CIA4U: Stock Market Challenge

Due on 2024, December 19 at 12:00

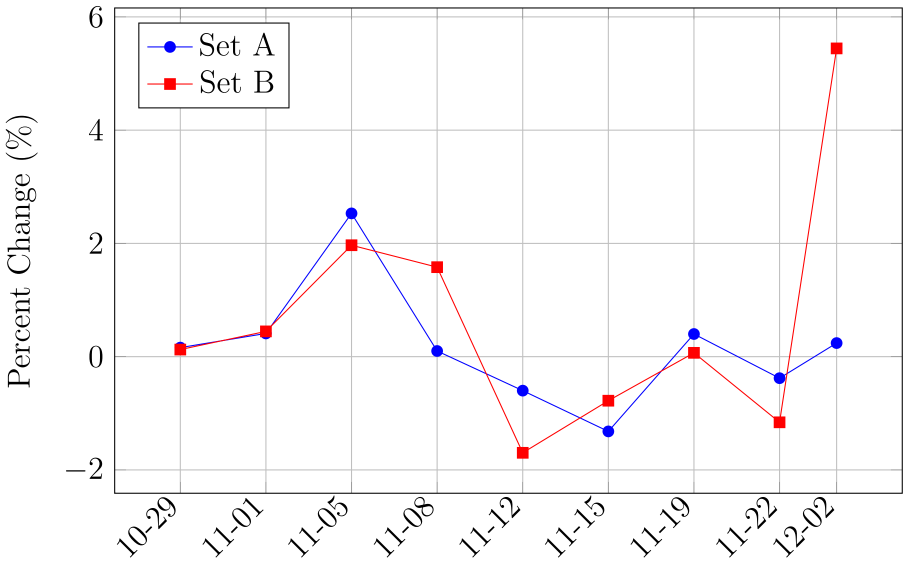
Mr. David Warrener Period C

Gregory Polstvin

Contents

1 Trading Activity and Performance

Date	Transaction Type	Symbol	QTY	Price (USD)	Gains/Losses (USD)
12/02/2024	Buy	SMCI	100	42.30	-4,230.00
12/02/2024	Sell	GOOG	-650	172.88	112,372.00
11/20/2024	Sell	APLS	-3000	28.13	84,390.00
11/19/2024	Buy	APLS	3000	30.23	-90,690.00
11/19/2024	Buy	SMCI	3000	28.30	-84,900.00
11/19/2024	Sell	LMT	-150	533.11	79,966.50
11/19/2024	Sell	PDD	-632	117.15	74,038.80
11/18/2024	Sell	SHOP	-500	107.58	53,790.00
11/15/2024	Dividends	HON	360	1.13	406.80
11/12/2024	Buy	DAL	338	63.49	-21,459.62
11/12/2024	Sell	BABA	-190	91.88	17,457.20
11/12/2024	Buy	SHOP	500	113.02	-56,510.00
11/12/2024	Sell	MULN	-20000	3.00	6,0000.00
11/12/2024	Buy	MULN	20000	3.04	-60,800.00
11/12/2024	Sell	BABA	-660	91.67	60,502.20
10/31/2024	Buy	PDD	632	118.50	-74,892.00
10/29/2024	Buy	HON	360	206.95	-74,502.00
10/29/2024	Buy	DAL	1250	56.22	-70,275.00
10/29/2024	Buy	GOOG	650	170.17	-110,610.50
10/29/2024	Buy	LMT	150	551.06	-82,659.00
10/29/2024	Buy	BABA	850	100.26	-85,221.00



1.1 Portfolio: Open Positions, Balances, and Performance

Symbol	QTY	Paid	Last Price	Mrkt. Value	Profit
DAL	1,588	57.77	63.41	$100,695.08	$8,960.46 (9.77%)
HON	360	206.95	229.95	$82,782.00	$8,280.00 (11.11%)
SMCI	3,100	28.75	42.00	$130,200.00	$41,070.00 (46.08%)

Initial Cash: $500,000.00
Value: $539,651.46 (7.93%)
Cash Balance: $225,974.38
SPY ETF % Return: 4.25%
Portfolio Return: 7.93%

2 Analysis of SMCI and Company

Initially, I had plans to purchase the stock on October 29. However, I hesitated massively due to a class action lawsuit coming out against SMCI. The allegations stated that SMCI's representations about its business, operations, and prospects were either false, misleading, and/or lacked a reasonable basis at all relevant times. Consequently, the share price plummeted by over 40%.

These allegations were serious enough to raise concerns about SMCI potentially being delisted from NASDAQ. Such a move would have been detrimental to the company, as liquidity and transparency would decrease massively. With their reputation already hanging by a thread, a delisting would likely have led to bankruptcy.

Despite these concerns, I purchased SMCI on November 19, after SMCI had put out a detailed report on how they plan on not getting delisted. This was in an effort to earn funds quickly within the shortest possible timeframe, a strategy not I would not advise to anyone. Recognizing this as an incredibly risky move, I limited my investment to approximately 85 thousand dollars.

Since then, bull run raised stock price up 48% from the 19th to the 2nd, the final day of the challenge. Reflecting on this decision, it's clear that my intuition played a significant role. Drawing on my experiences (see *On Trading*), I though I trusted my ability to analyze market overreactions and identify opportunities where others saw only risk. This was an incredibly reckless approach, as I took a gamble based on my understanding of the stock market, ignoring recommended advice.

3 Indicators of Other Best Companies

These are my other best performing stocks. I had initially went with my gut feeling for each of these stocks, and I had affirmed my decisions using a reasonably simple algorithm.

3.1 Analysis Algorithm

To start, I collected daily closing prices for time periods that best reflected the market currently, using data from Yahoo Finance. When the adjusted closing price was unavailable, I substituted the standard closing price to maintain consistency. For the first day of data, I included the opening price in the returns calculation to ensure that the algorithm accurately reflected price movements from the initial moment of analysis.

I calculated daily logarithmic returns using the formula:

$$\log(\frac{P_t}{P_t - 1})$$

where P_t represents the day in question, providing a reasonably accurate representation of percentage changes and accounts for compounding effects.

Next, I calculated the mean (μ_c) and standard deviation (σ_c) of these daily returns as follows:

$$\mu_c = n \cdot \mu_d$$

where n is the number of trading days. c represents cumulatice, and d represents daily.

For the standard deviation:

$$\sigma_c = \sqrt{n} \cdot \sigma_d$$

Using these cumulative statistics, I worked out the probability of a 10% gain by the end of the analysis period. (10% was chosen as a realistic, although ambitious goal, as I would consider it to be in an area that would best assess risk to performance.) The threshold for this gain is defined as a logarithm:

$$TS = \log(1.10) + log(P_o)$$

The probability was then derived using the cumulative distribution function (CDF) of the normal distribution:

$$P(x > TS) = 1 - \Phi(\frac{TS - \mu_c}{\sigma_c})$$

This allowed me to quantify the likelihood of achieving significant gains for each stock. Through this algorithm, the chances of my stock achieving a 10% gain from my inital price produced the following results:

- **DAL:** 47.14%
- **HON:** 71.83%

You can see how I implemented this on the Github repo for this assignment: `https://github.com/gripols/cia4u-isu`

Honeywell (HON)

Honeywell (HON) in the past year has been incredibly stable, and has consistently met price targets each quarter. I purchased stock coinciding with a bear run, which presented itself a great time to buy.

From October 29, 2024, to December 2, 2024, I worked out the the probability of HON achieving a 10% gain was calculated to be approximately 71.83%. As of December 2, 2024, a profit of 11.11% has been realized.

Other Metrics

Analyst's Recommendations: 2.5. Most analysts earlier in the year had recommended that it was a hold. Since then, it has done significantly better than what analyst's expected, and as a result, it has gone up.

Price-to-Earnings (P/E) Ratio: 25.43

Dividend Yield: Around 2.18%.

Revenue Growth: Honeywell reported revenue of $36.90 billion over the trailing twelve months, showcasing its robust business operations.

Delta Airline (DAL)

Since 2008, the "Big Four" U.S. airline stocks (Delta, Southwest, American Airlines, and United) have delivered an average gain of 13.6%, with the top performer, Delta, delivering an average gain of 20.8% within two months. This made Delta an incredibly attractive investment, especially in the span of this challenge. With a price-to-earnings (P/E) ratio of 7.14, I made the move to purchase it.

Upon my own analysis, Delta's probability of achieving a 10% gain was calculated as 47.13%. However, given past growth, I strongly believed that the real growth rate would be higher.

Analyst Recommendation

About a 3.4 when I purchased it. Towards the end of the challenge, it had gotten significantly higher, reaching to 4.0, and the stock price hovering around $60 USD.

This isn't all that surprising, as discussed previously.

Other Metrics

- Price-to-Earnings (P/E) Ratio: Approximately 7.14, suggesting a potentially undervalued stock relative to earnings.
- Dividend Yield: Delta Air Lines reinstated its dividend with a yield of around 0.85%, which is quite cautious, but very safe.
- Revenue Growth: Delta reported revenue of $58.05 billion over the trailing twelve months, making Delta the largest airline in the world in terms of revenue.

4 Two Buys and Sells

Buys

All buys were using the same strategy as SMCI, where I see something to buy that's going through a surge, and try to make money. For some I was correct, but I sold too early to realize any decent profits. Best example of this is with APLS (Apellis Pharmaceuticals), which I had purchased on November 19. If I hadn't sold, I would have made a profit of 20% on my original investment, but I did not.

The same could be said for SHOP (Shopify Inc.), which did experience quite a large surge. However, I didn't like the PE ratio, it was incredibly high.

Sells

Sells were either a result of cutting my losses, or just making room to buy more stock. For the former, the best example of this is with Ali Baba (BABA). I had high hopes for this, and it had a desirable PE ratio of about 21.97. But I failed to do more proper research besides the PE, and lost about 10% of the 100k I put in.

That's another thing I'd like to mention; going strictly off PE ratio is a really, *really* bad idea in real life. There are no real world implications as a result of my actions in this challenge, but still.

Another example of this was with LMT (Lockheed Martin Corp.) I was banking on Iran attacking Israel or something, but all that happened was a bunch of Syrian rebels toppling the government. Upsetting really, but I could have seen this beforehand by calculating it. Only lost about 4% of my investment, but I'm still an idiot.

For the 'making room' part, I think GOOGL (Alphabet Inc.) was my only example for this. I made about 5% profit on it. I was satisfied with it, sold it, and bought more SMCI, right before the challenge ended.

5 On Trading

Prior to this challenge, from February to March of this year, I had participated in a highly active form of trading called day trading, focusing mostly on large, established cryptocurrencies, such as Bitcoin, and Ethereum. For 95% of people, the logic behind it isn't so much strategy, as it is obfuscated gambling and following the crowd, as people approach trading with incredibly high expectations, and will stop at nothing.

Despite this, I had made a return of over 60% on my investments within the span of a month, mostly focusing on Ethereum. While the financial results are undeniably impressive, the experience itself is far from fulfilling. It's an incredibly mentally tiresome experience. You spend a lot of your time reading news that ends up becoming useless and constantly monitoring price movements. There's this looming sense of paranoia that looms with you, so even if you're doing something fun, the question of "am I losing money right now?" is always on your mind.

Even with the returns I achieved, I can't shake the feeling that much of my success was due to luck rather than skill.

Through the challenge, I was forced to re-evaluate my approach to trading with the 15-minute delay on stocks purchased. I began to consider the positives of passive investing with the challenge, as I couldn't help but feel that my successes from day trading were from pure luck.

Reflecting on my experience from the challenge, I believe that IF I had the money to invest, I would invest passively through a carefully managed ETF, since I don't think I would have the time or knowledge for managing my investments, and I probably have better things to do at that point. However, at this stage in my life, passive investing doesn't feel practical. I want access to my money when I need it, not just when the market opens on Monday, and I don't have enough to realize any meaningful profits.

For those with the financial means, ETFs represent a far more stable and less stressful way to grow wealth over time. I welcome the benefits that come from such an approach, but it feels distant for me right now. I believe that's why people are so drawn to day trading; that they feel like they could make money quickly and be successful easily. At least, that's how I felt.