

The VICEX Fund: Recent Shortcomings of a Long-Run Success Story

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Received: March 18, 2013 Accepted: April 1, 2013 Online Published: July 3, 2013

doi:10.5539/jms.v3n3p131 URL: <http://dx.doi.org/10.5539/jms.v3n3p131>

Abstract

In this article, we empirically test the extent to which the VICEX fund, a portfolio of companies benefiting from human vices (i.e., alcohol, gambling, and smoking), outperforms a variety of benchmarks. One pair of benchmarks consist of Vanguard's 500 Index Fund and a portfolio of all funds in the same Morningstar style category based on company size. On a more focused basis we compare the performance of the VICEX fund to two popular dividend-oriented mutual funds, because of the propensity of several VICEX fund components to offer large dividend yields. Using a wide array of return, risk, and risk-adjusted measures we find limited support for human vice-based investing over an extended period of time. Over the recent 2008-2009 period, the VICEX fund has underperformed these alternatives.

Keywords: vice, mutual funds, socially-responsible investment, risk-adjusted performance, Morningstar ranking, capture ratios, Sortino ratio

1. Introduction

Many illicit activities attract humans. Illegal drugs and prostitution are just a few of the means by which some seek to get ahead by preying on others. Simultaneously, investors have several legal options by which they can benefit at others' unsavory habits. Companies that benefit from addiction to tobacco and alcohol are examples of this. Investing in firms that make weapons on scales ranging from handguns to aircraft carriers is a legal means by which one can benefit from the destruction caused by homicide and war. These are just some of the examples of what are commonly referred to as personal vices.

In order to assess the benefit of legally investing in vice, we used the mutual fund titled the Vice Fund Investor Class (which trades in the marketplace using the symbol VICEX). It is the only investor class mutual fund of this nature available to the general public. The VICEX fund is managed by USA Mutuals, which purchases common stock issued by a wide range of companies in industries of ill repute. Prominent investments include Diageo (alcohol), Philip Morris (tobacco), Las Vegas Sands (casinos), and United Technologies (weapons). Use of a mutual fund allows investors to benefit from the diversification advantage of mutual funds and is therefore a common means of investing by prudent investors. Investors are diversifying away non-relevant characteristics of companies, leaving vice industry related activities as the portfolio securities' common factor. Through employment of a diversified portfolio, investors are also avoiding reliance upon a single company or dimension of the vice construct. Morales and Krueger (2013) have recently documented the wide range of stock price performance by individual vice companies.

Four alternative investments are used to assess the performance of the VICEX fund. Three of these are Vanguard family funds. Vanguard's 500 Index Fund (VFINX) is used as a benchmark because several VICEX components are relatively large companies. In 2012, Morningstar placed VICEX in the large blend category, so it makes sense to compare the performance of VICEX to the average mutual fund performance of this category. Given the tendency of VICEX components to pay dividends—some would say as a way to suave investor apprehension—we also examined the performance of two Vanguard dividend-focused funds. Vanguard's Dividend Growth Fund (VDIGX), is more focused on the level of dividends and potential for dividend growth,

while Vanguard's Dividend Appreciation Fund (VDAIX) is based on a group of companies with dividend growth in each of the past ten years. One could say that VDIGX analyzes fundamentals in order to identify which firms will be the best dividend payers in the future, while VDAIX assumes future dividend payment is a function of past dividend growth.

In the low interest rate environment of 2012, many investors shifted their focus to dividend paying stocks in early 2012 (see for instance, Lauricella and Cheng (2012) and Pollack (2012)). During the March to December 2012 period, which are the last ten months of our study, more money was flowing into than out of all four funds. Investment in the VDIGX fund was growing at a 2.1 percent annual rate, while VDAIX was growing at a 1.8 percent rate. At the same time, the VFINX fund was advancing at a 0.4 percent monthly clip. However, all of these were outshined by the VICEX fund which saw its coffers grow from \$93 million to \$123 million. This change is seven times the rate at which money was being poured into the Standard & Poor's 500 index fund. This paper appears to be a timely study of whether these additional cash deposits were being well placed.

2. Literature Review

2.1 Human Vices

Given the allure of vices, it is not surprising that the literature is replete with many studies of sin stocks. Discussion of sin stock performance can be found in newspaper articles, academic publications, and books. The detail has ranged from brief mentions to doctoral dissertations (Ozkan and Xiong, 2010). In this literature review, we will limit our discussion to eight rigorous studies found in finance academic literature.

A recent study by Lobe and Walkshäusl (2011) examines what the authors refer to as the sextet of sin: adult entertainment, alcohol, gambling, nuclear power, tobacco, and weapons. The strength of this study lies in its premise that vice has no boundaries. They conclude that there is no clear winner in the gamble between investing in ethical and distinctly unethical stocks. While these authors make an attempt to select companies in the sextet of sin, we simplify the process for the investor by using the VICEX fund as our sample of vice-oriented stocks. During our entire decade-long sample period, investors would have been able to invest in the VICEX fund and thereby not have to determine which companies were benefiting from human vices.

One curious aspect of the VICEX fund is its common misperception. For instance, in what the authors claim to be the first in-depth analysis of VICEX fund, Hoepner and Zeume (2009) find the VICEX fund's abnormal returns are statistically indistinguishable from zero. However, Hoepner and Zeume totally mistake the orientation of the VICEX fund, claiming that the stocks in this portfolio penalize rather than reward corporate environmental, social, or governance performance. In reality VICEX fund attempts to benefit from human vices. There is no evidence that companies serving as VICEX fund components are unconcerned about their environment or the benefits of effective corporate governance.

Another misrepresentation of vice investing is Portney's (2008) assertion that the VICEX fund "holds only the stocks of companies that are screened out of virtually every socially responsible investment fund" (Portney, p. 270). Exclusion from socially responsible mutual funds does not automatically assign a judgment of being tied to unethical human behavior. The companies may simply believe that it is not in their investors' best interest to complete the extra steps necessary to comply with a third party's definition of socially-acceptable business behavior though they are not in the sextet of sin related industries identified by Lobe and Walkshäusl (2011).

2.2 Comparison of VICEX Fund and Socially-Responsible Investing

There are multiple paths to riches. Though not quite the opposite of vice, many companies place a premium on their virtuous behavior, and hope their shareholders do too. An alternative to a socially-responsible investment program would be for the investor to select better-yielding conventional funds and then contribute to the charity of their choice. Baron and Szymanska (2010) provide a theoretical model showing that corporate philanthropy and private philanthropy are not perfect substitutes because giving through a company allows investors to avoid corporate taxation on dividends from which they would make the donation. In a review of the empirical literature concerning socially-responsible investing, Portney (2008) evaluates whether these firms are profit-maximizing or profit-sacrificing. He concludes that abnormally good performance by socially-responsible funds is a result of sampling bias due to industry representation. Further castigating the importance of socially-responsible investing, he notes that the VICEX fund did extremely well over the 2003-2006 period. Portney asserts that this does not eliminate socially-responsible investing as an investment selection criterion. As a variation of the Baron and Szymanska treatise, we examine the potential benefit of purchasing donation-enabling dividend focused funds as an alternative to the VICEX fund.

A more direct comparison of socially-responsible investing and vice investing was undertaken by Jo, Saha, Sharma, & Wright (2010). In an odd twist of perception, these authors note that sin-based investment has historically performed better than socially-responsible investment over the 2004-2008 time period, but did not do so in the year ending in March 2009. Their estimate of alpha drops from 3.08 percent to -4.18 percent, while the socially-responsible portfolio's alpha rises from -1.04 percent to -0.43 percent. Using a single year of data, they claim that in volatile markets the diversification of socially-responsible investments is most important and therefore vice-oriented investments should be avoided. We by comparison believe that it is impossible to predict the future and therefore investigators should consider VICEX performance over as long a holding period as possible. We assert that the best sample period is one that includes the market sell-off of 2007-2009 and the subsequent recovery, as is done in our analysis of the first ten years of VICEX fund existence.

We do not assert that vice stocks are the best in all periods. In fact, Areal, Cortez, & Silva (2010) investigate market timing possibilities by comparing socially responsible funds with VICEX performance over different states of the market. They follow the lead of Abdymomunov and Morley (2009) and apply a Markov-Switching specification wherein Areal, Cortez and Silva use high and low volatility as proxies for bear and bull markets, respectively. VICEX fund performance is compared to that of 13 morally-responsible funds and 38 socially-responsible funds. The former stocks abide by expectations identified by religious groups (i.e., Catholic doctrine, Islamic principles, Lutheran catechism) while the latter consider other common highly regarded social principles (i.e., environmental stewardship, human rights protection, sustainability). The VICEX fund is found to outperform both types of responsible funds during low volatility (i.e., bull) markets, but not during high volatility (i.e., bear) market regimes. The difference is attributed to changing betas, with the VICEX fund having a higher beta in bull markets. We will look at this issue through the reporting of Sortino ratios and capture ratios.

2.3 Spillover Effects

Relatively little work has been done on spillover effects from portfolios of firms based on their social mores to the stock market overall. An example of this sort of analysis is Chen and Diaz' (2012) observation that the amount of risk or return found in ETFs and the stock market can cause a delayed rise or fall in the other respectively. On a more specific and relevant level, Chen and Diaz observe that faith and non-faith ETFs have significant positive and negative relationships with their stock index returns, respectively. They find that non-faith ETFs showed an ability to provide minimal losses during economic downturns and claim that their results occur because "sin investments can expect positive returns even during an abysmal economy....[because] vices are insulated from economic downturns and are possible safe havens during recessions" (Chen and Diaz, p. 7). However, Chen and Diaz's sample of seven non-faith ETFs includes the Vanguard Consumer Staples ETF, MSCI North America ETF, iShares US Consumer Goods ETF, and PowerShares Dynamic Food and Beverages ETF. None of these ETFs identify human vices as the basis of their stock selection. Consequently, any connection between their "non-faith" portfolio and "vice" portfolio performance is heroic. We avoid this issue by directly examining the VICEX fund.

Instead of comparing the performance of funds to the market, Morales and Krueger (2013) studied the prices of individual vice-oriented companies in the alcohol and tobacco industries, comparing their performance to the Vanguard's Standard & Poor's 500-based mutual fund (i.e., VFINX). Significant variation is observed among the individual vice-oriented companies in terms of return and risk, which is diversified away in a portfolio context. Portfolios consisting either of eight alcohol companies or eight tobacco companies are more highly correlated with the S&P 500 than the individual companies, having Pearson correlation coefficients of 0.79 for the alcohol portfolio and 0.64 for the tobacco portfolio. Fourteen of sixteen single-index regression models had positive intercept terms, which the authors term a "sin" premium. Further analysis did not locate a relationship between vice company stock performance and either unemployment or inflation rates. By limiting our concern to the diversified VICEX portfolio, we diminish the impact of unique company factors.

3. Research Method

3.1 Mutual Funds Studied

Information about the VICEX fund and benchmark Vanguard mutual funds is provided in Table 1, as of December 31, 2012, which is the end of the sample period used in this study. Additional detail regarding fund goals and strategies is displayed in the third and fourth row, respectively. Despite their different approaches, Vanguard's dividend-focused funds had virtually the same dividend yield which was about 150 basis points higher than that of the VICEX fund. Although the VICEX fund's average dividend yield is only 77 basis points,

its largest investment (i.e., Altria) had a dividend yield of 520 basis points at the end of the study period, justifying comparison of the VICEX fund to dividend-oriented mutual fund alternatives. In addition, its second and third largest holdings, Philip Morris International and Las Vegas Sands, had dividend yields of 348 and 204 basis points, respectively. The VICEX fund is relatively new compared to the broad-market VFINX fund, but older than the VDAIX fund. Due to the absence of ten years of data for the VDAIX fund, results for both a ten-year period and a five-year period ending on December 31, 2012 are presented below.

In terms of relative size, the VICEX fund is dwarfed by the other funds, including the six-year old VDAIX fund. Small size may be a reflection of investor aversion to investment in vice-based choices and the fact that USA Mutuals is not as well known as the Vanguard Group. The limited interest in vice-oriented mutual funds may be dissuading other prominent mutual fund families from following USA Mutuals' lead. Fewer holdings are found in the VICEX fund, though the number is not far from that of the dividend-potential oriented VDIGX fund. In addition to risking money on potentially less savory investments, the VICEX fund has a much greater propensity to invest abroad. Although the VICEX fund and VDAIX have a plurality of their funds invested in the consumer defense industry, the difference between them is evident from their respective choices regarding the best single company in which to invest. While VDAIX has 4.6 percent of its wealth into shares of retail giant Wal-Mart, the VICEX Fund has put a larger 6.2 percent into Altria of the tobacco industry.

Table 1. Profiles of VICEX fund and benchmark mutual funds

Fund Name	Vice Fund Investor Class	Vanguard 500 Index Fund Investor Shares	Vanguard Dividend Growth Fund	Vanguard Dividend Appreciation Index Fund Investor Shares
Ticker Symbol	VICEX	VFINX	VDIGX	VDAIX
Goal	Long-term capital growth	Match return of large-capitalization stocks	Above-average current income and long term income growth	Invest in listing of firms with above-average income growth
Strategy	Invest 80+% in firms gaining revenue from tobacco, gaming, and defense	Hold all 500 stocks in the same capitalization weighting	Companies paying a dividend with potential for dividend growth	Hold companies on Mergent's listing firms paying increasing dividend for at least ten years
Dividend yield	0.77%	2.05%	2.21%	2.3%
Inception	8/30/2002	8/31/1976	5/15/1992	4/27/2006
Investment	\$123 million	\$58.9 billion	\$11.8 billion	\$13.0 billion
Holdings	42	505	51	133
Foreign percentage	34%	0%	9%	0%
Largest sector in March 2012	Consumer Defense (49%)	Technology (19%)	Industrials (18%)	Consumer Defense (27%)
Largest investment	Altria (6.2%)	Apple (4.8%)	Occidental Petroleum (3.4%)	Wal-Mart (4.6%)
Proportion invested in top 10 stocks	41%	21%	28%	39%

Source: www.vanguard.com and www.morningstar.com

It appears as though the VICEX fund is less well diversified than the other funds, when looking at the concentration of the top ten companies, which is given in the bottom row of Table 1. However, with only 42 companies, an even distribution would result in 24 percent in ten companies. Applying this analysis to the 51 companies found in the VDIGX and 133 companies chosen by VDAIX, respectively, an equally-weighted portfolio would have 20 percent and 8 percent in their top ten companies. It appears as though greater fund management occurs at VDAIX, because 39 percent of its wealth is in the top ten companies. Consequently, we are comparing the VICEX fund to a relatively unmanaged (VDIGX) and managed fund (VDAIX) that attempt to earn above average current income.

3.2 Data and Sample Period

All measures of return and risk, including those for category averages, were found at the publicly-available Morningstar website. The ten years studied runs from December 31, 2002 to December 31, 2012. Morningstar reports annual returns, which were geometrically averaged over years. Risk and risk-adjusted return measures are based on trailing monthly total returns by Morningstar (2013). This was one of the most stressful periods for investors with the S&P 500 starting at a base of 898 on December 31, 2002. The S&P 500 index reached 1,565 on October 9, 2007, fell to 677 by March 9, 2009, and then rebounded to 1,426 by December 31, 2012. In percentage terms, across the first fifty-seven months of the sample period there was a 74.3 percent increase, followed by a 56.8 percent drop over the next sixteen months, which was followed by a 110.6 percent rise over the remaining forty-seven months. However, at the end of the sample period, the S&P 500 was still 12.7 percent below its record high close.

Information for the latter half of the sample period is also presented for two reasons. One, the VDAIX fund has not been in existence for ten years. Two, generally, bullish stock market conditions existed over the first half of the sample period. From December 31, 2002 to December 31, 2007 period, during which time the S&P 500 rose from 898 to 1,486, a 63 percent rise. As the recent five-year period begins, investors were in the early days of the 2007-2009 market swoon, followed up by the subsequent bull market. Given such turbulent times, investors may have turned to vice-related industries to provide a needed lift to their portfolio in terms of greater return or less volatility. However, as noted above, the research findings of Jo, Saha, Sharma, & Wright (2010) suggest that vice stocks do worse during period of high price volatility.

3.3 Morningstar Rankings

Some information is provided about Morningstar, Inc. because its star system will be used to assess the relative performance of the VICEX fund. This well-respected firm is an Illinois-based independent investment research company that provides analysis on over 350,000 investments. It is most well-known for its analysis of stocks and mutual funds (Morningstar, 2012). Their different rankings are assigned by Morningstar based on a fund's monthly performance including the effects of sales charges, loads, and redemption fees.

Although Morningstar's assessment process is proprietary it reportedly places more emphasis on downward variation from the mean return and rewards consistent performance, which are both prized by mutual fund investors. The top 10% of funds in each category receive five stars, the next 22.5% receive four stars, the middle 35% receive three stars, the next 22.5% receive two stars, and the bottom 10% receive one star, providing a crude bell-shaped distribution. In the *Wall Street Journal's* Investing in Funds & ETFs quarterly analysis in early 2013, Morningstar's star rankings were viewed as being both well-known and a "straight-forward and intuitive approach for gauging fund performance" (Espinoza, 2013).

3.4 Alternative Measures of Risk-Adjusted Performance

This article like Morningstar uses the traditional asset pricing model in the identification of risk-adjusted return performance. The traditional Capital Asset Pricing Model, CAPM, uses only one variable, referred to as beta, to describe the relationship between returns of a portfolio or stock relative to the returns of the market surrogate. The CAPM assumes that investors need to be compensated for inflation and risk. Inclusion of a risk-free rate in the formula compensates investors for placing money in any investment over a period of time. The other half of the formula calculates the compensation the investor receive for taking risk beyond that found in a Treasury instrument by combining (actually multiplying) a nondiversifiable risk measure (i.e., beta) by the market premium ($R_m - r_f$).

Measurement of risk-adjusted return has been a popular topic in the finance literature over recent years thanks to the seminal research by Fama and French (1993) and Carhart (1997). The Fama and French model is an empirical application of Ross's (1976) arbitrage pricing theory, building on Banz's (1981) documentation of the small firm effect. Fama and French demonstrate that market conditions, security issuer size, and price-book value ratios can be used to assess risk-adjusted return. Carhart's addition is the inclusion of a momentum factor. Griffin (2002) demonstrated that Fama and French's factors are country specific, resulting in Fama and French's (2012) revision of their original 1993 findings to those asserting that local factors work better than global factors in assessing the returns received for issuing company size and value.

Fama and French claim that size and value are independent risk factors. (We are not focusing on trading patterns, so Carhart's research has little applicability.) They claim that if we have two stocks with a beta of 1, the one with a smaller size and/or lower price/book ratio is more risky. Ross, Westerfield, and Jaffe (2013) question

whether the premiums earned for investing in small firms and low P/B value are compensation for risk or mispricing. Furthermore, as shown in Table 1, the VICEX fund does not focus on small companies or those are required to have a low price/book ratio. Hence, our results do not appear to be the result of a small size premium. Furthermore, there is no special weighting on value shares, resulting in excess return to VICEX shares. Consequently, use of the traditional CAPM methodology to evaluate performance appears to be valid.

4. Research Findings

4.1 Comparative Management Expenses and Portfolio Turnover

Across all funds studied, the VICEX fund has the largest expense ratio. As exhibited in the left “Expense Ratio” column of Table 2, VICEX fund investors pay 1.59 percent (i.e., $1.76\% - 0.17\%$) more than the investors in the Vanguard 500 Index Fund. Over a ten-year period, the compounded extra required rate of return necessary to offset this cost is 17.1 percent! Vanguard’s dividend-focused mutual funds have an average expense ratio of 0.28 percent, or 1.48 percent (i.e., $1.76\% - 0.28\%$) less than that of the VICEX fund. Over a ten-year period, the compounded extra required rate of return necessary to offset this cost is 15.8 percent. Morningstar reports that the average, large-blend category expense ratio is a higher 1.13 percent. Though closer, this expense ratio is still 0.63 percent lower than the VICEX fund’s charges, which is a difference that compounds to a 6.5 percent deficit. In order to provide better performance, the VICEX fund’s managers need to earn higher returns through allocation of investment funds to vice-related industries and effective selection within the realm of vice-related companies.

Table 2. Expense ratio and annual turnover as of December 31, 2012

Fund ticker	Expense ratio (%)	Annual turnover (%)
VICEX	1.76	84
MF Average	1.13	71
VFINX	0.17	4
VDIGX	0.31	13
VDAIX	0.25	14

Note: MF Average: Average of mutual funds in the Morningstar category of large blend.

As shown in the “Annual Turnover” column of Table 2, the VICEX fund’s average turnover ratio is 84 percent. Stated another way, 16 percent of the VICEX fund’s portfolio stays in place for the entire year. Turnover of this magnitude is much greater than that of index funds and also greater than large blend funds overall. It is about six times higher than the portfolio turnover of Vanguard’s dividend-focused funds. Even the S&P 500 has some turnover, with the 4 percent VFINX turnover indicating that in the typical year twenty firms are replaced by twenty others in the process of maintaining this market benchmark. The key insights from Table 2 are that vice-oriented investment choices are not stable from period to period and the higher expense ratios may be a function of additional transactions costs.

4.2 Analysis of VICEX Fund Return and Risk as an Independent Investment

Return performance metrics are presented in Table 3, where Panel A provides results for the full ten years and Panel B provides results for the more recent five years. During the ten-year period, the VICEX fund’s average annual return performance of 10.41 percent, dominates the benchmarks, being 3.79 percent greater than Morningstar’s large blend fund category average, 3.42 percent higher than the VFINX fund, and 1.57 percent greater than the VDIGX fund. A \$1,000 investment in the VICEX fund would have been worth an extra \$379, \$342, and \$157 annually compared to the mutual fund average, VFINX fund, and VDIGX fund, respectively. As shown in the second column, this performance put the VICEX fund in the top two percent of all mutual funds. By comparison, the VFINX fund’s return percentile ranking was 34 out of 100.

T-test statistics were run to estimate the probability that the VICEX fund’s annual returns are significantly different from those of the other measures. Over the ten-year period, annual returns earned by the VICEX fund were significantly higher than those generated by its category average at the ten percent level. The difference between the 10.41 percent VICEX fund return and 6.99 percent VFINX return was also found to be statistically different at the ten percent level. The middle “Standard Deviation” column of Table 3’s Panel A indicates that the VICEX fund carried more risk, though the difference is less than half a percent when compared to mutual

funds in its large-blend Morningstar category, and about one percent in comparison to the S&P 500. As a consequence, the Sharpe ratios, which measure the VICEX fund's return in excess of Treasury rates on a risk-adjusted basis using standard deviation as the risk measure, indicates that the VICEX fund did very well. The VICEX fund's Sharpe measure is fifty-six percent higher than the large blend fund category and forty-three percent higher than that generated by the VFINX portfolio. The final measure presented in Panel A of Table 3 is the Sortino ratio, which measures return in excess of the Treasury bill ratio dividend by negative volatility. Sortino ratios do not consider upward volatility because abnormally high returns are desirable. The VICEX fund's Sortino ratio exceeds this measure for both the large blend fund category average and VFINX fund. Obviously, investment in the VICEX fund over the 2003-2012 period would have been advantageous.

Table 3. Total risk and return performance measures

Panel A. Ten-year period ending on 12/31/2012					
Fund Ticker	Average Annual Returns (%)	Return Percentile Rank	Standard Deviation (%)	Sharpe Ratio	Sortino Ratio
VICEX	10.41*	2	15.86	0.60	0.85
MF Average	6.62*	50	15.47	0.38	0.55
VFINX	6.99*	34	14.77	0.42	0.59
VDIGX	8.84				
VDAIX					
Panel B. Five-year period ending on 12/31/2012					
Fund Ticker	Average Annual Returns (%)	Return Percentile Rank	Standard deviation (%)	Sharpe ratio	Sortino Ratio
VICEX	0.86	50	18.94	0.12	0.16
MF Average	0.68	50	19.83	0.12	0.16
VFINX	1.57	29	19.04	0.16	0.21
VDIGX	4.05	4	15.23	0.31	0.43
VDAIX	3.46	6	16.03	0.27	0.36

Notes: * The VICEX fund's return performance is significantly different from the others so noted at the 0.10 percent level.

MF Average: Average of mutual funds in the Morningstar category of large blend.

Source: www.morningstar.com

The same cannot be said about the performance of the VICEX fund over the most recent five-year period, as shown in Panel B of Table 3. Although the VICEX fund's average annual return exceeds that of mutual funds in the large-blend category, it is about fifty-five percent of the return registered by the VFINX fund, and about twenty-three percent of the returns provided by the dividend-oriented funds. As can be seen in the "Return Percentile Rank" column, the dividend-focused funds did the best during the most recent period. Investing in the VFINX fund provided a return that was better than seventy-one percent of the mutual funds. By comparison, the VICEX fund turned in a return consistent with the relevant category's average, being at the center of the return distribution (i.e., 50 percent above, and 50 percent below).

As with the VICEX fund over the longer period, the good performance of the dividend-oriented mutual funds was not a result of additional risk. In fact, the VDIGX and VDAIX funds have the lowest standard deviations reported in the third column of Panel B. Interestingly, the VICEX fund's standard deviation was lower than both the large blend fund category average and the VFINX fund. Consequently, the VFINX fund's Sharpe ratio is only thirty-three percent higher than that earned by the VICEX fund. Of course, given a much higher return and lower risk, the dividend-oriented funds' Sharpe ratios were much greater than that posted by the VICEX fund. This dominance carries over to the Sortino measure. However, probably due to the volatility caused by the 2008 financial crisis and limited degrees of freedom, none of the five-year differences are statistically significant at the 0.05 level.

4.3 Analysis of VICEX Fund Return and Risk within a Portfolio Context

Most investors own diversified portfolios. Therefore, analysis of VICEX fund performance relative to the overall stock market is valuable. In this regard, information on the funds' systematic risk, excess return per unit of systematic risk, and beta-adjusted market excess return are presented in Column 1 through Column 3 of Table 4, respectively. Over the 2003-2012 period, with a beta of 0.94, as shown in the first row of Panel A, the systematic risk of the VICEX fund is six percent less than that of the typical share, as indicated by the 1.00 beta level for the VFINX fund. Compared to firms in the large blend category, the VICEX fund's beta is eight percent lower. Given its better annualized return performance, it is not surprising that the VICEX fund's Treynor measure is very high compared to that of the VFINX fund or large blend category. In fact, the VICEX fund's Treynor measure is almost twice as great as the value typically found among large blend funds.

While Treynor measures report excess return per unit of risk, alpha values are excess return estimates after adjusting for systematic risk and the market's return in excess of the Treasury yield. Looking at the alpha column of Table 4's Panel A, we can see that after adjusting for systematic risk and Treasury bill returns, the annual average return of the VICEX fund is a positive 3.6 percent. By comparison, large-blend category average and VFINX fund's alpha values are negative.

The final two columns of Table 4 present the capture ratio, or the percentage of the market movement captured by the investment. A capture ratio of 1.0 indicates that the portfolio moved up or down to the same extent as the market. The preferred investment is one that has an upside capture ratio in excess of 100 percent and a downside capture ratio less than 100 percent. Such is the case for the VICEX fund, which magnifies market advances by 10.5 percent (110.5% - 100%) and softens market losses by 4.11 percent (95.89% - 100%). Both the typical firm in the large blend category and the VFINX fund do the opposite by underweighting market advances and accentuating market declines. The primary advantage of the VDIGX fund comes during market declines, because it understates market declines by 27.7 percent (72.3% - 100%). However, it understates market advances.

Table 4. Market-based risk and return performance measures

Panel A. Ten-year period ending on 12/31/2012					
Fund Ticker	Beta	Treynor Measure (%)	Alpha (%)	Capture Ratio	
				Upside	Downside
VICEX	0.94	9.20	3.60	110.50	95.89
MF Average	1.02	4.84	-0.45	99.11	103.37
VFINX	1.00	5.24	-0.11	99.66	100.19
VDIGX				87.19	72.30
VDAIX					
Panel B. Five-year period ending on 12/31/2012					
Fund Ticker	Beta	Treynor Measure (%)	Alpha (%)	Capture Ratio	
				Upside	Downside
VICEX	0.90	0.52	-0.49	89.97	92.82
MF Average	1.02	0.36	-0.86	99.54	103.71
VFINX	1.00	1.18	-0.09	99.80	100.14
VDIGX	0.78	4.67	2.34	80.13	70.43
VDAIX	0.82	3.73	1.77	83.03	75.69

Notes: MF Average: Average of mutual funds in the Morningstar category of large blend.

Source: www.morningstar.com

Over the recent five-year investment period, the VICEX fund had a lower beta of 0.90, which was lower than either the category average or the VFINX fund. However, the average beta of the dividend-oriented funds was 0.80. Consequently, the VDIGX and VDAIX funds' Treynor measures were much greater than that of the VICEX fund. In fact, over the recent five-year period, only the dividend-oriented mutual funds had alpha values that were positive.

During the past five years, all five of the analyzed mutual fund portfolios understate the market performance when the market advances. Dividend-oriented firms do the worst in these periods, with the VDIGX fund capturing only about 80.13 percent of the gain. However, during market drops, this dividend-oriented mutual fund captured (i.e., mirrored) 70.43 percent of the drop. The VICEX fund, in contrast, still captured 92.82 percent of the decline.

4.4 Morningstar Rankings

Information above provides point estimates for four mutual funds and the large-blend mutual fund category. Additional benefit is derived from learning about the performance of these funds relative to other mutual funds. Morningstar rankings are widely used to support mutual fund claims that they have done better than other funds, including reports by Vanguard (see, for instance Philips (2010) and Philips and Kinniry (2010)).

Morningstar rankings are provided for return performance, risk performance, and risk-adjusted return performance in Table 5. The third ranking is known as the Morningstar “rating” ranking. The best investments have a “5” for return and risk-adjusted return, and only a “1” on the risk dimension. Panel A of Table 5 shows that the VICEX fund’s strong price performance earned it a “5” during the 2003-2012 period. Its slightly higher risk resulted in a “4” for risk. With much higher return and slightly higher risk, it is not surprising that the VICEX fund’s Morningstar rating ranking was a “5.” As one would expect, the large blend category averages and VFINX fund tended to earn the average of “3” across each of the ranking dimensions.

Consistent with the more recent period’s return and risk findings presented above, the VICEX fund has only earned average rankings (i.e., 3) for its return, risk, and risk-adjusted return performance. By comparison, both dividend-oriented mutual funds earned a high ranking (i.e., 5) for return, had preferable low rankings (i.e., 1) for risk. As a consequence, these funds earned high rating (i.e., 5) for risk-adjusted return.

Table 5. Morningstar return, risk and rating rankings

Panel A. Ten-year period ending on 12/31/2012			
Fund Ticker	Return	Risk	Rating
VICEX	5	4	5
MF Average	3	3	3
VFINX	3	3	4
Panel B. Five-year period ending on 12/31/2012			
Fund Ticker	Return	Risk	Rating
VICEX	3	3	3
MF Average	3	3	4
VFINX	3	3	3
VDIGX	5	1	5
VDAIX	5	1	5

Notes: MF Average: Average of mutual funds in the Morningstar category of large blend.

Source: www.morningstar.com

5. Conclusion

Much like alcohol and gambling, investors are tempted to in live in a variety of stocks which could benefit from such vices. This study examines the only vice-focused mutual fund available, the Vice Fund Investor Class (VICEX), issued by USA Mutuals. The findings provide cautious support for investment in the VICEX fund. Having higher returns and higher risk-adjusted return than the Standard & Poor’s 500 and a Morningstar-based benchmark of large blend funds, the excess performance existed over the investment period running the first full year since inception (i.e., 2003) to the end of 2012. Over its first ten-year period, VICEX fund’s returns were significantly better than those of Vanguard’s 500 Index Fund and Morningstar’s category average at the ten percent level of confidence, resulting in five-star Morningstar rating ranking. There could be investment virtue in vice investing over the long term. In general, over the first ten full years since inception, the VICEX fund did a better job of magnifying market advances and softening market declines than the VFINX or the typical large blend funds.

However, over the recent 2008-2012 period, the VICEX fund underperformed Vanguard's 500 Index Fund and especially two dividend-focused funds. The VICEX fund's risk-adjusted market returns (alphas) trailed these dividend-focused funds average performance by approximately 2.5 percent. During this recent five-year period encompassing the 2008 credit crisis, the VICEX fund gained less than the VFINX fund during bull market conditions, but fell more than dividend-focused funds during bear market conditions. The abnormally good performance during its first five years of existence has not been sustainable and does not justify the additional fund management expenses. Future study of a longer investment horizon or specific vices may well find investment virtue in vice investing. Future research may also evaluate whether excess returns would be present in the presence of Fama and French's three-factor model or Carhart's four-factor model.

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