Investment Portfolio Analysis

Qualitative and Quantitative Overview of Financial Portfolio

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1. Executive Summary

Stock markets have experienced unusually high volatility in the past couple of months, the large swings in market benchmarks and many escalating international and domestic political tensions in the U.S. have stirred overwhelming ambiguity in stock market speculation. In the face of substantial risk, we have decided to build our portfolio with a focus in stability in the long run, meanwhile capturing those stocks that we believe have great potential to grow in the future. In fact, in our pursuit of constructing a portfolio that generates high return while maintaining a relatively lower risk level, we implemented the following two strategies: Large-Cap investing and GARP investing.

2. Portfolio Rationale & Investment Strategies

Investment Strategy 1: Large-Cap Investing

The literal meaning of this strategy is to invest in companies with relatively large market capitalization[1]. The benchmarks for large companies stem from their dominance over their industries (Motley Fool, 2017), well-established historical track records, sustainable sales and growth, and relatively higher stability (Investopedia, 2019), and thus stock selection under large-cap investment strategy would involve both fundamental and quantitative analyses. In fact, the reason of choosing such strategy is due to three reasons. Firstly, as the market is currently infused with much uncertainty, it becomes increasingly important for us to target large companies with strong financial foundation. Given their management experience and information transparency[2], they are preferred by banks during economic downturns and thus

[1] **Large Market Capitalization**: benchmark for large capitalization is 10 billion USD.
[2] **Information Transparency** because large, well-established companies often have more complete public track records for investors to use in evaluation.

could be more capable in sustaining their sales and growth. For example, after comparing stocks across industries, we allocated shares of our portfolio in Johnson&Johnson, Eli Lilly and Co., P&G, Berkshire, and Visa, which are companies that have average capitalization of 300 billion and average beta[3] of approximately 0.5. These companies are also leading figures in their industries. Second, statistics has it that "the returns of smaller-stocks portfolio had greater variability" and that their returns are "disproportionately greater than their standard deviation" (Financial Analyst Journal, 1998). Large-cap stocks, excluding information technology, usually have betas lower than 1, especially those in the healthcare. Furthermore, large-cap companies usually allocate higher spending in R&D so we looked for companies with this feature. Referring to Figure 1 in the appendix, Johnson&Johnson, Apple, and Microsoft are among the top of the list in R&D spending and since investment in R&D encourages innovation and sustainability, this could support growth in the long run. Investing in these companies then supports our rationale to build a portfolio that demonstrates potential in the long run. Overall, given the same volatility, we selected stocks that are higher in market capitalization, and 80% of the companies we invested in have capitalization greater than 100 billion.

Investment Strategy 2: Growth at a Reasonable Price

We decided to implement GARP (Growth at a Reasonable Price) as our primary investment strategy to combine features of value and growth investing that suited our view of macroeconomic trends in an attempt to beat the benchmark index. According to Zacks Equity Research, companies that exhibit GARP characteristics are those that have robust earnings growth history, higher than industrial average ROE and impressive earnings prospects (Zacks,

[3] **Beta** is a measure of the volatility of the underlying asset to the volatility of the market

2019). When selecting specific securities that matched our investment criteria, we turned our focus towards the PEG ratio, otherwise known as the price to earnings to growth ratio. This ratio helped us determine which companies were trading at relative discounts to their intrinsic value whilst exhibiting wide economic moats which would lead to future growth. However, due to recent stock market volatility as a result of geopolitical tensions, we diluted the role of the PEG ratio in case we overestimated the true volatility of equity markets. To combat this, we put greater emphasis on more robust metrics, particular ROE, to aid in our screening of companies that have high growth potential. As companies with high ROE historically showed returns that outperformed their respective benchmarks (Delventhal, 2019), we felt confident in utilizing these two metrics to screen for companies that suited the characteristics of GARP firms.

3. Portfolio Performance

Over the course of the investment period, we were able to generate a total investment return of 2.80%, outperforming the benchmark index which produced a total investment return of 1.96%. On an annualized basis, this translates to our portfolio generating a strong return of 11.69% versus the benchmark which produced 8.08%. To achieve this, our group remained rigid in our investment strategy and stayed up to date on recent news to ensure we had a thorough understanding of the economic backdrop underpinning our performance. Within our group, we had split up individually to focus on specific sectors and asset classes to benefit from both the diversity of thought and sector expertise. Through this strategy, we were able to get valuable input from each group member that contributed greatly to our performance which ultimately led us to outperform the benchmark and generate an alpha of 17.36% as can be seen in figure 2 of the appendix.

Given our blend of top-down and bottom-up investment strategies, we were able to effectively diversify our portfolio and achieve a Sharpe ratio of 7.34[4] driven primarily by our low standard deviation of returns. This came as a direct result of our asset allocation and sector diversification, as we had invested in 8 different sectors and 14 different industries[5]. Moreover, through our analysis of the correlations between different sectors using Excel solver, we were able to effectively reduce our portfolio's idiosyncratic risk resulting in a high Sharpe ratio. We were also able to achieve a Sortino ratio of 13.78, implying that our portfolio downside standard deviation was low relative to our risk-adjusted return. This ratio was achieved through our rigid implementation of sector diversification, allowing us to maximize returns on cyclical industries due to our extensive macroeconomic research and active management skills[6].

To gain a clearer picture of the key drivers of our performance, we also performed sector attribution to dissect which sectors underperformed and overperformed during our investment period. Referring to figure 3 in the appendix, 0.82% of our return up was driven by our investments in the tech sector, which contrasted with the industry return of -0.22% as measured by the S&P 500 Information Technology industry tracker. Our portfolio outperformance could be attributed to our security selection, as our deep-dive analysis into the industry enabled us to outperform the index by picking companies least affected by macroeconomic events. Our second-best performer came from the oil & gas sector, which reflected the steady rise in oil prices during our investment period and supported our view of prices increasing due to geopolitical crises occurring in the Middle East. These two sectors combined with our investments in healthcare provided the bulk of our investment gains, with consumer

[4] Refer to figure 7 in the appendix
[5] Refer to figures 4 & 5 in the appendix
[6] Refer to figure 6 in the appendix

discretionary and financials providing moderate tailwinds to our overall returns. However, one sector that lagged was real estate, as we were relatively overweight in the sector which supported our view on diversifying into alternative assets. Yet, as certain macroeconomic events turned real assets relatively unfavourable, our mistiming of shifting allocations away from this sector ultimately hurt us but in no material fashion due to certain systematic errors.

Our risk management approach centered around risk diversification and targeting low volatility stocks to cap our losses whilst allowing for unlimited upside returns. Though we relied heavily on historic returns and volatility, our extensive macroeconomic research and scrutinizing approach to valuing business models gave us confidence in building our portfolio and following our risk management strategy. Rather than utilizing an absolute risk management approach, we focused on employing a benchmark risk assessment whereby we aimed to be within 5% of the benchmark portfolio's returns. Our focus towards industry diversification across low correlated sectors coupled with global exposure proved beneficial in achieving our risk management strategy, by lowering our overall portfolio standard deviation and creating a high Sharpe ratio and Sortino ratio that both beat the benchmark.

4. Learning Outcome & Reflection

We were able to outperform the benchmark on various measures including total investment return, Sharpe ratio and Sortino ratio. One of our key success factors was that we consistently stuck to our investment strategies and remained disciplined when screening for stocks. To get rid of the risk derived from small companies during the economic cycle, we selected stocks with more than 100 billion market capitalization and low beta's. This proved evident as tech stocks comprised a large portion of our portfolio return. However, one of our pitfalls came from the considerable loss on large-cap real estate investments, indicating that we must improve our research regarding the overall performance of the real estate industry in the future. Additionally, in the process of managing our portfolio, we found that there was an unexpected gap between the VWAP of Americold Realty Trust and the average price found on Yahoo Finance. This greatly impacted our profits and reminded us to be more careful prior to making investment decisions. On further note, as dividends are an essential factor that provide great benefits on investments, we will consider stocks with higher dividend yield in the future as a potential investment strategy.

5. Conclusion

Before choosing any specific investment strategy, as a group we had to generate our own forecast for the global economy for the next 3 years in order to produce the most effective investment plan. In recent years technological advances have made great revelations and are expected to continue to grow and develop. However, since most technology stocks have a relatively high beta, we deduced that diversification is crucial. Hence in our portfolio we put together a combination of technology, healthcare, real estate, consumer staple and discretionary stocks, ETFs, and bond market securities alongside cash. It is only reasonable that in order to outperform the benchmark, we had to make practical predictions about potential industries that we could invest in, and use our economic forecasts and apply them to the respective industries. In an event of economic downturn we found that investing in consumer staples, healthcare, and real estate stocks in order to protect our portfolio's value from diminishing. Conversely, we chose to invest the majority of our stock component in cyclical stocks, since our outlook on the economy for the next few years was relatively positive.

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7. Appendix 1 – Securities Rationale

Asset Class	Sector / Stock	Rationale Behind Purchase
Equities (61.1%)	**Technology (28%)**	
	Apple (9.8%)	• They are a dominant technology company and lead the industry, and have performed consistently well over the years • With a beta relatively close to 1 and alongside the tech industry continuously growing, this company comprised the majority of our portfolio
	Alibaba (5.6%)	• As a technology conglomerate mainly known for their wholesale e-commerce efficiency, we expected the company to continue to develop their investments business overall and generate future growth • With the growth of the Chinese economy growing by more than 5% per year, we chose this stock to invest in as also presumed that their growth would increase substantially over our investment horizon
	Salesforce (1.4%)	• As CRM and cloud computing solutions became more prominent than how they were a decade ago, we had high hopes for Salesforce to see growth like the rest of the industry • With healthy financial statements, we anticipated a relatively risk-free equity investment from this company
	Microsoft (2.8%)	• Microsoft has been an integral role player in the tech industry with new software and Windows products nearly every year • They consistently battle with rivals Apple and are still able to remain competitive in the heavily saturated industry
	Shopify (2.8%)	• Shopify provides excellent service like no other fast-growing company in the industry by providing e-commerce solutions to companies • With the emergence of e-commerce and their increasing popularity with consumers, Shopify's ability to remain the industry leader provided us reason that their solid business model would continue to keep competitors at bay
	Sony (5.6%)	• With the new PlayStation expected to release soon, we expect Sony to break new thresholds in their respective field • Sony has proven to perform quite well over the years and we expect it to continue to do so with the release of new products and improved efficiency of their operations
	Energy (1.75%)	
	Exxon Mobil (1.75%)	• Their low-cost business model has enabled them to become the industry leader in oil & gas production in North America • Their below average EV/EBITDA of 8.9x and NTM EV/Revenue of 1.38x made it relatively cheap compared to competitors and an attractive buy
	Real Estate (3.5%)	

	Americold Realty Trust (1.23%)	• Their dominance in the food infrastructure space and ability to connect retailers to consumers with ease makes this company unique and trades at a discount to industry peers • We anticipate population growth and demand for high-quality food to increase over the near-term thus making this investment an easy one
	Terreno Realty Corporation (2.27%)	• The company's six-market strategy of acquiring real estate makes it one of the most reliable real estate firms in the industry • This is proven as they have able to outperform the Dow Jones US real estate index since October 2018 and has continued to do so heading into 2020
	Healthcare (3.5%)	
	Johnson & Johnson (2.24%)	• The company's is a leading pharmaceutical company with reported sales growth to be 7% in 2018 • Though stock has trended sideway in 2019 due to some lawsuits, but its investment in R&D and its historical reputation among consumers give it a strong foundation in competition for the long-run • Ranked 2nd in revenue out of 546 companies in the industry • Relatively much higher-than-average profitability ratios compared to its competitors (ROE at 25.5%) • Non-cyclical stock can help us hedge against any major economic downturns
	Eli Lilly (3.36%)	• One of the world's largest research-based pharmaceutical companies • ROE is at 28.6% • Extremely low volatility against market (beta = 0.16), thus great for diversification • Non-cyclical stock can help us hedge against any major economic downturns
	Consumer Staples (10.5%)	
	Metro Inc. (4.2%)	• Experiencing much faster revenue growth than main competitors Loblaws • Has solid leverage ratio and strong balance sheet, impressive historical record of earnings
	Costco (4.2%)	• Increase in worldwide memberships have risen significantly in last 5 years and we expect this trend to continue • Very high ROE which indicates strong profitability and solid PEG ratio
	Proctor & Gamble (2.1%)	• Forward dividend yield of 2.48% was notable along with their ability to raise dividends during financial crisis of 2008-2009 • Expect to outperform relative consumer staples index due to strong fundamentals and extensive history of earnings growth
	Consumer Discretionary (4.66%)	
	Lululemon (2.33%)	• Consistently increasing sales growth in Europe and Asia is propelling it to one of the top apparel retailers in North America • Their low beta of 0.68 and P/E of 37.8x makes it an attractive investment for

		low volatility and diversification
	Starbucks (2.33%)	• Rapid overseas expansion calls for increased growth over next 3-5 years • We expect their strong branding, customer loyalty and sustainable sales growth to remain high and help us outperform the benchmark
	Financials/Others **(7.09%)**	
	Visa (1.12%)	• Being one of the largest financial services companies in the world with a healthy balance sheet, we had confidence in Visa's ability to generate return for its investors through their LTM ROE of 34.7x • With new competitors aiming to enter the market, we expect Visa to develop and integrate innovative ways of growing their earnings
	Berkshire Hathaway (2.24%)	• Being such a large conglomerate, Berkshire has proven to be an undervalued business making it an attractive investment • The company is also well diversified, leaving relatively low risk of the company performing badly relative to analyst expectations over the coming years
	Wells Fargo (1.4%)	• Due to their strong fundamentals we believed Wells Fargo was trading at a discount relative to their peers and had room for growth over the next 5 years • Due to steady share buybacks in recent years, Wells Fargo has been able to reward investors with a larger stake in the firm and their robust dividend yield of 3.8% places it well above other high profile large-cap banks in its peer group
	Disney (2.33%)	• Their recent release of Disney+ and continued pressure on Netflix to become the leading streaming provider globally makes Disney an incredibly attractive investment • Due to their strong and consistent record of high earnings across all of their business lines, we expect Disney to be one of our strongest performers in our portfolio
ETFs **(15%)**	iShares MSCI Switzerland (2.25%)	• Switzerland's stable economy and steady growth made it an attractive investment for diversification and residual income • The nation's consistently high GDP per capita and low unemployment made it a safe investment and a potential safe haven if the market were to crash
	SPDR S&P China (3.75%)	• To continue our international diversification we wanted to expose ourselves to the continued growth within China's mainland economy • With limited access to China's A shares we chose this ETF to get exposure to China's broader market and wide their wave of growth
	iShares MSCI Brazil (2.225%)	• South America's most stable and promising economy continued to show strong signs of growth as economic data such as GNP growth impressed us greatly • As we were not comfortable with researching specific Brazilian companies as we were not well versed with their markets we decided to use our macroeconomic intuition when purchasing this ETF
	iShares MSCI Australia (1.5%)	• Due to many similarities between the Australian market and the Canadian market we purchased this ETF for greater balance between our international exposure • Their financials driven market index ensured we would see slow but increasing growth over the next 3-5 years

	iShares MSCI Japan (3.75%)	• Japan's unique economy characterized by being the leading exporter in automobiles, steel products and semiconductors makes it one of the five largest economies in the world • We wanted to have a balance between growth and stability when investing in Asia hence our decisions to gain exposure to both China and Japan
	iShares MSCI Germany (1.5%)	• The economic leader of the Eurozone has showed record low unemployment and a stabilizing stock market over recent years • Though interest rates have been negative we believed valuations were beginning to stabilize in the majority of German stocks and thus wanted a broad market exposure to their largest and most stable companies
Bonds **(15%)**	US Treasury Bond – Maturity: 2022, 1.625% coupon rate (5%)	• This short-term US Treasury bond provides us security in our portfolio due its low duration and low exposure to volatility • Combined with a stable fixed income market and strong US dollar, we felt comfortable investing in this security to provide diversification and lower our standard deviation of returns
	US Treasury Bond – Maturity: 2024, 7.5% coupon rate (5%)	• This mid-term maturity bond impressed us with its high coupon rate, relatively low duration and negative correlation with many of our equity securities • To ensure consistent returns we invested in US Treasuries due to the economy's stable fixed income and money markets
	US Treasury Bond – Maturity: 2029, 5.25% coupon rate (5%)	• Our exposure to long-term bonds helped provide diversification to our portfolio along with consistent sources of income • Though we were at risk to higher duration we felt comfortable investing in long-term US Treasuries due to their little to no credit risk and strong US dollar
Cash **(8.91%)**		• Used as a precautionary measure in case liquidity issues arose • We ensured we had a high reserve amount in case we found promising companies that were worth investing in • Our cash amount helped us remain flexible when making portfolio adjustments

8. Appendix 2 – Graphs & Figures

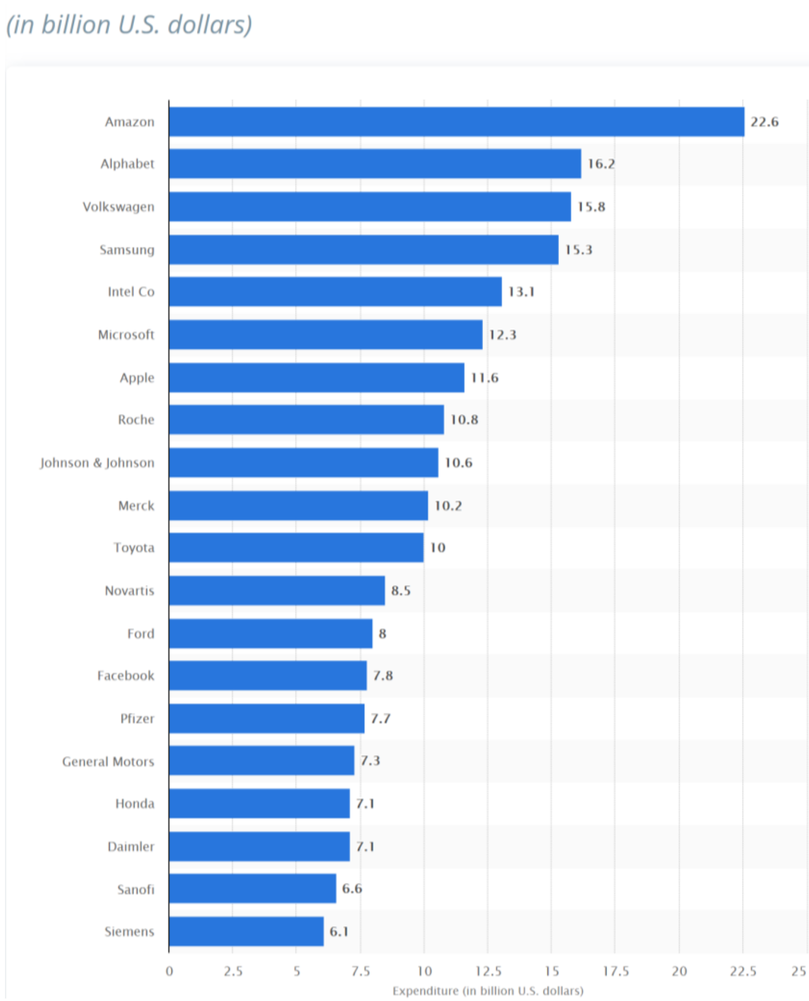

Figure 1: Top 20 Companies with Highest Spending in R&D (Statistica, 2019)

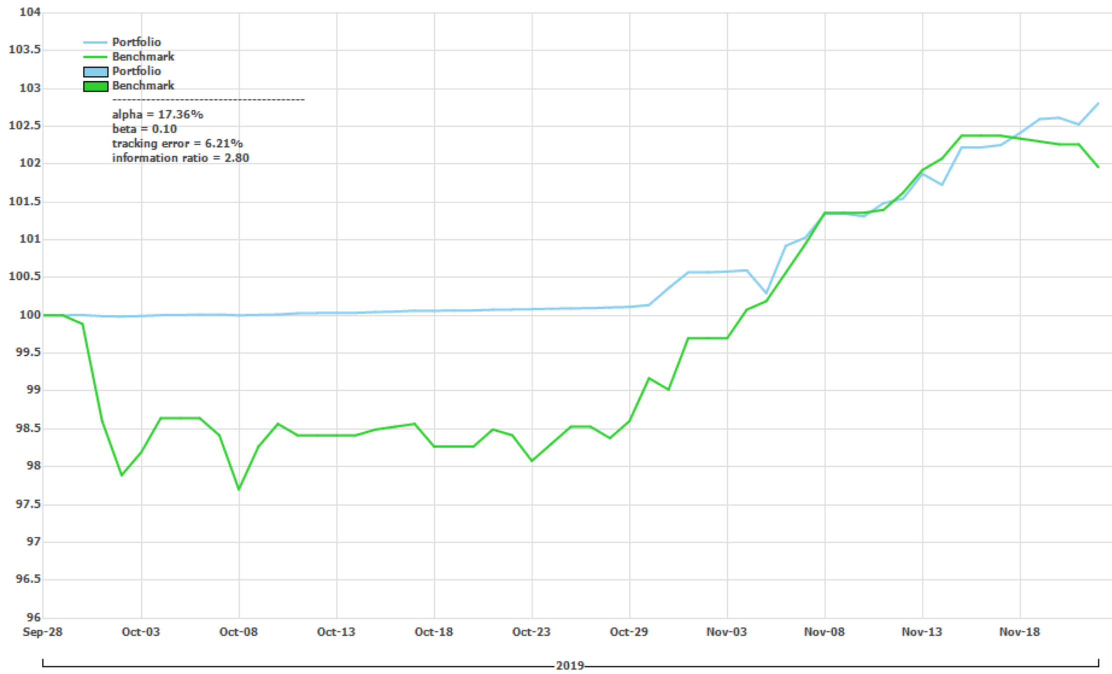

Figure 2. Portfolio Performance vs Benchmark

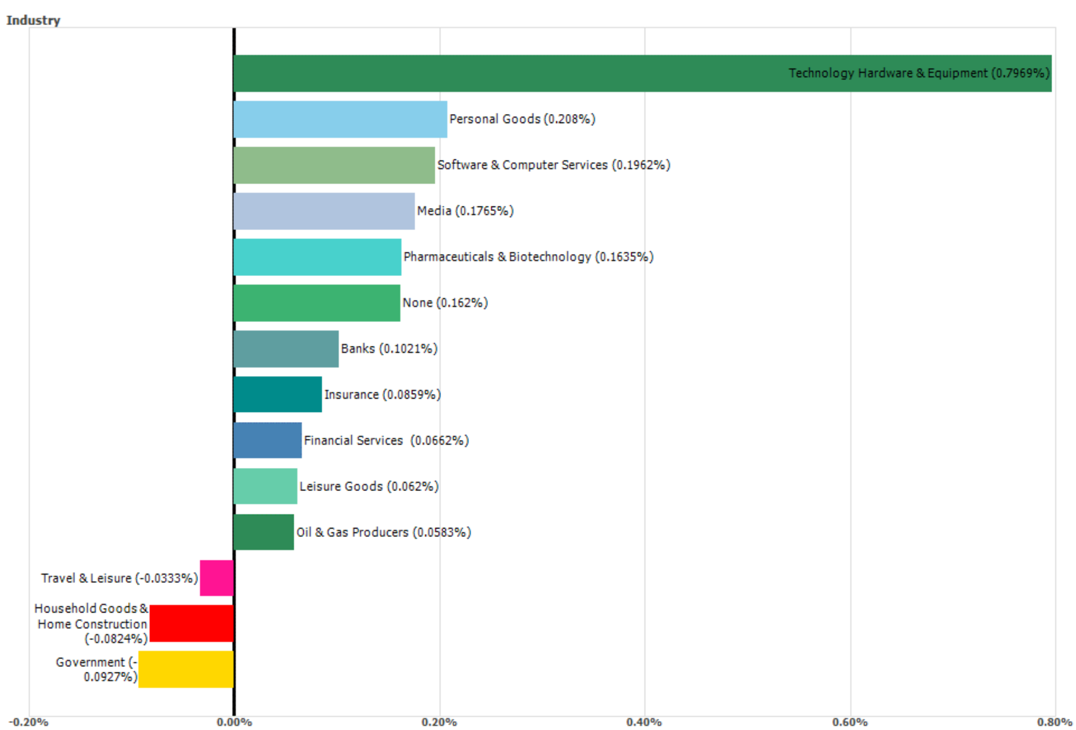

Figure 3. Sector Attribution

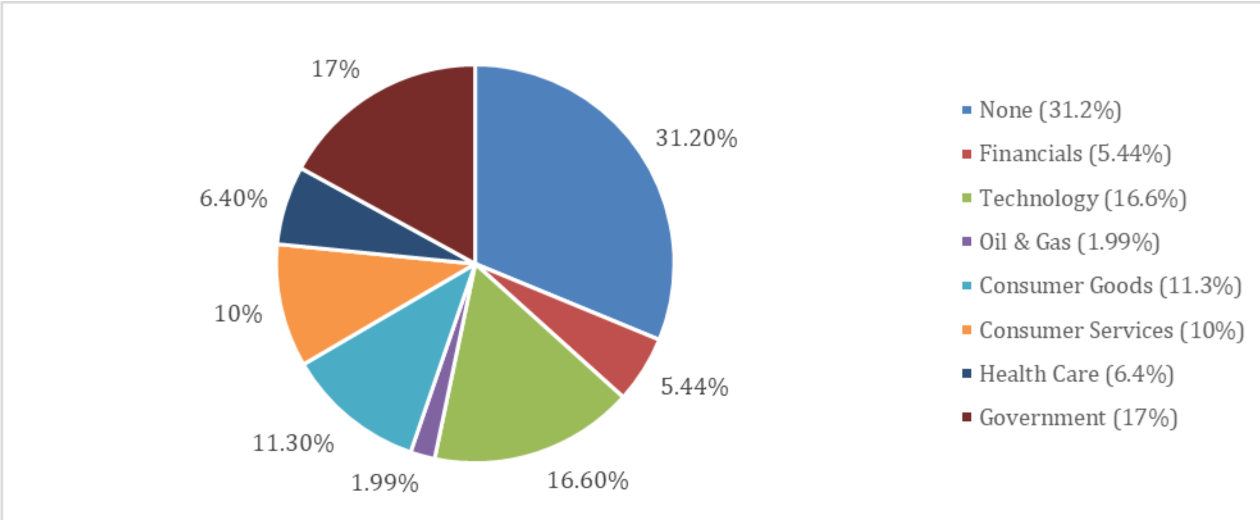

Figure 4: Asset allocation by sector

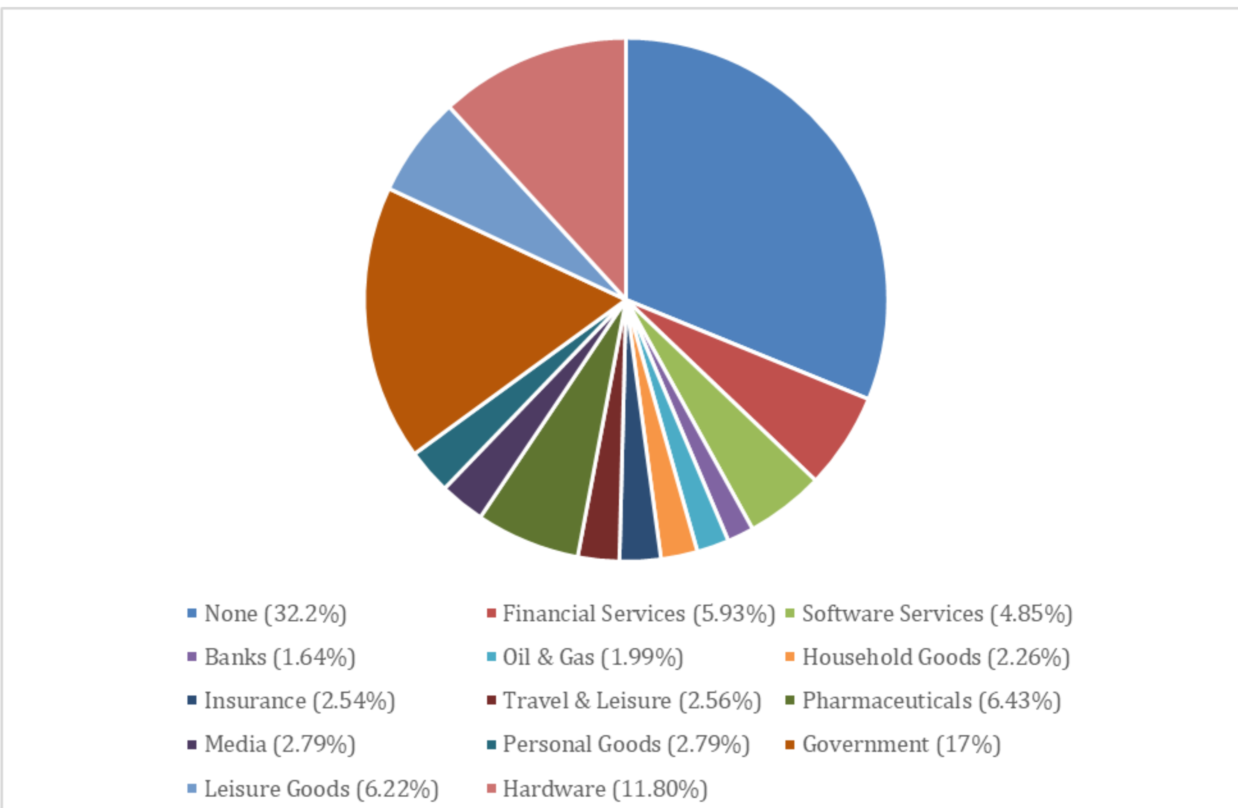

Figure 5: Asset allocation by industry

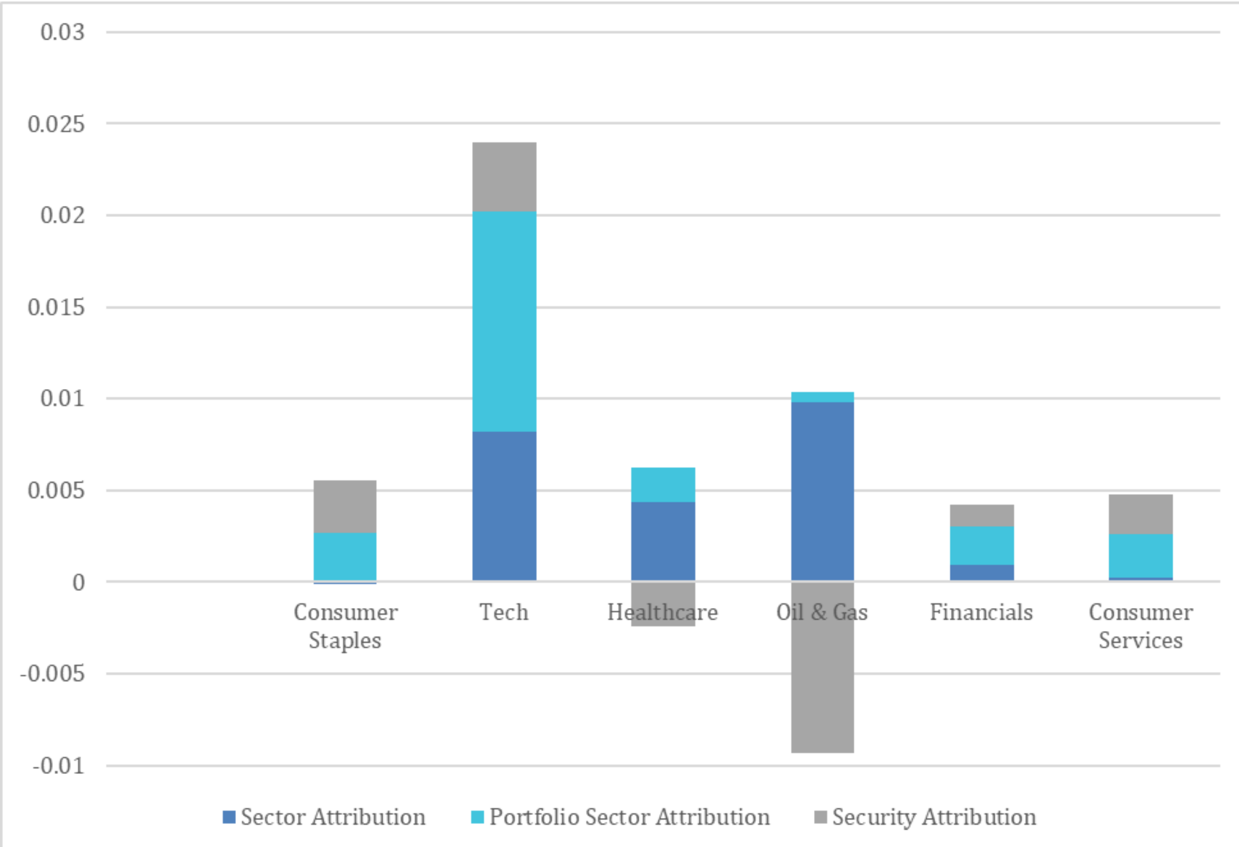

Figure 6: Attribution divided into sector, security and portfolio

Rank	Username	Portfolio Value	Sharpe Ratio	Sortino Ratio
1	Group 28	1,162,580.91	5.4756	6.304
2	jiaoziyu	1,099,116.85	2.8272	2.4876
3	beefgang	1,098,642.45	2.0212	3.0312
4	accountaholics	1,094,629.55	6.5686	11.0091
5	taxmaniandevils	1,093,709.71	4.1983	5.3498
6	RSM336 Group32	1,092,913.89	6.4883	8.8771
7	rsm336group10	1,081,361.02	4.7572	5.3657
8	CHL Investment	1,076,893.28	4.8367	11.289
9	nalgeners	1,075,562.51	4.6980	5.7985
10	336groupmoney	1,059,776.26	2.3561	3.2854
11	336group43	1,059,025.34	5.0684	7.3383
12	jrzhang	1,058,411.81	5.4310	5.1591
13	Xiao Xu	1,056,162.50	4.1151	5.0135
14	RSM336GROUP1	1,054,534.27	8.0922	16.6115
15	group#35	1,053,242.01	5.6144	12.5432
16	LIGMA Capital	1,052,503.88	3.3880	3.3987
17	Stay Alive	1,045,745.23	1.9579	3.4021
18	**04**	**1,045,510.63**	**7.3446**	**13.7757**
19	rpmgroup42	1,040,660.76	4.2850	7.4105
20	sallycai001	1,040,362.24	4.3876	5.8964
21	group12traders	1,040,144.40	4.9737	9.8779
22	staples	1,039,276.16	3.3983	5.4587
23	RSM336Group14	1,038,932.40	4.7533	8.0302
24	3group3	1,038,826.42	4.1740	7.1419
25	TaxTerrorists	1,036,598.69	2.3314	3.6954
26	RSM336Group23	1,035,354.15	3.7140	5.8548
27	GroupProject	1,035,234.37	6.1310	13.6719
28	RSM339_Group6	1,034,861.51	1.5384	1.1552

Figure 7: Portfolio value, Sharpe Ratio, Sortino as of November 28, 2019