Economics

Diversification as a Strategy to Invest in Stock Market

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The stock market is seen by many as a path to success and wealth. However, this is only true for some lucky ones or experts. Although, when the market is booming, it seems that everyone can make money, few can sell their stocks at the right moment because most investors do not have enough knowledge and information to predict what the market is going to do in the next minute. Thus, it is important for investors to choose diversification as their strategy by hedging risks in their portfolio and using performance measures such as the Sharpe Ratio to better understand and perform in the ever-changing market.

Strategy

When selecting stocks to build a portfolio, investors should aim to select a set of stocks that will perform well under a number of different market conditions. In order to hedge risks, investors should focus on selecting stocks from different industries and asset classes. The prices of the stocks are not only purely determined by the financial metrics of the company, but are also greatly influenced by external means such as political instability and industry trends. For example, if there is a serious conflict between China and Australia, firms in China may decide to stop importing agricultural products from Australia. This would likely result in a significant fall in price for stocks in the agricultural firms because there is less demand. This would result in significant losses for investors who only invest in the Australian agricultural sector. Thus, to mitigate poor performance of the entire industry, investors should diversify their portfolios by selecting stocks from different industries and asset classes.

- ["SBUX","TSLA","AAL","MSFT","NOK","DAL","AAPL","F","BAC","T"]
- Nasdaq **Starbucks Corporation (SBUX)**
- Nasdaq **Tesla, Inc. (TSLA)**
- Nasdaq **American Airlines Group Inc. (AAL)**
- Nasdaq **Microsoft Corporation (MSFT)**
- Nasdaq **Apple Inc. (AAPL)**
- NYSE **Nokia Corporation (NOK)**
- NYSE **Delta Air Lines, Inc. (DAL)**
- NYSE **Ford Motor Company (F)**
- NYSE **Bank of America Corporation (BAC)**
- NYSE **AT&T Inc. (T)**

Portfolio (stock selection)

Figure 1: Stocks selected to form a portfolio.

Figure 1 shows an example of a diversified portfolio in the United States stock market.

This portfolio includes stocks from both New York Stock Exchange (NYSE) and NASDAQ stock exchange (NASDAQ). This paper will use this portfolio to explain how a diversified portfolio can provide outstanding returns while hedging risks.

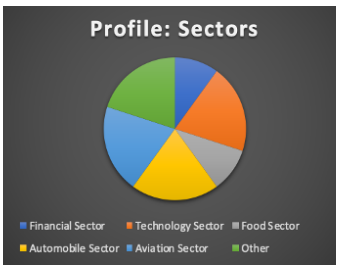

Figure 2: Stock sectors.

As shown in Figure 2, the stocks are chosen from different sectors. Because different sectors will perform differently in different market situations, the risks of the investment can be reduced by choosing stocks from a range of sectors.

Considerations

Optimal Weights, Risk and Return

The first step of constructing a portfolio is to pick the stocks and give the stocks various weights. The overall weight will be equal to 100 percent, which means we split all our capital into these companies. To find the optimal weights, we draw the market allocation line and the efficient frontier curve to find the optimal portfolio weight for each stock in regard to risk and return.

The general rule in the market is if an investor can take a higher risk, he or she deserves to earn more returns. When measuring a stock portfolio, investors should consider the return and the risk together. Portfolio returns and risks are calculated to determine the return and its statistical significance. As shown in Figure 3, when investors are going to construct a medium size portfolio, they might can find a combination where can generate a high return while maintaining a low risk for a given set of stocks.

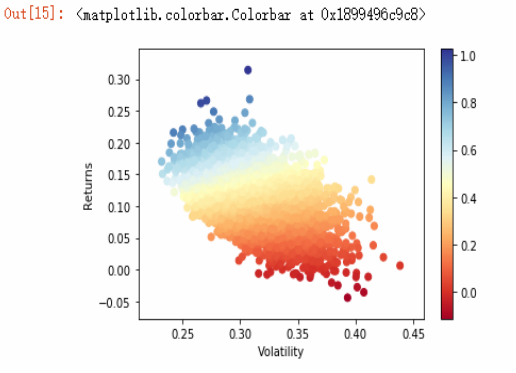

Figure 3: Risk and Return of a Portfolio

Financial Performance in a Company

Performance metrics provide insight to consumers on the efficiency of a businesses they have invested in.

Similar to the operating margin, asset utilization is a means of measuring effectiveness over time. Investors can search for the momentum of benefit, the decline or the rise of profit between cycles, as seen in trends, to see where companies are actually going. Analysis of past eight-quarter profits can be used to predict expected revenue trends and elasticity of cycles.

Financial metrics of a firm, including income, gross margins and cash flow, need to be considered when buying stocks. Both factors combined will clarify the company's overall financial performance and the likelihood of it being sustainable in the short and long term. Creditors will look at how stable these gains are in the sales ledger, and how trendy they are. Higher operating margins are usually more beneficial in terms of assessing how well a business is running than smaller operating margins. Measuring the company's cash flow numbers, especially cash flow per share, helps measure productivity. It is also a way to determine whether a stock is over or undervalued.

The most common valuation metric is the price-to-earnings ratio, or P / E ratio, which calculates an equity's price per share over its earnings. Classification of overpriced goods is based on the price-to-sales ratio, or PSR. The PSR compares the purchase price of a company to the real profit per unit. A high PSR indicates an overpriced stock advising investors to sell. Another useful method for evaluating investment assets is equating rising investment with its benchmark. Short-term share investors would hedge against underperforming stocks or stocks that have hit a cyclical peak on their averages.

Long-term investors have the luxury of discretion, not worrying about micro conditions or market changes. Long-term investors then align typical business outcomes to their index's aggregate trend. Unless the stock displays significant declines or a small yet steady decline, it might be time to sell and invest in a higher production stock. Look at the general trend when you buy your stock and sell shares. Long-term buyers will review market price projections and annual or five-year price maps to see whether the portfolio is bearish or optimistic, or if the company is doing well. Short-term buyers may use trend charts for forecasting the course of stocks every month, weekly, or even intraday. Benchmarks and industry trend charts can also be found on websites featuring updated inventory information. The business trends can be compared with supply in the same manner. They can also be analyzed to see how the business, as a whole, functions. When an industry does not perform well, a study of the latest industry articles and news releases can clarify the market movements. In this study, the three most important companies in this portfolio are Tesla, Microsoft, and Apple.

Holdings

To lower the risk level, it would be better to diversify the stocks. When the dollar value of the stock portfolio is increasing periodically, it might be time to reassess the holding. To assess the probable perpetrator in your fund's downfall, calculate the dollar value of growing stock. Long-term investors should review their investment holdings at least annually, irrespective of the outcome. Short-term traders tend to reassess shares on a regular basis in order to keep up with financial reports on market surveys.

Backtesting

In order to prove the validity of our strategy for the investment portfolio, we should first understand the position of our portfolio compared to the market benchmark.

Backtesting is one of the methods used to compare the data of our portfolio with the market. To set up for backtesting, the portfolio return and portfolio standard deviation are necessary. The portfolio which takes the highest Sharpe Ratio, under our strategy will be the best portfolio.

$$Sharpe\ Ratio = \frac{Mean\ Return}{Average\ Weekly\ Standard\ Deviation}$$

The Sharpe Ratio is a ratio of the average return and the volatility of a portfolio, and it can evaluate the past performance of a certain portfolio with regard to its risk.

After collecting the weekly data of our ten stocks from Yahoo Finance, we are to backtest our strategy with Python within a three-year window between June 30th 2020 and July 30th 2018. With the assumption of a $1,000,000 initial investment and $0.01 transaction cost, we should first consider

how many shares of each stock we should be holding

$$(holdings = \frac{stock\ weights \times amount\ invested}{stock\ price})$$

and how many shares we should buy or sell to adjust the stock weights in our portfolio with reference to the updated weekly data.

We can then find the net asset value of our portfolio by first calculating the expected return of our optimal portfolio and the total cost of the stocks. The total costs include both the transaction costs of each purchase or sale of stock and the dollar amount bought or sold each week when adjusting our portfolio weights:

$$Net\ Asset\ Value = Expected\ Return - Total\ Costs$$

Comparing the net asset value each week of our optimal portfolio to the weekly data of the market benchmark, we capture the following graph (Figure 4). The orange line represents the optimal portfolio and the blue line represents the benchmark. This graph shows that our portfolio performs stronger than the market average within this three-year window.

Figure 4: Portfolio Performance against Market Benchmark

Conclusion

It is clear that this portfolio can generate better results than the market does in regard to above indicators. Also, compared to the returns, the transaction cost is relatively small although the frequent rebalancing activities may generate a huge amount of transaction cost. Thus, this portfolio can outperform the overall market using diversification as a strategy.