Challenging Hedge Funds by Mimicking Their Strategies

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Abstract: Since the launching of the first hedge fund, its ability to have a greater return with less volatility has attracted more and more people to get involved in this investment tool. Numbers of people either invest in hedge funds, or simply simulate the hedge fund strategy in order to obtain a higher return. This paper studies whether people can beat hedge funds by simply mimicking hedge funds' strategies. The results are shown by comparing data from Goldman Sachs Hedge Industry VIP ETF, which stands for GVIP, and the long-short hedge fund index from November 2016 to July 2022. According to yahoo finance, GVIP seeks to invest 80% of its assets in its underlying index, depositary receipts representing securities included in its underlying index, and in underlying stocks in turns of depositary receipts included in its underlying index. First of all, the statistical return of GVIP and the long-short hedge fund index are analyzed in terms of their mean, standard deviation, and sharpe ratio. The number of months that GVIP outperforms hedge funds, and the maximum return gap are also concluded by using cross-sectional comparison. Secondly, some regressions are applied to obtain the preliminary conclusions of this paper. Thirdly, the Fama-French five-factor model is applied to improve the accuracy of the model, so as to further analyze and verify the previous conclusions. Based on the statistical analysis, we can conclude that investors cannot beat hedge funds by mimicking their strategies.

Keywords: Mimick trading strategies, Hedge Fund return, CAPM model, Fama-French 5 factor model

1. Introduction

Since Alfred Winslow Jones launched the first hedge fund in 1949 through his company, hedge funds have become one of the most well-known investment tools in the market. Outperforming other investment tools and having a lower risk is just one of the reasons why hedge funds have become so popular. The entire Hedge funds assets had exceeded $2 trillion in 2011, and exceeded $3 trillion in 2019, which shows a fact that the hedge funds market is turning into one of the largest industries in the world. As a result, more and more people begin to invest in hedge funds.

However, when people invest in hedge funds, people usually pay 2% of management fee and 20% of performance fee, and there are limitations for some people who are not willing to pay the fee or don't have a chance to invest in hedge funds. Since the return of hedge fund is typically high-

er than the average market return and it has a lower risk, many people are attracted to find a way to invest like a hedge fund manager but get away from the management fee and performance fee. Therefore, do people have other ways to obtain the same return as hedge funds obtain? Is mimicking strategies from hedge funds a good idea? Here are some aspects of mimicking strategies. Firstly, individual investors can waive management fees by simulating hedge fund strategies by themselves. Moreover, Coval et al. also proved that the trading performance of individual investors has a strong persistence, which means skilled individual investors exploit market inefficiencies to make extraordinary profits that exceed anything a well-known strategy based on size, value, or momentum can achieve, by just mimicking strategies from large firms [1]. Frankly speaking, many small firms that simply mimic the strategies from large hedge funds do provide investors with similar returns. However, investors generally prefer to invest in funds that beat their peers rather than match them. There is also a downside for those who copy the strategies of these large hedge funds: By the time these large hedge fund firms publish their portfolios, the information may be quite late, resulting in the simulated hedging strategies producing lower returns. In this research paper, we focus on individual investors or some other firms that try to mimic hedge fund strategy, Goldman Sachs Hedge Industry VIP ETF, which stands for GVIP in our case, and see if it can do as well as hedge funds or even beat the hedge funds.

To analyze whether non-hedge fund investors or firms can beat hedge funds by mimicking hedge fund strategies, this paper focuses on the following aspects. First of all, the statistical return of GVIP and the long-short hedge fund index are analyzed in terms of their mean, standard deviation, and sharpe ratio. The number of months that GVIP outperforms hedge funds, and the maximum return gap are also concluded by using cross-sectional comparison. Secondly, some regressions are applied to obtain the preliminary conclusions of this paper. Thirdly, the Fama-French five-factor model is applied to improve the accuracy of the model, so as to further analyze and verify the previous conclusions. Finally, conclusions are drawn by combining the performance of the three aspects.

2. Literature Research

Over the past three decades, many scholars have examined whether mimicking the trading strategies of hedge funds can help individual investors to achieve better returns.

Coval et al. document strong persistence in the performance of trades of individual investors [1]. Investors classified in the top performance decile in the first half of our sample subsequently outperform those in the bottom decile by about 8 percent per year. Strategies long in firms purchased by previously successful investors and short in firms purchased by previously unsuccessful investors earn abnormal returns of 5 basis points per day. Their results suggest that skillful individual investors exploit market inefficiencies to earn abnormal profits, above and beyond any profits available from well-known strategies based upon size, value, or momentum.

Rob Copeland, Gregory Zuckerman, stated that there are a lot of smaller firms that simply just do a simulation on large hedge funds' strategies and those firms do give a similar return to their investors. However, investors usually tend to invest in the funds that beat the peer not match them [2]. Those who copy those large hedge funds' strategies also have disadvantage: the information could be quite late by the time those large hedge fund companies released their portfolios. Also, having a stock in a portfolio doesn't necessarily reflect how the hedge fund managers feel about the stock.

Yen et al. select 13,098 hedge funds from January-1994 to August-2008 and divide them into four categories, - Macro, Equity Hedge, Relative Value and Event Driven [3]. They apply the Step-SPA test to each category of them based on a seven-factor model. It is found that hedge funds with statistically significant and positive studentized alpha tended to beat dataset indexes during the holding period, irrespective of the time span for the selection and the holding periods investigated.

Christopher Schelling, provides an example about individual investors investing in Gamestop compared to hedge fund investing in Gamestop [4]. He mentioned that some people did make a lot of money in an early stage, but most of them lost their money, because it's still hard for individual investors to time the market and even harder when people are going up against the hedge funds that have deep-pocket, well resourced, full-time professionals with teams of people, even though you follow their moves.

Juan De La Hoz, said that GVIP is one of the ETF that has a sample investment thesis which is investing in the most popular hedge fund stocks [5]. If many hedge funds invest in the same stock, which implies that many managers believe that it will outperform, GVIP will follow them. So if the assumption is right, then the stock and GVIP should make a profit. Also, based on the data, GVIP's strategy seems to be working and with similar risk compared to average.

Barclay Palmer, explains the main differences between institutional investors and individual investors [6]. There are mainly 7 differences: funds, potential trading impact, emotional trading, sizes, protective regulations, limits and information advantage. Potential trading impact, funds and information advantage are three of the main differences, since institutional investors usually have a way larger fund to invest, large position and frequent transactions from institutional can effect the stock price suddenly, and institutional investors can usually access to up-to-the-minute market insight.

Glenn Curtis [7], states that there a usually 5 main points to investing like hedge funds. First of all, Some hedge funds focus on arbitrage situations, while others are market neutral, or use a combination of long/short strategies. Secondly, mangers in hedge funds care a lot in the cash flow of one company which can keep them update on how the company is doing. Thirdly, hedge funds will trades through different brokers and exchanges to gain better returns, and take advantage of mispricings within the market. Moreover, some hedge funds buy securities on margin or get loans and credit lines to buy more stocks or more investments. When these kinds of bets pay off, they pay off big, but when they fail, some companies might go bankrupt. Finally, rather than holding on one stock indefinitely, hedge fund managers are strict enough to get out in order to secure the profits.

3. Methodology

This paper uses the five-factor model developed by Fama and French [9]. The method used in this paper is the 2*3 method. First, all stocks are divided into two groups, small market capitalization (S) and large market capitalization (B), according to the median market capitalization of stocks; and all stocks are divided into three groups, high (H), medium (N), and low (L), according to the 30% and 70% quartiles of the book-to-market ratio. Secondly, the two indicators of market capitalization and book-to-market ratio are crossed to classify all stocks into six combinations of SH, SN, SL, BH, BN, and BL. Again, operating profitability and investment style are used instead of book-to-market ratio, and the above steps are repeated to divide all stocks into 12 portfolios: SR, SN, SW, BR, BN, BW, SC, SN, SA, BC, BN, BA, where R represents strong profitability, W represents weak profitability, C represents conservative investment style, A represents aggressive investment style, and N represents intermediate profitability or investment style. N represents the middle of profitability or investment style;. Next, the market value-weighted average return of each portfolio is calculated for each period. Finally, the difference between the returns of different portfolios is used to construct four factors. The model is shown below [10]: is the risk-free rate, is the market factor, and is the size factor, which indicates the difference between the stock returns of smaller companies and those of larger companies at time t. is the value factor, which represents the difference between the stock returns of firms with higher book-to-market value and those of firms with lower book-to-market value at time t. is the profit factor, which represents the difference between the stock returns of companies with higher net profit margin and those with a lower net profit margin at time t. is the investment pattern factor, which represents the difference between stock returns of firms with high-

er investment levels and those with lower investment levels at time t. Their regression coefficients represent the sensitivity of stocks to their corresponding factors.

When there is a heteroskedasticity problem in the model, both t-test and F-test lose their significance, which will affect the judgment of whether the regression coefficient is significant or not. In this paper, we use White's test to verify this problem. If there is a heteroskedasticity problem, it can generally be solved in two ways. The "OLS (ordinary least squares) + robust standard error" method is more suitable for general cases, while the FGLS (feasible generalized least squares) method is more effective. According to Stock and Watson (2011), FGLS is not as effective as OLS if the covariance matrix is not estimated accurately, so "OLS + robust standard error" is used in this paper.

4. Data Section

The Goldman Sachs Hedge Industry VIP ETF (GVIP) index is used in this paper to represent investors mimicking hedge fund trading strategies from Yahoo Finance. Sample data begin in November 2016 and ends in July 2022. GVIP uses public filings to select its holdings from the portfolios of hedge funds. Looking at the disclosed equity assets at hedge funds, the fund selects the 50 US stocks most frequently appearing in the top 10 of individual hedge fund's assets by market value.

This work used the index returns of long-short strategy. Sample data begin in November 2016 and ends in July 2022. The risk-free rate is represented by a 1-month TBill. The 1-month TBill return is from Ibbotson and Associates Inc. The market return and 5 factors used in this paper is obtained from the Ken. French Data Library. The work uses LS to represent the long-short hedge fund index, MKT to represent the US market index in this paper. And the data used CAPM model [8].

4.1. Data Analysis

Table 1: Statistical data.

	mean	Annualized mean	Standard deviation	Annualized Standard deviation	Sharpe
GVIP	0.9%	11.4%	5.8%	20.1%	0.57
Long Short Hedge Fund	0.5%	6.3%	2.4%	8.2%	0.85
market	1.1%	14.5%	4.9%	17.0%	0.77

According to Data Table 1, In the work can learn that between November 2016 and July 2022, GVIP's annualized average return was 0.9%, slightly less than the market return of 1.1%, but it is worth noting that GVIP's monthly average is higher than the return ls hedging strategy. Compared to LS's hedging strategy, GVIP has performed well in 41 months, i.e. a strategy in which the average monthly yield exceeds ls in most months. Comparing the respective average returns of the win month and lose month, it can be seen that GVIP is only higher than the average return when GVIP wins, so GVIP's performance at lose month is not very important. Overall, GVIP's returns are higher than ls hedging strategies, which reflects GVIP's excellent performance when simulating ls hedge funds.

Table 2: GVIP and LS statistics data.

	Win month	win mean	Before COVID-19 Win month	Before COVID-19 win mean	After COVID-19 Win month	After COVID-19 win mean
GVIP	41	2.76%	24	2.33%	17	3.28%
Long Short Hedge Fund	28	3.08%	13	2.37%	15	3.69%

For further research, the results divided the period into two parts according to the COVID-19 epidemic. Table 2 shows that the Win month of GVIP was much more than that of Lose Month before the epidemic, but the situation became similar after the epidemic. This, to some extent, shows that the pandemic has had an impact on the revenue of GVIP.

Table 3: Total time statistics data.

whole period			
dependent variable	independent variable	coefficient	alpha
GVIP	MKT	1.12(25.0)	-0.4%(-1.6)
	LS	2.23(18.7)	-0.2%(-0.8)
	LS, MKT	0.80(8.1), 0.74(3.6)	-0.4%(-1.8)
Long Short Hedge Fund	MKT	0.44(17.8)	0.0%(0.1)

In Table 3, GVIP has the lowest Sharpe ratio of the three. Stocks have both higher average returns and lower volatility. In Table 3, This regression shows GVIP monthly returns are 90%, explained by the overall stock market. The beta is 1.12, so GVIP responds 12% more to the market than stocks in general. The alpha of -4.3% per year makes GVIP seem to be a poor choice, but the t-statistic of -1.6 means the result does not meet the 5% significance level (that would require a t-statistic less than -2), so it's possible that GVIP does have true alpha, just a bad period from 2016 to 2022. The GVIP monthly returns are 84%, explained by LS returns. The beta is 2.23, so GVIP is a levered version of LS. The alpha of -2.8% per year suggests GVIP underperforms LS, but the t-statistic of -0.8 is not close to statistical significance, so we can't conclude much. This regression shows GVIP monthly returns are 92%, explained by MKT and LS returns combined. GVIP is like holding 74% of your portfolio in stocks plus 80% in long-short equity--borrowing 54% cash to do it. The alpha of -2.4% per year suggests GVIP underperforms that portfolio, but not at the 5% significance level. The LS monthly returns are 82% explained by MKT. LS is like holding 44% of your portfolio in stocks plus 56% in cash. The alpha of 0.2% per year is positive, but has no statistical significance.

Table 4: Pre-pandemic statistics data.

before			
dependent variable	independent variable	coefficient	alpha
GVIP	MKT	1.08(15.4)	-0.2%(-0.7)
	LS	2.65(13.1)	0.0%(0.1)

Table 4: (continued).

	LS, MKT	0.70(4.6), 1.07(2.8)	-0.2%(-0.7)
Long Short Hedge Fund	MKT	0.36(12.6)	0(-0.2%)

Pre-covid-19 statistics are in Table 4. This regression shows GVIP monthly returns are 87% explained by the overall stock market. The beta is 1.08, so GVIP responds 8% more to the market than stocks in general. The alpha of -2.3% per year makes GVIP seem to be a poor choice, but it is better than the overall alpha. And the t-statistic of -0.7 means the result does not meet the 5% significance level (that would require a t-statistic less than -2). This regression shows GVIP monthly returns are 83%, explained by LS returns. The beta is 2.65, so GVIP is a levered version of LS. The alpha of 0.2% per year suggests GVIP is slightly better than LS, but the t-statistic of 0.1 is not close to statistical significance so we can't conclude much. This regression shows GVIP monthly returns are 90%, explained by MKT and LS returns combined. GVIP is like holding 107% of your portfolio in stocks plus 70% in long-short equity--borrowing 77% cash to do it. The alpha of -2.0% per year suggests GVIP underperforms that portfolio, but not at the 5% significance level. The LS monthly returns are 82% explained by MKT. LS is like holding 36% of your portfolio in stocks plus 64% in cash. The alpha of -0.3% per year is negative, but has no statistical significance.

Table 5: Post-epidemic statistics data.

after			
dependent variable	independent variable	coefficient	alpha
GVIP	MKT	1.14(18.2)	-0.5%(-1.4)
	LS	2.14(13.6)	-0.7%(-1.3)
	LS, MKT	0.80(5.5), 0.71(2.5)	-0.06%(-1.8)
Long Short Hedge Fund	MKT	0.47(12.7)	0.1%(0.6)

And then statistics after the COVID-19 outbreaking are in Table 5. This regression shows GVIP monthly returns are 92%, explained by the overall stock market. The beta is 1.14, so GVIP responds 14% more to the market than stocks in general. The alpha of -6.2% per year makes GVIP seem to be a poor choice, but the t-statistic of -1.4 means the result does not meet the 5% significance level (that would require a t-statistic less than -2), so it's possible that GVIP does have true alpha, just because this was during the COVID-19 pandemic. This regression shows GVIP monthly returns are 86%, explained by LS returns. The beta is 2.14, so GVIP is a levered version of LS. The alpha of -7.8% per year suggests GVIP underperforms LS, but the t-statistic of -1.3 is not close to statistical significance, so we can't conclude much. This regression shows GVIP monthly returns are 93%, explained by MKT and LS returns combined. GVIP is like holding 71% of your portfolio in stocks plus 80% in long-short equity--borrowing 51% cash to do it. The alpha of -7.3% per year suggests GVIP underperforms that portfolio, but not at the 5% significance level. This regression shows LS monthly returns are 84% explained by MKT. LS is like holding 47% of your portfolio in stocks plus 53% in cash. The alpha of 1.5% per year is positive, but has no statistical significance.

Table 6: Five-factor model.

whole period		
	beta	alpha
GVIP	1.07(22.96)	-0.01(-0.97)
Long Short Hedge Fund	0.01(0.73)	-0.00(-9.52)
before		
	beta	alpha
GVIP	1.02(14.78)	-0.00(-0.88)
Long Short Hedge Fund	0.00(0.00)	-0.00(-11.33)
after		
	beta	alpha
GVIP	1.09(16.12)	-0.00(-0.64)
Long Short Hedge Fund	0.00(1.34)	-0.00(-4.63)

This work also have chosen the Fama-French five-factor model to further improve the accuracy of the model, and the results are shown in Table 6. The result finds that their alpha is 0 regardless of the time of day, and they are not excess returns. Their beta also does not change dramatically before and after. This suggests that in some way, they are stable enough to achieve part of the role of a hedge fund. Compared to the previous single-factor model, there is no significant change, which shows that the analysis the paper did before is relatively reasonable.

All in all, After dividing the time into two periods by epidemic factors, the result found that GVIP was slightly higher than LS before the outbreak of COVID-19, but much lower than LS after the outbreak. In addition, the performance of GVIP after the epidemic was far worse than that before the epidemic, while the difference was that LS had a better performance than the market after the epidemic. However, the absolute value of t-statistics for these statistics does not exceed 2, so progress observation is still needed.

5. Conclusion

To conclude whether investors can beat hedge funds by imitating hedge fund trading strategies, this paper uses GVIP to represent investors' imitation of hedge funds and compare their performance with long-short hedging strategies. Also, in order to exclude the impact of the epidemic on the fund, this paper is divided into pre- and post-epidemic analysis using November 2019 as the time point. Several regression analyses were performed for GVIP and long-short hedging strategies, and it can conclude that mimicking hedge funds' strategies are not able to beat hedge funds, both before and after the epidemic. This is even more evident after the epidemic, where the returns obtained by imitation are more volatile and less resilient to risk. In this paper, this paper believes that there are two main reasons for this: firstly, imitation only imitates the underlying of the purchase, and does not strictly imitate the timing of its buy and sell, which may affect the final return. The second point is that GVIP is mimicking multiple hedge funds and cannot imitate the ratio of the portfolio of the imitated hedge fund well, failing to achieve the optimal solution of the portfolio, resulting in inferior performance to the imitated fund. Also, this paper suffers from model flaws. For example, one of the many stringent assumptions of the CAPM is that the market is in a state of perfect competition. However, a perfectly competitive market is difficult to achieve in practice, and "market making" can occur from time to time. There is also the assumption that investors can borrow at a fixed risk-free rate without restriction, which is also difficult to achieve. Also, the assumption of rational humans and consistent expectations, in fact, the market has transaction costs, taxes and information

asymmetry, etc. The failure to meet the assumptions brings about a serious reduction in model accuracy, and there are limitations to the usefulness of relying on historical data to calculate systematic risk for future guidance.

Reference

[1]   Coval, Joshua D., David A. Hirshleifer, and Tyler Shumway. "Can individual investors beat the market?." (2005): 02-45.

[2]   Rob Copeland, Gregory Zuckerman, "How Individual Investors Can Invest Like a Hedge Fund", August 3, 2014

[3]   Yen, Stéphane Meng-Feng, Ying-Lin Hsu, and Yi-Long Hsiao. "Can hedge fund elites consistently beat the benchmark? A study of portfolio optimization." Asia Pacific Management Review 20.4 (2015): 275-284

[4]   Christopher Schelling, "Hedge Funds always Win", February 05, 2021

[5]   Juan De La Hoz, "GVIP: Invest In the Top Hegde Fund Holding With This ETF", April 17th, 2021. https://seekingalpha.com/article/4419557-gvip-etf-top-hedge-fund-holdings

[6]   Barclay Palmer, "Institutional Investors vs. Retail Investors: What's the Difference", March 17th, 2022. https://www.investopedia.com/ask/answers/06/institutionalinvestor.asp

[7]   Glenn Curtis, "How to Invest Like a Hedge Fund", August 25th, 2021. https://www.investopedia.com/articles/mutualfund/08/hedge-fund-invest.asp

[8]   Fama, Eugene F., and Kenneth R. French. "The capital asset pricing model: Theory and evidence." Journal of economic perspectives 18.3 (2004): 25-46.

[9]   Fama, Eugene F., and Kenneth R. French. "A five-factor asset pricing model." Journal of financial economics 116.1 (2015): 1-22.

[10] Stock, James H., and Mark Watson. "Dynamic factor models." Oxford Handbooks Online (2011).