.

This research contributes to the understanding of sin stocks in the context of portfolio management, highlighting the multifaceted nature of these assets and the need for a nuanced approach to their inclusion in investment portfolios. It further provides valuable insights into the characteristics of sin stocks and underscores the need for a well-rounded investment strategy that accounts for their unique attributes and potential drawbacks.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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