VSE – TRANSACTION DIARY

FIN – 654

FINANCIAL ANALYTICS

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Prepared By:

Hendi Kushta

In the VSE simulation exercise, I am given $100,000 to trade from September 27th 2023 December 2nd 2023.

At the end of December 2nd 2023, my overall gain is $4,623.70, with an overall return of 4.62%. My rank is #34 in my class.

The overall return is computed as:

$4,623.70/$100,000 = 4.62%

In total I have done 25 transactions with a total commission amount of 25 * $10 = $250

According to my Holdings, 205 shares of XLK provides the most value with gain $2,756.23 or 7.91% followed by SPY with 7.66%.

	Symbol	Shares	X..Holdings	Value.Gain.Loss..
3	XLK	205	18%	7.81%
1	SPY	220	48%	7.66%
4	XLY	219	18%	-6.53%
2	XLE	393	16%	-2.05%

My line code for this analysis is from line 1 to 18 on the VSE_final.R file.

From 9/27/2023 to 10/13/2023 I didn't do any transactions. There was only some cash interest that came into my account. The total return was 0.148% making a profit of $148. As shown also on the graph below, there was a constant increase of 0.01% daily cash interest.

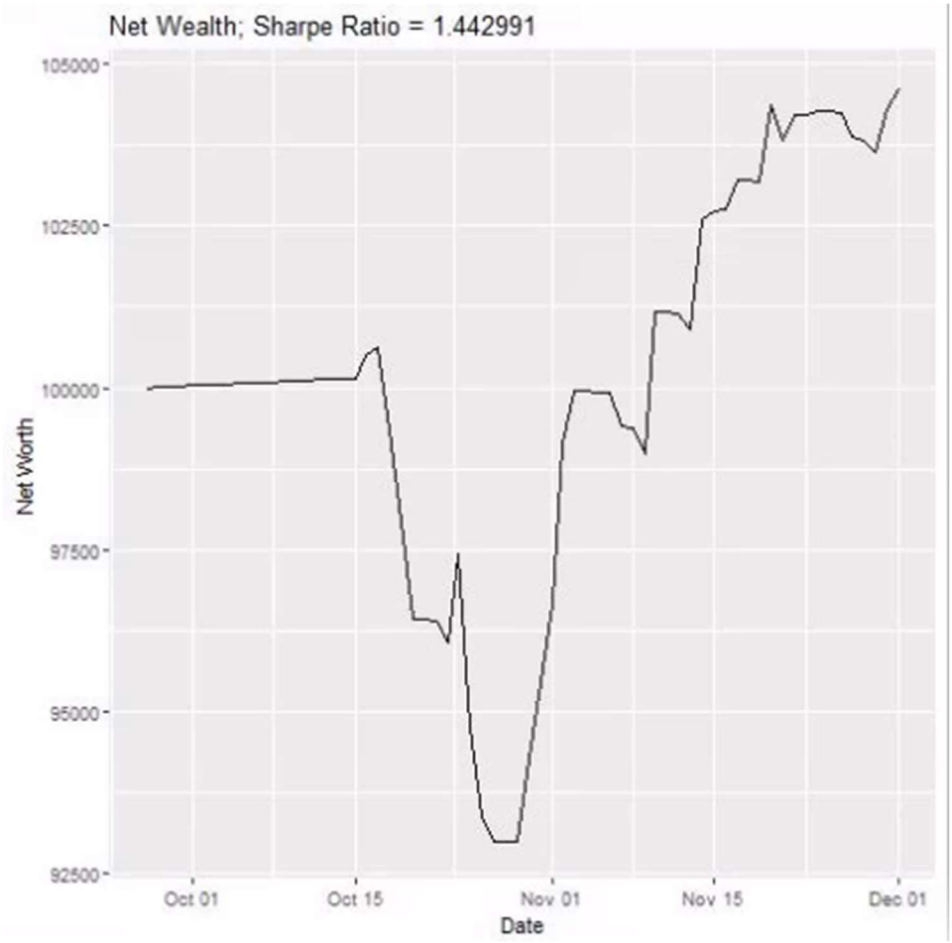
After that I started to trade in different ETFs, from 10/13/2023 to 10/20/2023 I did transaction based on fundamental analytics, reading news about specific ETFs, and by analyzing charts and historical prices. I bought different ETFs, and here are the results when I bought and when I sold. The results in red is the amount of money I lost in each transaction, while the black is how much I won.

	Symbol	Buy	Sell	Difference
	<chr>	<dbl>	<dbl>	<dbl>
1	XLE	33831.	34094.	263.
2	XLF	15697.	15318.	-380.
3	XLK	20442.	20163.	-278.
4	XLRE	13853.	13336.	-517.
5	XLU	15589	15327	-262
6	XLV	5095.	5003.	-92.8

Starting from September 27th to December 2nd, my portfolio has had many up and downs as also shown in the graph below. The biggest dip occurred during the last week of October, where the uptrend also

started. As we can see from the graph, there has been an increase in the value of portfolio compared with the initial balance. The net worth shows that there is a positive direction of the final value. After finding the daily return in percentage, I calculated my sharpe ratio, which has a value of 1.442991.

A Sharpe Ratio of 1.442991 suggests that, on average, the portfolio has generated 1.442991 units of excess return for each unit of risk taken. This is a positive signal.



Starting from 20/10/2023, I use a daily return sample of SPY. to perform analysis. My analysis is based on my knowledge of Asset allocation. I assume that I have a risk aversion A = 1.125.

I bought 47 SPY on October 16th with a price of $433.81/stock, then I bought another 80 stocks on October 18th with a price of $434.11/stock, and 89 stocks with a price of $425.98/stock on October 20th. These amounts were bought before starting building the model and the code.

Based on my calculations I had to buy a total of 440 SPY stocks, so on October 20th , I bought 224 SPY stocks with a price of $422.17 per stock.

My line code for this analysis is from line 178 to 208 on the VSE_final.R file.

On October 26th, I have decided to work with the second model. My analysis is based on the knowledge of efficient frontier, financial indicators (mean, standard deviation, sharpe ratio, value at risk and expected shortfall) to filter ETF.

Next I did the analysis of buying other ETFs, but because I am loosing money with SPY, I couldn't sell all the SPY stocks, so I decided to sell only 220 SPY stocks on October 26th with a price of $416/stock.

Based on the tangency portfolio, I compute my portfolio weight for XLI, XLV, XLB where XLB will not have any weight, XLV has 37.41% and XLI 70.61% as shown also in the screen shot below.

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Portfolio Weights:
   XLV    XLI    XLB
0.3741 0.6259 0.0000
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The current prices are 97.3, 125.26 and 74.98 respectively

This means I will propose to buy 504 of XLI and 381 of XLV at the market opening price on 10/30/2023. The rest of my wealth is invested in SPY and the remaining is cash.

My line code for this analysis is from line 212 to 387 on the VSE_final.R file.

On November 2nd, I decided to continue with my last model. I sold the XLI and XLV stocks that I bought on October 30th with prices $99.63/stocks and $125.39 stocks respectively.

My analysis is based on the knowledge of single-index model and information ration for the third model. The model suggests that you have to buy ETFs with the highest information ratio and short sell the ETFs with the lowest information ratio. The model suggests to use the same amount of investments in all 3 ETFs you decide to invest on.

Based on the results that this model gave, as shown in the screen shot below, on November 3rd, I decided to buy 393 stocks of XLE with a price of $86.77/stock, 205 stocks of XLK with a price of $172.10/stock and since we have also discussed short sell in the class, I short sold 219 stocks of XLY with a price of $160.57/stock.

My line code for this analysis is from line 392 to 447 on the VSE_final.R file.

	Alpha	Sigma	Beta	Ratio
XLY	-3.103478e-04	0.007364893	1.2585422	-0.042138807
XLC	-2.397142e-04	0.007696040	1.1213153	-0.031147735
XLRE	-2.611990e-04	0.008743876	0.8391096	-0.029872219
XLU	-1.526081e-04	0.009718606	0.5352844	-0.015702674
XLP	-4.173288e-05	0.006437724	0.5142400	-0.006482552
XLB	-4.626465e-05	0.007527025	0.9339588	-0.006146472
XLI	5.887802e-05	0.005966551	0.8681254	0.009868015
XLV	8.614154e-05	0.006034668	0.6317852	0.014274444
XLF	1.434254e-04	0.008087336	0.9424250	0.017734568
XLK	1.162076e-04	0.005726363	1.2942480	0.020293432
XLE	1.402129e-03	0.018379435	0.7585144	0.076287916

Conclusion

In conclusion, the VSE simulation exercise provided a comprehensive learning experience in managing a financial portfolio. Starting with an initial capital of $100,000 on September 27th, 2023, and concluding on December 2nd, 2023, I successfully navigated the dynamic landscape of financial markets.

Over the course of the simulation, I executed 25 transactions, incurring a total commission of $250. The initial phase saw a steady increase in cash interest, contributing to a profit of $148 by October 13th, 2023. Subsequently, employing fundamental analytics, news analysis, and chart examination, I engaged in ETF trading, marking both gains and losses.

The portfolio exhibited fluctuations, with a notable dip in late October, followed by a substantial uptrend. Calculating the overall return of 4.62%, I ranked #34 in my class. Utilizing daily return data and implementing Asset Allocation strategies, I attained a Sharpe Ratio of 1.442991, indicating a positive excess return relative to risk.

Transitioning to a daily return sample of SPY from October 20th, 2023, I incorporated risk aversion and strategically purchased SPY stocks. Later, I adjusted the portfolio based on efficient frontier analysis, selling SPY stocks and allocating investments to XLI and XLV.

Further evolution occurred on November 2nd, where I implemented a model based on the single-index model and information ratio. This led to strategic stock purchases, sales, and short selling, optimizing the portfolio's composition.

In summary, the VSE simulation journey showcased the application of diverse financial strategies, from fundamental analysis to risk-adjusted asset allocation. The continuous adaptation and refinement of the portfolio underscored the dynamic nature of financial markets and the need for informed decision-making. This experience has enriched my understanding of financial analytics, portfolio management, and risk assessment, contributing to a holistic learning experience in the field of finance.