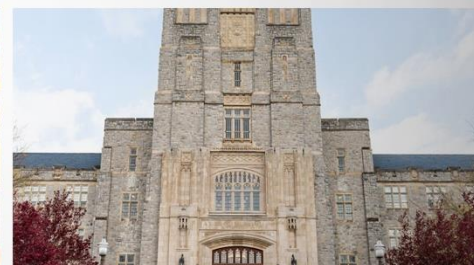
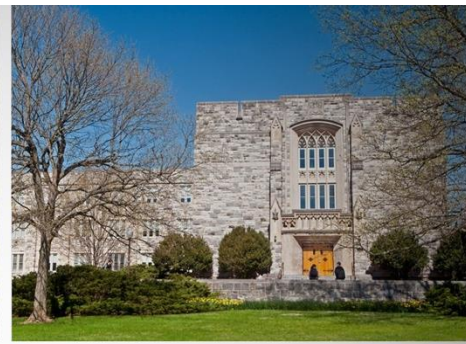


Virginia Tech SEED

2022 Annual Report



PAMPLIN COLLEGE OF
BUSINESS
VIRGINIA TECH.

Table of Contents

<u>Table of Contents</u>	<u>2</u>
<u>CEO Commentary</u>	<u>3</u>
<u>Faculty Advisor Note</u>	<u>4</u>
<u>Advisory Board</u>	<u>5</u>
<u>Sectors of SEED</u>	<u>6</u>
<u>Meet the SEED Team</u>	<u>7</u>
<u>SEED Placements</u>	<u>10</u>
<u>Year in Review</u>	<u>11</u>
<u>Performance Review</u>	<u>13</u>
<u>CIO Commentary</u>	<u>14</u>
<u>Sector Updates</u>	<u>17</u>
<u>Closing</u>	<u>24</u>

Letter from our Co-CEOs

Dear Alumni,

Over the past year, Virginia Tech SEED has continued to provide students with unparalleled learning opportunities preparing them both for success in school and after graduation. Often times, it is forgotten that outperformance is not the most important initiative of SEED, it is human capital development. With twenty-four students that have completed training, our technical base is as strong as ever. Armed with this knowledge, we have continued to uphold some of the strongest placements at Virginia Tech. This includes careers in investment banking, capital markets, sales and trading, valuation and asset management consulting, and more. While firms continue to see record setting application numbers, SEED has placed students at Goldman Sachs, Morgan Stanley, Bank of America, Citi, and McKinsey just to name a few (pg. 7). However, performance is important, and we saw no lack of activity with students having six buy-pitches, four sell-pitches, and a variety of other rebalances. While we underperformed our benchmark this year, SEED learned several valuable lessons in 2022. To name a few, we learned to stay disciplined in rocky waters, that complacency must be consistently challenged, and the people we surround ourselves with are more important than the work itself.

Looking into the future

As we look forward, we have chosen three targets for our time as CEOs: alumni engagement, training, and operational improvements. Alumni engagement has always

been a focus of ours and as we enter the new year, we have implemented a speaker series that allows alumni to speak to the organization regarding their career experiences. Additionally, we are assembling the first ever SEED Summit, a chance to have investment professionals host a conference at the University. In terms of training, the process needs more exposure to in-depth financial modeling. Going forward, we will extend the treatments of financial modeling, research skills, and presentation methods, while also focusing on public speaking experiences to prepare candidates for their internships and careers (pg. 7). Lastly, we will be continuing to improve our operational processes. The original bylaws have not been updated since their inception in 1992. With the help of our advisory board, we will be revising and updating rules. Additionally, we have added BamSEC to our software portfolio, and will continue improve on our internal systems of Google Drive and Teams. Also, we have created a “SEED Serves” initiative that facilitates volunteering with local Blacksburg organizations.

To conclude, we are optimistic about the upcoming year and believe the future of SEED is as bright as ever. With over 30 years of success, our organization continues to benefit from the countless hours spent by the members before. It is our pleasure to help guide the group into the next stage of its development.

Carson Kabance & Piyush Pokala
Co-CEOs

SEED Faculty Advisor

Dear SEED Alumni, Friends, and Supporters,

Notwithstanding the challenges of 2022, SEED continued to learn and explore how to value equities and to manage our \$5 million portfolio responsibly and effectively. The year brought tremendous upheaval, suffering, and market challenges. Russia's attack on Ukraine was a humanitarian tragedy and a threat to the world order. Global hunger became even worse, which is heartbreaking. The moderating pandemic continued to affect politics, society, and the economy. Inflation in the U.S. for the year was an unsettling 8 percent, the S&P 500 fell a jarring 19.4 percent, and the bonds issued by S&P 500 firms fell 14.2 percent. Safe havens were hard to find.

SEED's ongoing missions are to build human capital by educating our students about equity investing and portfolio management, to provide a world-class experiential learning opportunity, and to generate a favorable return relative to our benchmark, the S&P 500. Achieving these goals should naturally lead to exemplary professional placements. And SEED had one of its best placement records in 2022.

SEED celebrated its 30th anniversary in 2022! We had small celebrations in New York and Richmond, and we plan to make all SEED alumni aware of more regional celebrations in 2023. SEED is reaching out more

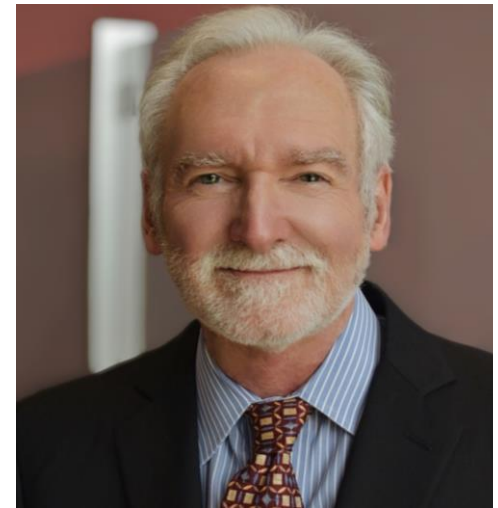
broadly and systematically to alumni and is planning more opportunities for alumni to get into contact with each other, interact with current SEED students, and to get together.

As faculty advisor, I am grateful to SEED's alumni, friends, and supporters. It is a career-defining honor and a privilege for me to be the faculty advisor. I thank our students for their commitment to excellence and for their robust work ethic. I am grateful to the Virginia Tech Foundation in general and in particular to CEO Justice Elizabeth McClanahan and AVP Dan Ward for their continuing support of and dedication to the students of SEED and Virginia Tech. I thank finance department head Professor Vijay Singal and Dean Roberta (Robin) Russell of the Pamplin College of Business for supporting SEED and my role as faculty advisor. I thank the members of the SEED Advisory Board for their guidance and vision for the continued improvement of SEED. I especially thank Chair Trey Snow, CFA, for continuing to be a great resource and source of inspiration to me and to SEED.

As this report indicates, in 2022 SEED continued to place more emphasis on diversity in its recruiting efforts with greater success – and we want to achieve more. Stock pitches routinely discuss environmental, social, governance (ESG) issues, and we continue learning from our quantitative strategy initiatives by consistently refining our value and momentum investing models and

management discipline. And SEED's analyst-in-training (AIT) program became more comprehensive and demanding.

I like to joke that SEED is about excellence, and we just happen to manage money. Thanks to our alumni, friends, and supporters who help us to continue pursuing excellence and learning how to manage our investment portfolio better! With your help, we will have an even better 2023.



Randall Billingsley

SEED Faculty Advisor

SEED Advisory Board



Trey Snow
Chairman



Chad Meade
Member



Christina Todd
Member



Dan Ward
Member



Duffy Fischer
Member



James Rosenstock
Member



Kevin Bennett
Member



Nick Cullen
Member



Nick D'Angelo
Member



Patrick Moody
Member



Tracy Castle-Newman
Member



Vanessa Bradford
Member

“SEED greatly appreciates the continued guidance of its advisory board. Through the expertise to our students and faculty, the organization is in as good of shape as ever”

– SEED Executive Team

Sector Descriptions

CONSUMERS

The Consumer Discretionary sector encompasses those businesses that tend to be the most sensitive to economic cycles. Its manufacturing segment includes automotive, household durable goods, leisure equipment and textiles & apparel. The services segment includes hotels, restaurants and other leisure facilities. The Consumer Staples Sector comprises companies whose businesses are less sensitive to economic cycles. It includes manufacturers and distributors of food, beverages and tobacco and producers of non-durable household goods and personal products.

ENERGY

The Energy sector comprises companies engaged in exploration & production, refining & marketing, and storage & transportation of oil & gas and coal & consumable fuels. It also includes companies that offer oil & gas equipment and services.

FINANCIALS

The Financials sector contains companies involved in banking, thrifts & mortgage finance, specialized finance, consumer finance, asset management and custody banks, investment banking and brokerage and insurance. It also includes Financial Exchanges & Data and Mortgage REITs.

HEALTHCARE

The Health Care sector includes health care providers & services, companies that manufacture and distribute health care equipment & supplies, and health care technology companies. It also includes companies involved in the research, development, production and marketing of pharmaceuticals and biotechnology products.

INDUSTRIALS

The Industrials sector includes manufacturers and distributors of capital goods such as aerospace & defense, building products, electrical equipment and machinery and companies that offer construction & engineering services. It also includes providers of commercial & professional services including printing, environmental and facilities services, and office services & supplies. It also includes companies that provide transportation services.

TECHNOLOGY

The Information Technology sector covers technology software & services, technology hardware & equipment, and semiconductors & semiconductor equipment manufacturers. Our Technology sector also contains companies that facilitate communication and offer related content and information through various mediums, primarily telecom and media & entertainment companies.

QUANTITATIVE STRATEGY GROUP

The Value-Momentum quantitative strategy balances two approaches to investing. It gives students the opportunity to learn more about the of role of quantitative analysis finance.

Executive Team



Carson Kabance

Co-Chief Executive Officer

Carson is a Junior at Virginia Tech studying finance with a concentration in the CFA route. In addition to SEED, Carson is the Co-Founder of the Investment Banking Group. He also serves as the Co-President of the Finance Club and is responsible for its post-covid rebirth. Next summer, Carson will be a IBD Summer Analyst at Morgan Stanley.



Piyush Pokala

Co-Chief Executive Officer

Piyush is a Junior at Virginia Tech studying Finance with concentrations in the CFA, CFM, and FAC routes. Additionally, Piyush is involved with the Investment Banking Group and the Club Tennis Team, where he holds the role of President. Next summer, Piyush will be an Investment Banking Summer Analyst at Wells Fargo.



Justin Smith

Co-Chief Investment Officer

Justin is a senior pursuing dual degree in Management Consulting and Business Information Technology from Fairfax, VA. Last summer, he was with Deloitte as a Risk and Financial Advisory Analyst in Arlington, VA. Upon graduation, Justin will be a Business Analyst with McKinsey & Co. in Washington, D.C.



Riley King

Co-Chief Investment Officer

Riley is a Junior from Washington, D.C. pursuing a double major in Finance and Accounting. She spent the summer of 2022 in Denver interning for Arrowmark Partners as an Investment Analyst for their small and mid-cap growth strategies. This summer she will be a Sales and Trading Summer Analyst at Citi.



Jake Vodovoz

Chief Quantitative Officer

Jake is a Senior from Medford, NJ studying FinTech and Data Analytics. This past summer, he interned at Campion Asset Management as a research intern, where he enhanced his knowledge of the financial markets and portfolio management. Outside of SEED, Jake enjoys working out, traveling, poker, and spending time with friends.

Lead Analyst Team



Justin Harrison

Consumers Lead Analyst

Justin is a Junior at Virginia Tech studying Finance with a concentration in the CFA route. Next summer, Justin will be a Summer Analyst at Black Rock.

Jackson Oleyar

Energy Co-Lead Analyst

Jackson is a Senior at Virginia Tech studying BIT with a concentration in the DSS option. Next summer, Jackson will be a FSO Technology Consultant at EY.



Kevin Wang

Energy Co-Lead Analyst

Kevin is a Junior at Virginia Tech studying FinTech & Big Data Analytics. Next summer, Kevin will be a Restructuring Intern at FTI Consulting.

Kobey Simon

Financials Lead Analyst

Kobey is a Junior at Virginia Tech studying Finance with a concentration in the CFA route. Next summer, Kobey will be an Equity Capital Markets Summer Analyst at Bank of America.



Maddi Koch

Healthcare Lead Analyst

Maddi is a Senior at Virginia Tech studying Marketing and Finance with a concentration in the CFA route. Next summer, Maddi will be a Corporate Finance Intern at Pepsi.

Joaquin Baquerizo

Industrials Lead Analyst

Joaquin is a Senior at Virginia Tech studying Industrial Engineering. Next summer, Joaquin will be a Sales & Trading Analyst at Citi.



Pat Caiafa

Technology Lead Analyst

Pat is a Senior at Virginia Tech studying Finance with a concentration in the CFA route. Pat is currently looking for opportunities within Equity Research and Asset Management.

Analyst Team



Alex Nazari
Consumers



Kyle Canestra
Consumers



Wes Stone
Consumers



Chris Royal
Energy



Justin Phrampus
Energy



Will Stinson
Energy



James Schooling
Financials



Kennedy Kabance
Financials



Olivia Isley
Financials



Connor Jordan-Hyde
Healthcare



Giorgio Saade
Healthcare



Jake Alley
Healthcare



Liam Desmond
Healthcare



Tyler Phillips
Healthcare



Ansuman Rath
Industrials



Charlie Setash
Industrials



Maddy Marietta
Industrials



Max Skirkanaich
Industrials



Nate Doggett
Technology



Nick Carbone
Technology



Sebastian Franks
Technology



Eera Rasne
Value Momentum



Tim Carey
Value Momentum



Tyler Boehm
Value Momentum



Viktor Fedotov
Value Momentum

SEED Placements

2023 Senior Full-Time Placements

Name	Position	Firm	Division	Location
Justin Smith	Co-CIO	McKinsey & Co.	Management Consulting	Washington, D.C.
Lukas Khodayar	Former Co-CEO	Raymond James	Investment Banking	Washington, D.C.
Charlie Setash	Former Co-CEO	Wells Fargo	Investment Banking	Charlotte, NC
Ian Johnson	Former CIO	Wells Fargo	Investment Banking	Charlotte, NC
Jackson Oleyar	Lead Analyst	EY	FSO Tech Consulting	Arlington, VA
Joaquin Baquerizo	Lead Analyst	Citigroup	Sales and Trading	New York, NY
Chris Royal	Former Lead Analyst	Goldman Sachs	Investment Banking	New York, NY
Jake Alley	Former Lead Analyst	Epic Systems	Project Management	Madison, WI
Matthew Zayas	Former Lead Analyst	Deloitte	GPS Finance	Richmond, VA
Olivia Isley	Former Lead Analyst	Wells Fargo	Investment Banking	Charlotte, NC
Wes Stone	Former Lead Analyst	Microsoft	Corporate Finance	Seattle, WA
Bryce Dunleavy	Analyst	HSBC	Sales and Trading	New York, NY
Kyle Canestra	Analyst	Deloitte	Risk & Financial Advisory	Arlington, VA
Nate Doggett	Analyst	Amazon	Software Engineering	Arlington, VA
Shravan Mohan	Analyst	Bank of America	Sales and Trading	New York, NY
Tyler Phillips	Analyst	KPMG	Cybersecurity	Tysons, VA

2023 Internship Placements

Name	Position	Firm	Division	Location
Carson Kabance	Co-CEO	Morgan Stanley	Investment Banking	New York, NY
Piyush Pokala	Co-CEO	Wells Fargo	Investment Banking	Charlotte, NC
Riley King	Co-CIO	Citigroup	Sales and Trading	New York, NY
Jake Vodovoz	CQO	MidCap Financial	Investment Management	Bethesda, MD
Justin Harrison	Lead Analyst	BlackRock	Financial Institutions	New York, NY
Kevin Wang	Lead Analyst	FTI Consulting	Corporate Finance	Richmond, VA
Kobey Simon	Lead Analyst	Bank of America	Equity Capital Markets	New York, NY
Maddi Koch	Lead Analyst	PepsiCo	Sales Management	Wilmington, DE
Alex Nazari	Analyst	Redburn	Sales and Trading	New York, NY
Ansuman Rath	Analyst	EY	M&A Consulting	New York, NY
Max Skirkanich	Analyst	Davenport	Investment Management	Richmond, VA
Nick Carbone	Analyst	Bank of America	Investment Solutions	New York, NY
Tim Carey	Analyst	Next Sparc Growth Partners	Private Equity	Miami, FL
Will Stonson	Analyst	Davenport	Investment Management	Richmond, VA



2022 in Review

RECRUITMENT:

The Fall of 2022 kicked off a new recruitment process. Formerly, SEED recruitment consisted of three, essay-like questions to apply. For those that moved on, they then participated in a stock pitch and behavioral interview. With the changing format of the banks and companies alike, SEED believe it was time to change. We implemented a new interface for our original application, added a second round of 'video interviews' similar to internship processes, and ended the process with super days, consisting of a stock pitch and two behavioral interviews.

Fall 2022 Statistics



143 Applications

3.63 Average GPA



40% Female AIT Class

Application ➡ Video Interview's ➡ Superday's

TRAINING PROCESS:

Throughout 2022, Virginia Tech SEED continued to provide students with top-tier learning opportunities by educating with real-world scenarios. Led by then Co-CEOs Lukas Khodayar and Charlie Setash, 24 students improved their research, financial modeling, and pitching skills, graduating the training process, and becoming full-fledged members of SEED. Training consists of 12-weeks of weekly classes, a group pitch, a capstone project, and 7 weeks of rotations throughout all of SEED's sectors.

Looking forward, SEED's Co-CEOs are placing a higher emphasis on public speaking, financial modeling, research, and high quality 'work-product'. By doing this, students will be more prepared for internships and full-time placements as they will gain exposure to real world projects. Historically, SEED has based a large portion of its financial modeling from Bloomberg pulled date. Given the addition of BamSEC, trainees are forced to create financial models from raw financial reports, improving their accounting and making it a necessity for them to understand a company's accounting. SEED looks to create a more fluid form of communication with alumni to ensure training is up-to-date with company standards.

QUANTITATIVE STRATEGY INTIATIVE:

Over the past 3 years, SEED has made immense progress in introducing research-backed algorithmic investing strategies into the portfolio. Pre-covid, the Quantitative Strategy sector retired off Quantopian, their previous platform to find a more reliable third-party financial software. They now use Equities Lab, which has aided in refining the fundamentals of both the quantitative value and momentum strategies and reinstated confidence to invest in the algorithm once again. The Quantitative strategy sector is currently converting the value momentum strategy from Equities Lab into a private interactive interface created through Python and SQL. This in turn, offers students a hands-on learning experience to broaden not only their knowledge of the capital markets, but to also enhance their computer science and data analysis skills.

On October 24th, 2022, the sector purchased 15 different holdings distributing \$150,000 equally across the positions. Throughout the course of the holding period, the sector closely monitored the holdings, as 6 of the stocks on the quantitative value strategy sold off. This led to the implementation of the average true range stop loss, which will be updated once the strategy rebalances for Q1 2023.



Fall 2022 NYC Trip

Virginia Tech SEED travelled to New York City last October for their annual networking trip. SEED had the chance to meet and network with a group of Virginia Tech SEED alumni while being exposed to the finance industry in New York City. The group learned best practices related to recruiting and received valuable advice on how to 'break into Wall Street' while visiting Alliance Bernstein, Bank of America, Citigroup, Credit Suisse, Goldman Sachs, Houlihan Lokey, Morgan Stanley, RBC, and Wolfe Research. Additionally, SEED greatly appreciates all those alumni that took time out of their busy schedules to join us for our 30-year reunion. Over 40 alumni joined us for drinks and hors d'oeuvres, offering a wonderful opportunity for our

current members to interact with industry professionals. The New York Trip is an essential experience for the younger members of the group as they gain an immense amount of knowledge about the industry and different career paths. A key goal of SEED is to build human capital and prepare our members to succeed in the real world, visiting alumni and these major banks allows our members to get an out of the classroom experience that is hard to find anywhere else. This trip is a huge resource to our members that would not be possible without our great alumni who spoke with and welcomed us into their organization. SEED would like to thank everyone who hosted us on our trip to New York and made the trip memorable.

Thank you to the following firms for hosting SEED



Portfolio Insights

SEED Portfolio

Year Beginning Portfolio Value	\$5,350,622
Year Close Portfolio Value	\$4,892,045
Cash Balance	\$239,680

Performance

SEED	-22.24%
S&P 500	-19.44%
SEED vs. S&P 500	-2.80%

Key Statistics

Portfolio Beta	0.95
Sharpe Ratio	-1.17
Treynor ratio	-23.25

Sector Weightings

Consumers	20.36%
Energy	9.26%
Financials	13.72%
Healthcare	14.16%
Industrials	7.73%
Technology	29.75%

Sector Analysis

	SEED	BNCH	Relative
Consumers	-4.5%	-26.3%	21.9%
Energy	22.4%	24.0%	-1.6%
Financials	-27.5%	-16.5%	-11.0%
Healthcare	0.9%	-2.1%	3.0%
Industrials	-9.4%	-6.6%	-2.8%
Technology	-42.8%	-30.7%	-12.1%

Top 5 Performers

XOM	80.26%
XLE	57.60%
CVX	52.95%
MRK	44.77%
ABBV	19.36%

Bottom 5 Performers

ADBE	-40.65%
FRC	-40.98%
BX	-42.66%
SQ	-61.09%
META	-64.22%

Current Holdings

SEED Holdings

	Ticker	Purchase (\$)	Market Value (\$)	Weights
Alibaba	BABA	120,259	65,715	1.4%
Autozone	AZO	88,281	150,437	3.1%
Conagra Brands	CAG	124,393	143,190	3.0%
Constellation Brands	STZ	9,849	9,965	0.2%
Deckers Outdoor	DECK	83,490	93,803	2.0%
Dollar General	DG	111,332	137,161	2.9%
TJX	TJX	89,791	105,311	2.2%
Vacasa	VCASA	85,777	15,942	0.3%
Yum Brands	Yum	102,258	122,316	2.6%
Consumers BNCH	XLP	131,315	129,270	2.7%
Chevron	CVX	33,383	52,591	1.1%
Constellation Energy	CEG	30,525	40,605	0.8%
Dominion Energy	D	99,457	79,716	1.7%
Duke Energy	DUK	92,180	100,930	2.1%
Exxon Mobil	XOM	23,765	25,627	0.5%
Kinder Morgan	KMI	13,518	15,712	0.3%
Energy BNCH	XLE	77,482	127,356	2.7%
Blackstone	BX	92,787	110,469	2.3%
Coinbase	COIN	45,568	15,041	0.3%
Fifth Third	FITB	107,746	82,320	1.7%
First Republic Bank	FRC	116,586	113,967	2.4%
Morgan Stanley	MS	101,312	142,409	3.0%
Prologis	PLD	64,457	70,569	1.5%
Vici Properties	VICI	79,065	81,551	1.7%
Welltower	WELL	38,462	39,264	0.8%
Abbvie	ABBV	85,422	137,530	2.9%
Laboratory Corp	LH	100,104	121,743	2.5%
Merck	MRK	103,199	143,791	3.0%
UnitedHealth	UNH	84,755	130,424	2.7%
Veeva Systems	VEEV	78,177	60,518	1.3%
Healthcare BNCH	XLV	82,766	82,461	1.7%
Ameresco	AMRC	70,672	68,282	1.4%
Roper Technologies	ROP	84,227	81,233	1.7%
ZIM	ZIM	44,635	12,514	0.3%
Materials BNCH	XLB	38,455	36,121	0.8%
Industrials BNCH	XLI	164,822	171,376	3.6%
Adobe	ADBE	221,278	184,755	3.9%
Apple Inc	AAPL	248,348	259,210	5.4%
Block	SQ	169,959	50,712	1.1%
CrowdStrike	CRWD	125,229	81,916	1.7%
Meta Platforms	META	246,715	149,342	3.1%
Microsoft	MSFT	258,887	285,386	6.0%
Servicenow	NOW	217,635	188,311	3.9%
SS&C Technologies	SSNC	91,064	66,168	1.4%
Taiwan Semiconductor	TSM	39,008	28,381	0.6%
Communication BNCH	XLC	204,448	127,557	2.7%
Cash	-	239,680	239,680	5.0%

CIO Commentary

In 2022, the Student-Managed Endowment for Educational Development (SEED) delivered a total return of -20.66%. The S&P 500 Index, our benchmark, returned -19.64% over the same year, giving us an active return of -2.55% for 2022. Thus, SEED underperformed the benchmark by a considerable margin. We concluded 2022 with \$5,080,374 in assets under management (AUM). SEED's risk-adjusted return using Jensen's Alpha was -3.59% based on our portfolio beta of 0.95. With a -20.66% absolute return, a risk-free rate of 1.43% based on the one-month yields on U.S. Treasury bills in the year 2022, and a weighted portfolio beta of 0.95, we concluded 2021 with a Treynor ratio of -23.25. This underperformed the market on a risk-adjusted basis as the S&P 500 Treynor ratio was -23.52. Exhibit 1 portrays SEED's performance vs. the S&P 500 for the year 2022.

Exhibit 1: Risk-Adjusted Return vs. Relative Performance

Risk Adjusted Performance		SEED vs. S&P 500 Performance	
SEED Return	-20.66%	SEED Return	-20.66%
CAPM	-17.07%	S&P 500 Return	-18.11%
SEED Alpha	-3.59%	Raw Relative Performance	-2.55%

For analyst coverage purposes, SEED condenses the eleven sectors of the S&P 500 into six sectors. Real Estate is included in SEED's Financials sector, Materials is included in Industrials, Utilities is included in Energy, Consumer Staples and Consumer Discretionary make up Consumers, and Information Technology and Communication Services make up Technology. The newly implemented Value Momentum Sector is disregarded in our sector weighting comparison as it can hold equities across any sector output from the quantitative strategy. Exhibit 2 shows our respective relative weightings in each of the six condensed sectors in SEED as of the end of 2022. Exhibit 3 shows our respective relative weightings in each of the eleven sectors in the S&P 500. We ended 2022 with 4.89% and 14.49% in cash and ETFs, respectively (19.38%). This is higher than last year's total cash and ETFs of 15.16%. Although these cash and ETF positions were not added to, they grew as a percentage due to a combination of concerns of diversifying from the benchmarks with the volatility of the market and the other holdings underperforming the market. However, as it is one of SEED's primary goals to develop our human capital, we intend to actively seek out undervalued areas of the market and consequently reduce the amount of our portfolio held in other ETFs.

CIO Commentary

Exhibit 2: SEED Sectors vs. S&P 500 Weightings

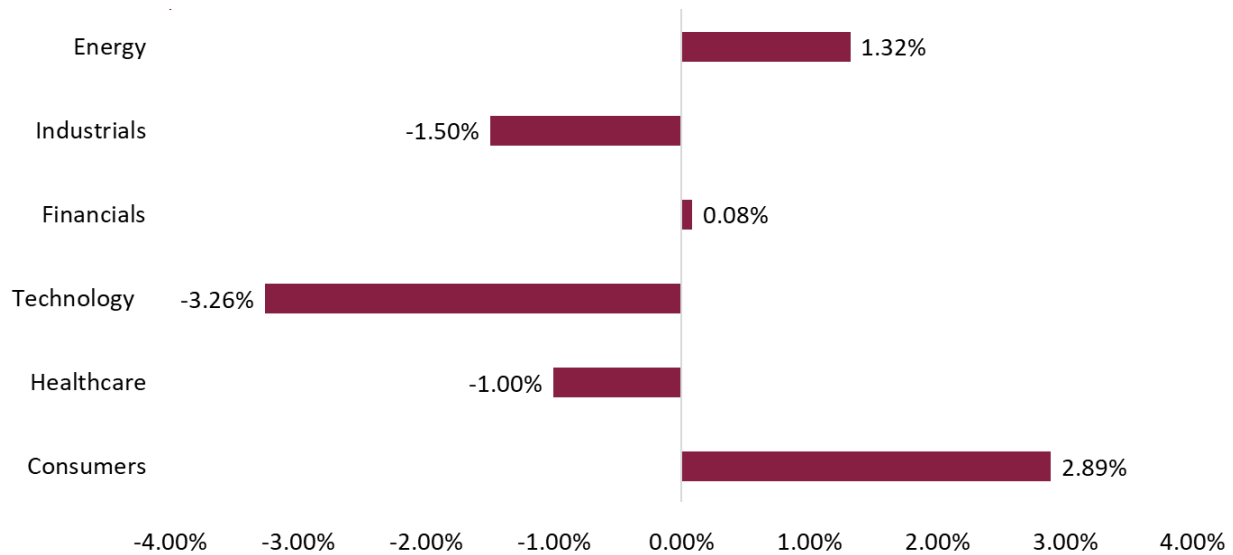
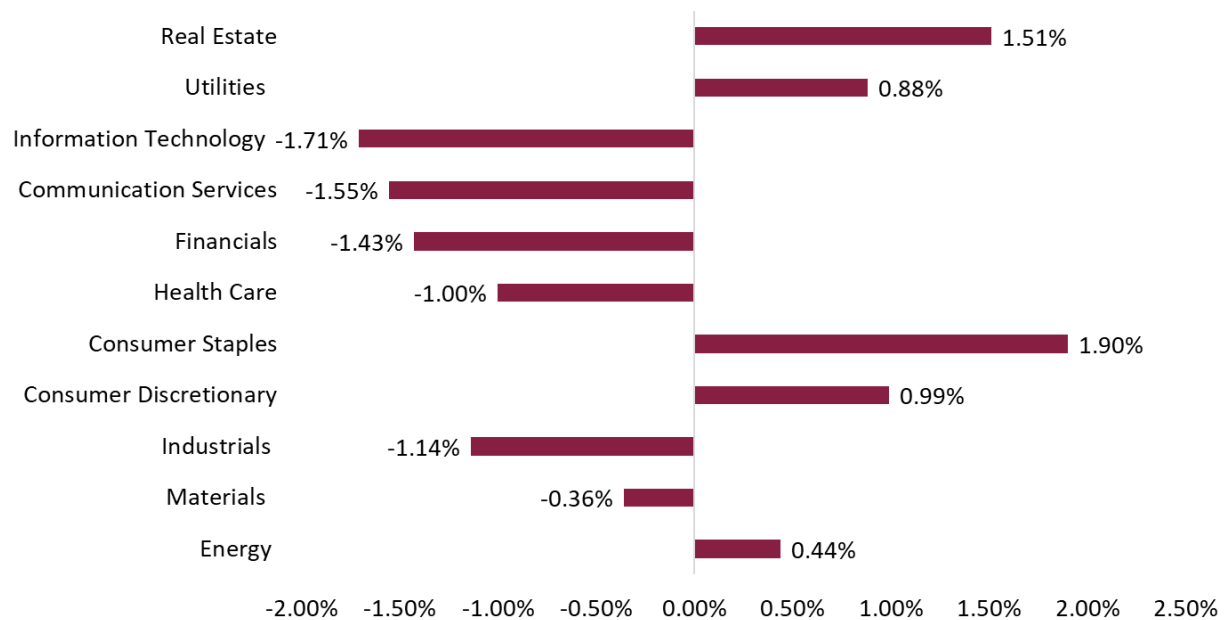


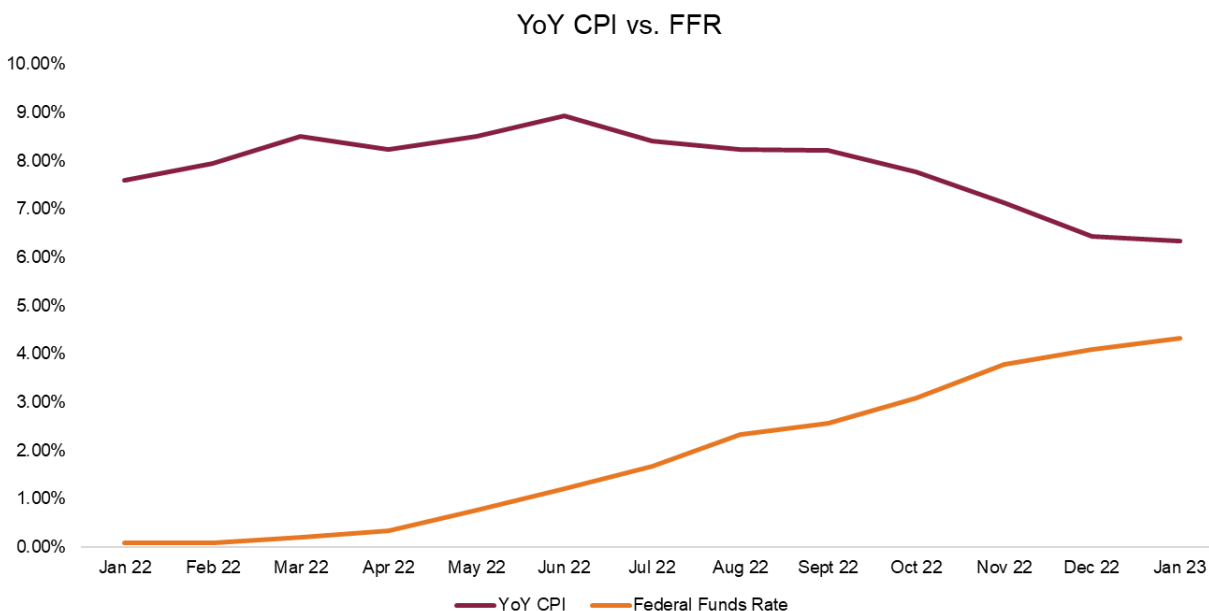
Exhibit 3: SEED vs. S&P 500 GICS Weightings



CIO Commentary

2023 Investment Outlook

During the year of 2022, we faced a difficult year in regards to performance, and it is important to evaluate how we might differ our strategy in the future. A year filled with raising rates, supply chain constraints, and international conflict was a learning experience. The most apparent macroeconomic event being that the federal reserve raised rates seven times during 2022, making their target range the highest it had been in over 15 years. The contribution this made to the turbulence of the market was significant and we saw heavy effects on demand and the market reacted accordingly. It made some weaknesses in our portfolio diversity more apparent, and we will take advantage of this realization and learning experience by establishing a goal to emphasize research on uncapped sub-sectors in 2023.



Looking forward to 2023, we recognize the need to capitalize on the current volatility of the market. SEED strives to adapt and evolve our strategy to better accommodate current market conditions, while continuing to stay in line with our value-based approach. In a time of market uncertainty, we believe it is crucial to stay deeply rooted in our fundamentals, while simultaneously assessing how we might revise our research and valuation to better accommodate the market. A main goal we have for the future is diversification of our portfolio away from the benchmark and into sub-sectors we don't currently allocate capital towards. We recognize that during a time where a potential recession is looming in the future, there is typically a flight to safety by the average investor, and we hope to offset this unintentional bias by encouraging research into unpenetrated markets. During times of market volatility, it is important to capitalize on the opportunity to invest in companies we believe are undervalued and are simply facing the repercussions of an economic downturn.

Members



Justin Harrison – Lead Analyst
harrisonjr@vt.edu



Alex Nazari - Analyst
alexnazari@vt.edu



Wes Stone - Analyst
wesstone@vt.edu



Kyle Canestra - Analyst
kylec23@vt.edu

Consumers Sector

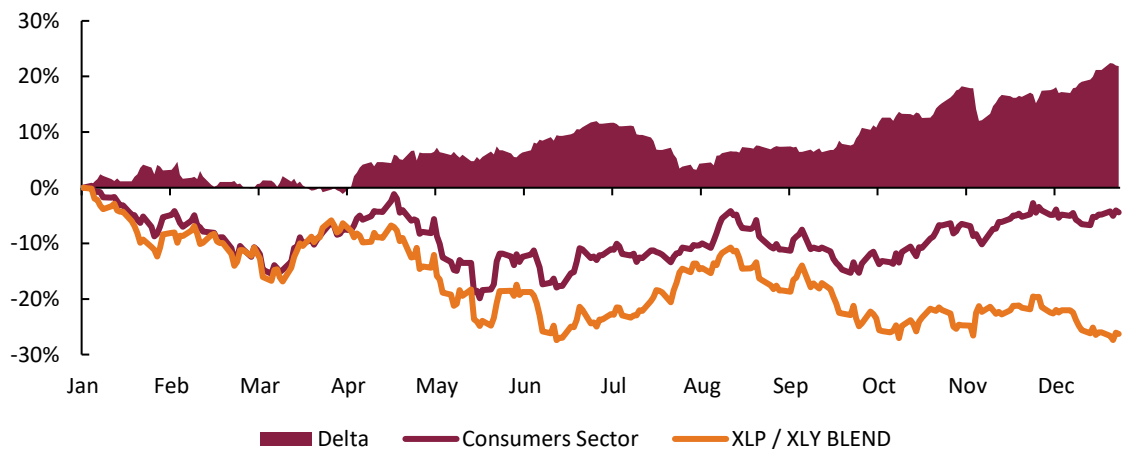
Portfolio Update:

In 2022, the consumers portfolio outperformed the sector's blended benchmark (XLY/XLP) by 21.87%. Throughout the year's market turmoil, the sector's low beta greatly affected annual returns. Some of the sectors best individual performers included AutoZone (+17.1%) and Conagra Brands (+12.0%). During the year, we made a few changes to the portfolio. First, we sold Constellation Brands (STZ) in April and replaced it with a position in the XLP. Second, we purchased Vacasa (VCSA) in May, to give us a unique, high growth potential name in the rental management space.. It was apparent that the companies with the highest degree of pricing power were able to successfully push off increased costs to their customers via higher prices. We also noticed consumers being forced to trade down to more affordable brands as they fought against higher food prices and higher prices at the pump. Currently our largest holdings include AZO (14.51%), CAG (14.37%), Dollar General (13.14%) and Yum! Brands (12.37%).

Semester Outlook:

Our sector is anticipating growth for both consumer staples and consumer discretionary segments in 2023. With our holding in Dollar General and their recent announcement of transitioning into Consumer Staples, we have found interest in increasing our exposure to Consumer Discretionary companies as many of their valuations have been brought down this year and so we can rebalance our portfolio between Discretionary and Staples. As a result, we are focused on conducting research into promising Discretionary industries such as hospitality and internet retail, among others. In addition, we are excited to reevaluate our investments in companies that have demonstrated positive performance, as part of our plan to ensure the success of our sector portfolio. We are proud to have outperformed the blended benchmark by the end of 2022 and remain hopeful that this trend will continue in 2023.

Consumers Sector Vs Blended Benchmark



Members



Jackson Oleyar – Co-Lead Analyst
joleyar@vt.edu



Kevin Wang – Co-Lead Analyst
kevinwang@vt.edu



Chris Royal - Analyst
croyal@vt.edu



Justin Phrampus - Analyst
jphramp@vt.edu



Will Stinson - Analyst
willstinson80@vt.edu

Energy Sector

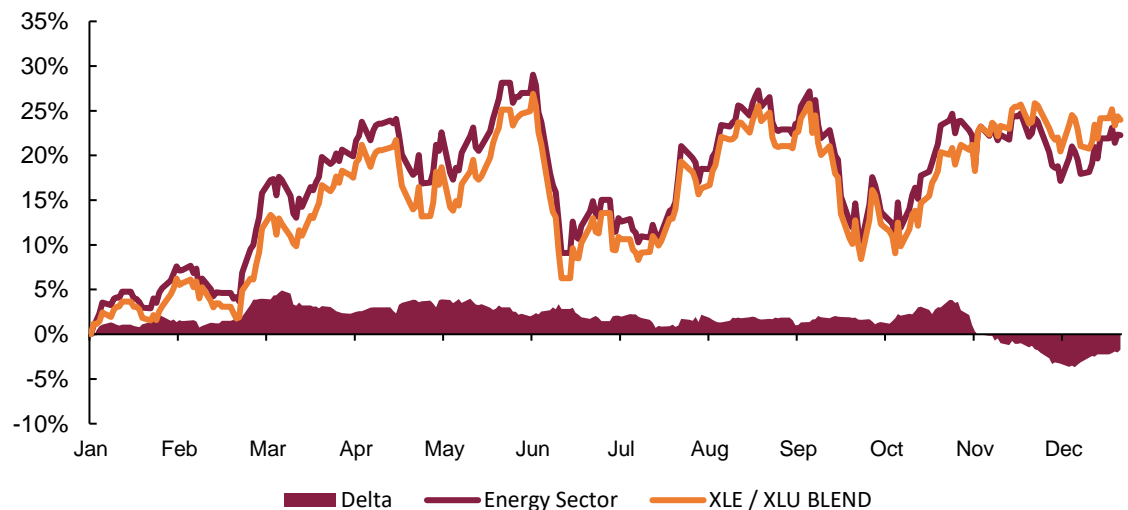
Portfolio Update:

In the energy portfolio, XOM, CVX, and KMI have largely aligned with the XLE performance, with XOM exhibiting a favorable earnings outcome. Meanwhile, DUK's performance is consistent with that of the XLU, while D lags the XLU. In line with the objective of diversifying into renewable energy, an investment was made into CEG, a leading nuclear energy producer in the North American utility sector, in April. CEG's exceptional performance reflects the growing demand for renewable energy sources. The \$3.15 billion dollar acquisition of REGI, the largest bio-diesel producer in North America, by CVX in June, further strengthened the portfolio's position in renewable energy. XOM's consistent outperformance of the XLE adds stability to the portfolio's investments in oil companies, along with CVX. The portfolio is diversified with holdings in natural gas (KMI), nuclear (CEG), and various traditional and renewable energy sources (DUK, D) from the utility sector.

Semester Outlook:

For the upcoming semester, our energy portfolio aims to diversify its utility holdings by divesting from D and seeking alternative companies. We plan to concentrate investments in successful supermajors, as demonstrated by our acquisition of SHEL, with the goal of maximizing returns and minimizing risks. The global energy sector is expected to perform well relative to the benchmark, due to positive macroeconomic trends and geopolitical developments, such as the resolution of the conflict in Russia and Ukraine, the easing of Covid-19 restrictions in China, and decreasing inflation. Our Energy portfolio remains committed to long-term growth and stability through sound investment strategies and a focus on high-quality holdings.

Energy Sector Vs Blended Benchmark



Members



Kobey Simon – Lead Analyst
kobeyrs@vt.edu



James Schooling - Analyst
jrschooling@vt.edu



Kennedy Kabance - Analyst
kennedykabance@vt.edu



Olivia Isley - Analyst
oliviai@vt.edu

Financials Sector

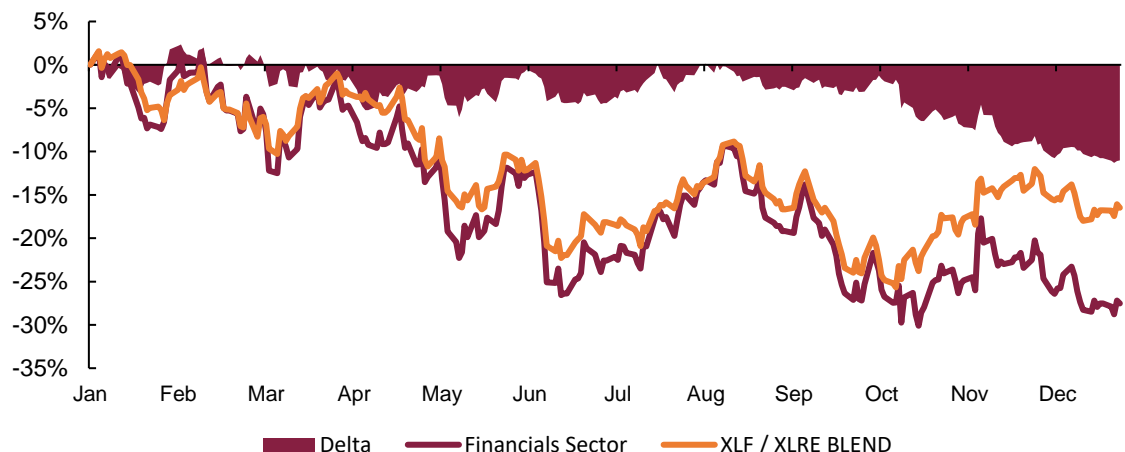
Portfolio Update:

The financials portfolio underperformed by 11% in 2022 relative to the sector's benchmark (XLF/XLRE Blend). The underperformance was partly due to harsh declines by Coinbase (COIN), a current holding pitched and purchased in May of 2022. Recently, the stock tumbled to its 52-week lows along with the cryptocurrency market, but has since recovered some of its losses. In addition to COIN's underperformance, our regional bank holdings, Fith Third Bancorp (FITB) and First Republic (FRC), each had poor performance, reflecting negative impacts of interest rate hikes and an overall decline in the industry. Analysts Piyush Pokala and Kobey Simon pitched Markel (MKL), a P&C insurance company, in November. We anticipate it will be purchased and added into the portfolio soon, giving the sector exposure to the insurance space. Insurance is an area that the sector has not seen exposure in for over a year, and we hope MKL will become a steady pillar in the sector moving forward.

Semester Outlook:

The financial sector is looking to rebound, with positive expectations for 2023. With plans to reassess our regional bank holdings as well as several of our Real Estate holdings, we hope to bring outperformance in the coming year. As the Federal Reserve continues to take an aggressive stance on inflation, we remain confident in our financials portfolio and its ability to withstand and potentially benefit off of increasing rates. While our REIT holdings continue to pay high dividends, we hope to add diversification that can bolster our potential returns, with the hopeful addition of American Tower (AMT), a company we plan to pitch in the Spring. We will continue to monitor the cryptocurrency space as a whole, as COIN has been impacted by the collapse of FTX.

Financials Sector Vs Blended Benchmark



Members



Maddi Koch – Lead Analyst
maddikoch@vt.edu



Connor Jordan-Hyde - Analyst
cjh213@vt.edu



Giorgio Saade - Analyst
giorgiosaade@vt.edu



Jake Alley - Analyst
jakealley@vt.edu



Liam Desmond - Analyst
liamdesmond@vt.edu



Tyler Phillips - Analyst
tylerp@vt.edu

Healthcare Sector

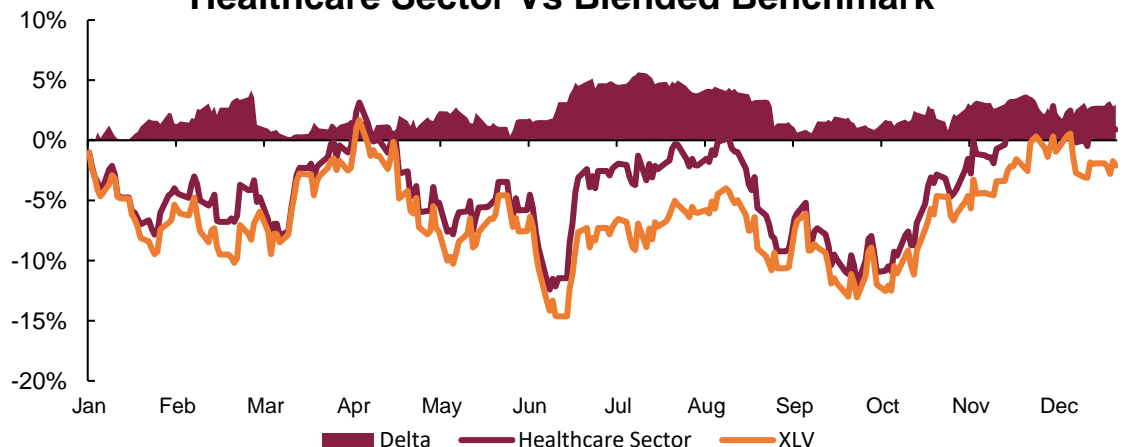
Portfolio Update:

The healthcare sector has been outperforming the XLV for the entire year. Abbvie's drug, Humira, is the top-selling drug in pharmaceutical history with sales of \$20.7B in 2022 and is coming up on patent expiration. The company has stated that they have no worries, as they have two successor drugs that could exceed Humira's peak when combined; COO plans to pay annual dividends and declared a semi-annual dividend of \$0.03 per share; Lab Corp. recently announced a quarterly dividend for \$0.72 and will continue to profit from clinical workflow, increased patient access, and drug development; Merck & Co announced a quarterly dividend on \$0.73 on the company's common stock starting in 2023. They plan to complete an acquisition with Imago Biosciences for \$1.35B; United Healthcare has been consistently adding new services such as new medicare benefits, making healthcare more affordable to individuals and families, and providing access to a leading interactive fitness platform in partnership with peloton; Veeva's 2021 total revenues were \$1.4M, up 27% YOY and has a healthy outlook for the upcoming year with a steady increase in subscription revenues – a 27% YOY increase for 2021.

Semester Outlook:

Healthcare SPDR XLV is planned to be sold and replaced with two companies in the industries services & providers and equipment & supplies in line with the goal to sell the benchmark in order to outperform the benchmark. With the only industry not held being Life Science Tools and Services, plans to dip into those markets are making headway. The Life Science Tools and Services industry is somewhat resistant to economic downturn due to the necessity of production. This semester's returns are expected to be driven by increased demand for healthcare services by the aging population, advancements in technology, and pandemic recovery. With strategic analysis and proper investment strategies and research, the sector will continue to outperform the benchmark as we focus on exceptional long-term opportunities.

Healthcare Sector Vs Blended Benchmark



Members



Joaquin Baquerizo – Lead Analyst
joaquinba@vt.edu



Ansuman Rath - Analyst
ansuman27@vt.edu



Charlie Setash - Analyst
charlesetash@vt.edu



Maddy Marietta - Analyst
mariettamt@vt.edu



Max Skirkanich - Analyst
maxskirkanich@vt.edu

Industrials Sector

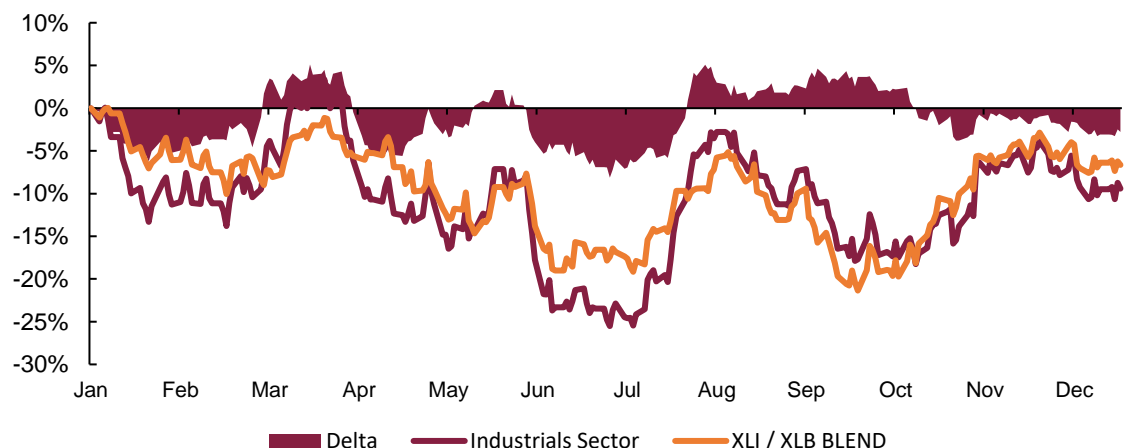
Portfolio Update:

The industrials portfolio has underperformed by 2.8% in relation to the sector's benchmark's (XLI/XLB Blend). The sector bought Atlas Air Worldwide (AAWW) in March 2022 and sold in in October 2022 for a 22.37% HPR after the announcement that it was being acquired by a group led by Investment firm Apollo Global Management. This helped to close the divergence between the XLI/XLB Blend and our portfolio. In reality, many of our holdings underperformed due to broader market weakness including supply chain disruptions and labor shortages. Due to the nature of the Industrial sector--high M&A activity--the high interest rates environment limited most of our holdings to strategically execute their M&A strategies. This was particularly true for Roper Technologies (ROP) who was limited in expanding into its software end markets, underperforming by -9.75% through 2022. Currently 15.53% of our portfolio belongs to Amaresco (AMRC) which is the portfolio's ESG play as they are well invested into renewable energy equipment solutions. Another company that we decided to buy in 2022 was ZIM Integrated Shipping Services (ZIM), to have more exposure to the Intrapacific and IntraAsia trading routes. Zim has given us steady returns as they have a 145% dividend for stakeholders, while also leading in terms of technology in the container shipping industry.

Semester Outlook:

We have a positive outlook for 2023. As Covid-19 restrictions are relaxing, and inflation is starting to ease in the United States, we see a strong push for manufacturing in house. This can be evidenced by the Biden's administration passing of the Chip Act, incentivizing a stronger supply chain to counter China's. This is why the sector is venturing into the backbone of the supply chain such as mining companies and steel producers. This will also increase our exposure to the material's sector, which account only for 29.7% of the sector at the moment.

Industrials Sector Vs Blended Benchmark



Members



Pat Caiafa – Lead Analyst
patrickc20@vt.edu



Nate Doggett - Analyst
nate88@vt.edu



Nick Carbone - Analyst
nickcarbone02@vt.edu



Sebastian Franks - Analyst
smf@vt.edu

Technology Sector

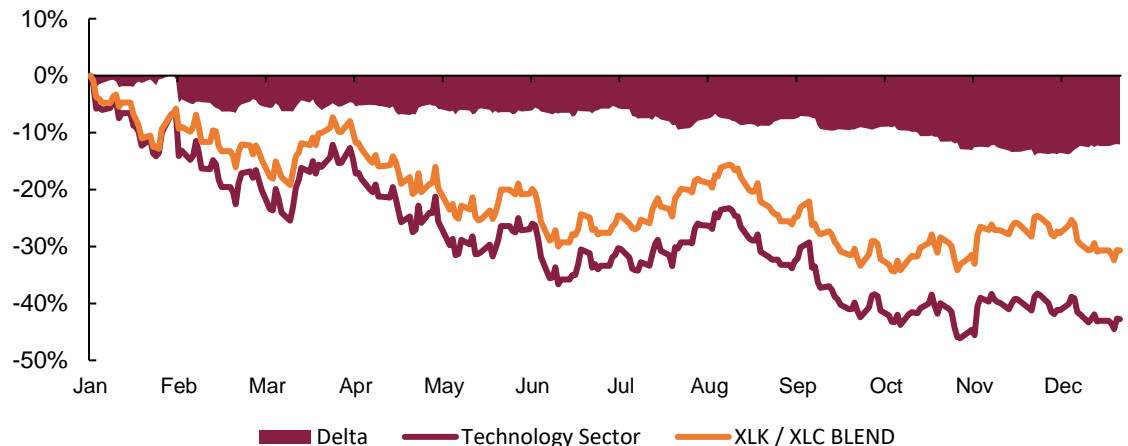
Portfolio Update:

The technology portfolio has underperformed by 12.07% in relation to the sector's blended benchmark: XLK/XLC. The benchmark consists of a combination of 78% XLK and 22% XLC. The sector sold Oracle (NYSE: ORCL) in April for an HPR of 49.38% and bought CrowdStrike (NYSE: CRWD) in October. The majority of our holdings performed very poorly in 2022, as was a common theme in the technology sector because of the deterioration of the economic landscape with extremely high inflation and one of the most vicious rate hike cycles in Fed history. We took this opportunity to lower our average cost on these names towards the end of 2022, as we believe a good portion of our holdings still have strong fundamentals but were just lumped in with the overall weakness within the market. Many tech stocks were trading at extremely high valuations last year, and we believe that the reset in these valuations will lead to strong performance this year and for the next few years to come. Last semester, we made it a focus to increase our exposure into cloud, cybersecurity, and semiconductor space as well. We were able to satisfy our cybersecurity and cloud focus with the CrowdStrike buy and purchase of Google.

Semester Outlook:

Looking forward for the semester, we plan to first focus on our semiconductor exposure. We plan to replace Taiwan Semiconductor (NYSE: TSM) with a different semiconductor holding that may have less exposure to the tensions in China and increase overall semiconductor weight from 2.2% to 5%. As one of the more beaten down industries in the market, we believe this is an opportunity to get into a market that may provide better returns for us in the long run. After that, we plan to reconsider holdings like Block (NYSE: SQ) and SS&N Technologies (NYSE: SSNC) which have underperformed since originally buying them.

Technology Sector Vs Blended Benchmark



Members



Jake Vodovoz – CQO
jakev@vt.edu



Eera Rasne - Analyst
eerasne@vt.edu



Tim Carey - Analyst
tcarey23@vt.edu



Tyler Boehm - Analyst
tylerboehm@vt.edu



Viktor Fedotov - Analyst
vfedotov03@vt.edu

Quantitative Strategy Group

Portfolio Update:

The QSDA sector underperformed the S&P 500 by 126 basis points, returning a total of 0.22% from inception on October 24th 2022. The sector saw 6 different companies stop out (DVN, MOS, VLO, COP, CF & NUE) all of which were from the quantitative value strategy. Consequently, this led us to do more research in different types of stop loss calculations, as the 15% trailing stop loss was not optimal. Through utilizing various forms of data analytics and simulating how different stop loss methodologies would have performed with the strategy, the sector discovered that for the quantitative value strategy; a average true range (ATR) stop loss calculation was stronger, as it is a more appropriate gauge to depict the volatility of a given equity. In addition, in early November, the sector made the decision to sell out of MRNA at a 31.39% gain and take it's profit, as the algorithm stopped outputting the company.

Semester Outlook:

Looking forward the sector plans to make progress using three steps - Active monitoring of new holdings, further developing the quantitative value strategy fundamentally and implementing the strategy into Python. The QSDA sector recently rebalanced the strategy and identified 20 new holdings, 10 value and 10 momentum, in which will be bought. Through the course of Q1 2023, we plan to closely monitor all holdings and check the strategy regularly to see if any positions need to be traded out of. We are also in the process of testing out the value strategy on a sector-basis and designing a weighting system to fairly assess what sectors possess the most value. We anticipate this would not only help us to identify even higher-quality value companies, but also help mitigate overweighting in certain sectors. Finally, we are still in the process of converting the strategy into Python, as this would expand the capabilities of what the strategy can ultimately do.

Value Momentum Strategy Vs S&P 500 (Q4)

