

Portfolio Theory Management Project

By

Group 6



University of
Strathclyde
Business
School

I have read, understood and abided by the restrictions on the use of generative AI for this assessment/assignment.

Investment Philosophy

Our portfolio management strategy follows a growth-investing approach, focusing on UK-based FTSE 250 companies that exhibit strong revenue and earnings growth. The primary objective is to maximize capital appreciation by investing in high-growth stocks with consistent financial performance and scalability potential. Growth investing prioritizes companies with above-average earnings growth, even if their valuations appear high compared to traditional metrics. We aim to identify businesses with strong fundamentals, competitive advantages, and long-term expansion potential.

We adhere to the semi-strong form of the Efficient Market Hypothesis (EMH), which suggests that publicly available financial data is already reflected in stock prices. By focusing on companies with robust financial fundamentals, we ensure that our investment strategy remains grounded in data-driven decision-making.

Selection of Benchmark Index

To evaluate our portfolio's performance, we have chosen the FTSE 250 Index as the benchmark. This index consists of the 101st to 350th largest companies listed on the London Stock Exchange, providing a balanced representation of mid-cap firms across various industries. The FTSE 250 is particularly suitable for our strategy due to its strong historical performance and higher growth potential compared to the FTSE 100. It also ensures alignment with our investment strategy, sector diversification, and balanced risk-return characteristics.

Stock Selection Criteria and Rationale

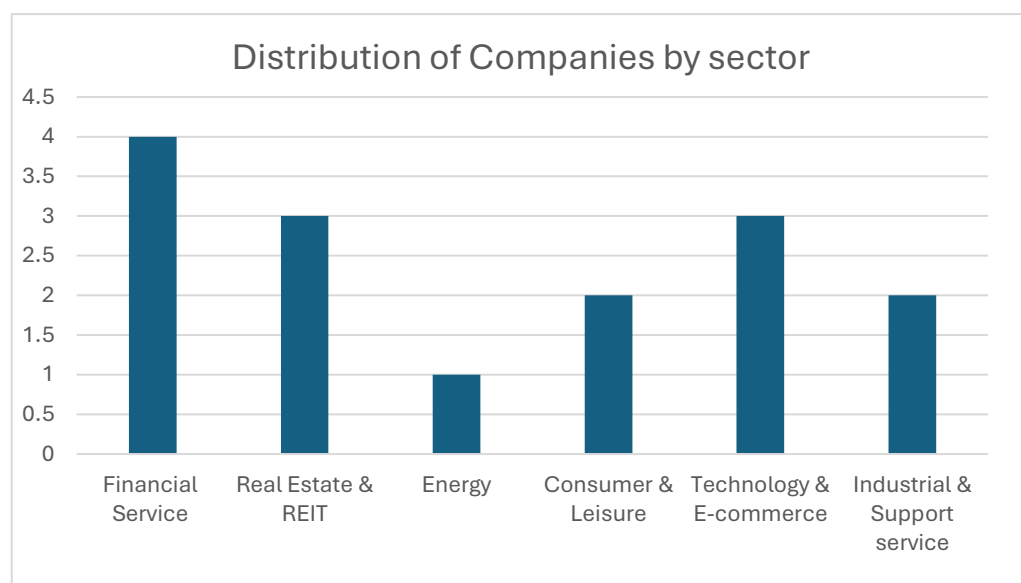
Our stock selection process was guided by specific financial and market-based criteria to ensure high growth potential and strong fundamentals. The following criteria were applied:

- **FTSE 250 Listing:** We focused on FTSE 250 companies as they represent mid-cap UK firms with higher growth potential compared to FTSE 100 large-cap firms, while maintaining sufficient market capitalization for stability.
- **Revenue Growth (5-Year Average > 15%):** This criterion ensures that the company has a strong track record of expanding its business, reflecting its ability to capture market share and sustain operations efficiently.
- **Earnings Per Share (EPS) Growth (5-Year Average > 12%):** A high EPS growth rate signals increasing profitability and management effectiveness in improving shareholder value.
- **Return on Equity (ROE > 15%) and Return on Assets (ROA > 8%):** These metrics indicate how efficiently a company generates profits from its equity and total assets, respectively. A higher ROE suggests strong financial management, while ROA ensures operational efficiency.
- **Market Capitalization (> £500 million):** Larger market cap firms typically provide greater liquidity and lower volatility, making them more suitable for institutional investors.
- **Current P/E Ratio (< 40):** This criterion ensures that growth stocks are not excessively overvalued, balancing potential upside with reasonable pricing.
- **Using Bloomberg,** we identified and included 15 stocks across various sectors, ensuring diversification. This approach mitigates risks while capitalizing on high-growth industries.

Ticker	Name	Gr Avg of Revenue:5Y	Gr Avg of EPS:5Y	Gr Avg of ROE:5Y	Gr Avg of ROA:5Y	Market Cap	P/E
ENOG LN Equity	ENERGEAN PLC	327.04	177.07	190.29%	189.79%	1.73B	9.52
CCL LN Equity	CARNIVAL PLC	111.16	458.77	385.17%	500.66%	19.83B	11.62
PRSR LN Equity	PRS REIT PLC/THE	63.47	76.4	68.05%	53.88%	629.44M	6.69
ALPH LN Equity	ALPHA GROUP INTERNATIONAL PL	52.14	61.41	19.78%	20.16%	1.04B	10.74
ATG LN Equity	AUCTION TECHNOLOGY GROUP	50.42	176.43	190.71%	112.68%	707.00M	29.01
SHED LN Equity	URBAN LOGISTICS REIT PLC	43.98	36.5	40.62%	40.96%	611.13M	33.45
LRE LN Equity	LANCASHIRE HOLDINGS LTD	32.86	198.18	120.63%	161.11%	1.41B	5.47
FUTR LN Equity	FUTURE PLC	32.7	92.41	39.12%	38.51%	949.86M	12.83
BGEO LN Equity	LION FINANCE GROUP PLC	29.01	61.8	24.28%	30.69%	2.49B	3.44
PAG LN Equity	PARAGON BANKING GROUP PLC	23.88	26.83	15.74%	17.16%	1.49B	8.03
RAT LN Equity	RATHBONES GROUP PLC	22.55	22.61	15.49%	33.62%	1.81B	25.64
BBOX LN Equity	TRITAX BIG BOX REIT PLC	21.96	141.23	128.32%	131.26%	3.50B	7.11
CMCX LN Equity	CMC MARKETS PLC	21.66	284.6	227.72%	208.94%	605.80M	7.1
ZIG LN Equity	ZIGUP PLC	20.37	87.55	113.09%	116.14%	696.71M	7.21
MTO LN Equity	MITIE GROUP PLC	17.83	183.81	203.75%	168.04%	1.43B	11.76

Sector Distribution of Equities

Our portfolio is well-diversified across multiple sectors, providing growth opportunities while managing risk effectively. Financial services stocks such as Alpha Group International, Paragon Banking, and Rathbones Group offer exposure to a growing financial sector, while real estate stocks like PRS REIT and Tritax Big Box REIT provide stability. Energy exposure is through Energean PLC, benefiting from rising natural gas demand. Consumer and leisure stocks like Carnival PLC and Future PLC take advantage of post-pandemic recovery trends, while technology-driven firms like Auction Technology Group and CMC Markets contribute to digital transformation opportunities. Finally, industrial support services such as Mitie Group PLC and Lancashire Holdings Ltd add resilience to the portfolio.



Company Profiles

1. Energean PLC – A UK-based energy company specializing in gas exploration and production, with a focus on the Mediterranean region. It has shown consistent revenue growth and strong profitability, driven by increased demand for natural gas.
2. Carnival PLC – A leading global cruise operator that has demonstrated resilience post-pandemic. With an improving travel sector, Carnival benefits from growing consumer demand and strategic cost optimization.
3. PRS REIT PLC – A real estate investment trust focused on developing and managing rental properties across the UK. It benefits from strong rental demand and a stable income stream.

4. Alpha Group International PLC – A financial services firm offering foreign exchange, risk management, and alternative banking solutions to businesses. The company has shown rapid growth due to increasing demand for efficient global payments.
5. Auction Technology Group – A technology company that operates digital marketplaces for auctions. It benefits from the growing trend of online transactions and asset sales.
6. Urban Logistics REIT PLC – A real estate investment trust specializing in logistics and industrial properties. The rise in e-commerce has driven strong demand for its assets.
7. Lancashire Holdings Ltd – A specialist insurance and reinsurance company focused on property, marine, and aviation risks. It has strong profitability driven by disciplined underwriting.
8. Future PLC – A media and publishing company that owns digital and print brands across various industries. Its diversified revenue streams include advertising, e-commerce, and subscriptions.
9. Lion Finance Group PLC – A financial services provider specializing in asset management and lending solutions. The company has seen steady growth through innovative financial products.
10. Paragon Banking Group PLC – A specialist lender offering mortgage and asset financing. It benefits from stable credit demand and a disciplined lending approach.
11. Rathbones Group PLC – A wealth management company providing investment and advisory services. It has a strong reputation in the UK financial sector and a consistent revenue stream.
12. Tritax Big Box REIT PLC – A real estate investment trust that focuses on large-scale logistics properties. It capitalizes on the growing demand for warehousing due to supply chain expansion.
13. CMC Markets PLC – A financial trading firm providing online trading platforms for forex, commodities, and indices. It benefits from increased retail and institutional trading activity.
14. Zigup PLC – A technology-driven company offering innovative solutions in data analytics and digital transformation. It has experienced rapid growth due to rising demand for AI-driven insights.
15. Mitie Group PLC – A facilities management company providing outsourced services across various industries, including security, cleaning, and technical support. It benefits from long-term contracts and a diversified client base

Portfolio Construction & Optimization

We utilized two primary portfolio construction methods: Naïve (Equal Weight) Portfolio and Mean-Variance Model (MVM). The Naïve Portfolio distributes capital equally across all 15 stocks, ensuring simple yet diversified exposure. Meanwhile, the Mean-Variance Model Portfolio (MVM) applies Markowitz's Modern Portfolio Theory (MPT) to maximize risk-adjusted returns by calculating the efficient frontier, identifying both the minimum volatility and maximum Sharpe ratio portfolios.

Naïve Portfolio Model Analysis

The Naïve Portfolio assigns an equal weight allocation to each stock, resulting in a portfolio expected return of 12.19% with a variance of 0.963%. This suggests moderate risk while maintaining robust return potential. Notably, stocks such as BGEO (2.679%), CMCX (2.093%), and FUTR (2.016%) contributed significantly to returns, whereas ATG (-0.076%) and RAT (-0.221%) underperformed, slightly dragging down portfolio performance.

The Naïve (Equal Weight) Portfolio assigns an equal allocation to each stock, simplifying the investment process while ensuring diversification. The key statistics for this model are summarized below:

Company	Average Monthly Returns	Weights	Variance
ATG	-0.076%	0.067	-0.01%
CCL	0.806%	0.067	0.05%

ENOG	1.352%	0.0667	0.09%
ZIG	0.439%	0.0667	0.03%
ALPH	0.913%	0.0667	0.06%
SHED	0.145%	0.0667	0.01%
PSRS	0.355%	0.0667	0.02%
LRE	0.419%	0.0667	0.03%
RAT	-0.221%	0.0667	-0.01%
PAGPA	1.461%	0.0667	0.10%
BGEO	2.679%	0.0667	0.18%
BBOX	0.287%	0.0667	0.02%
MTO	1.776%	0.0667	0.12%
CMCX	2.093%	0.0667	0.14%
FUTR	2.016%	0.0667	0.13%
Portfolio Variance			0.963%
Portfolio Expected Return			12.19%

Efficient Frontier Analysis

The Efficient Frontier represents a set of optimal portfolios that maximize expected return for a given level of risk. Our approach used simulation of random weights to come up with different portfolio options. Our analysis identified three key portfolios: the Max Sharpe Portfolio, Minimum Variance Portfolio, and High-Risk Portfolio. The Max Sharpe Portfolio delivered a 5.44% excess return with a standard deviation of 35.67% and a Sharpe ratio of 0.1526, making it the best risk-adjusted option. The Minimum Variance Portfolio (Min Var) had the lowest standard deviation of 13.17%, making it ideal for risk-averse investors, though with a lower return of 1.15%. Lastly, the High-Risk Portfolio showed a 9.22% return but with significantly higher volatility (78.91%), making it suitable only for highly aggressive investors. The different portfolios were filtered to identify the most efficient ones to plot the frontier and CAL.

The Efficient Frontier is constructed using a set of portfolios that offer the highest expected return for a given level of risk. The analysis revealed the following key metrics:

Portfolio Type	Expected Excess Return	Standard Deviation (Risk)	Sharpe Ratio
Maximum Sharpe Portfolio	5.44%	35.67%	0.1526
Minimum Variance Portfolio (Min Var)	1.15%	13.17%	0.0873
High-Risk Portfolio	9.22%	78.91%	0.1169

Portfolio Performance Evaluation

To comprehensively evaluate portfolio efficiency, we applied standard performance metrics, including the Sharpe Ratio, Treynor Ratio, and Jensen's Alpha. The Max Sharpe Portfolio demonstrated the best risk-adjusted return, while the Min Variance Portfolio provided stability with reduced market exposure. Jensen's Alpha indicated that active portfolio management added value beyond market expectations, particularly in the optimized portfolios.

To assess the effectiveness of our portfolio, we applied the following performance evaluation techniques using data from 1st January 2025 to 28th February 2025:

Performance Metric	Max Sharpe Portfolio	Min Variance Portfolio	High-Risk Portfolio
Sharpe Ratio	0.1526	0.0873	0.1169
Treynor Ratio	Higher due to superior return per unit of systematic risk	Lower due to lower market exposure	Moderate but with higher volatility
Jensen’s Alpha	Positive, indicating active management outperformance	Minimal, closely tracking the market	Mixed, depending on market movements

Discussion & Market Comparison

Our portfolios were benchmarked against the FTSE 250 Index, which had an average expected return of 3.62% with a Sharpe ratio of 0.20. While our Max Sharpe Portfolio (0.1526) had slightly lower risk-adjusted efficiency, it remained competitive. The Min Variance Portfolio, although safer, underperformed in returns. This highlights the trade-off between risk and reward, reinforcing that portfolio selection must align with investor preferences.

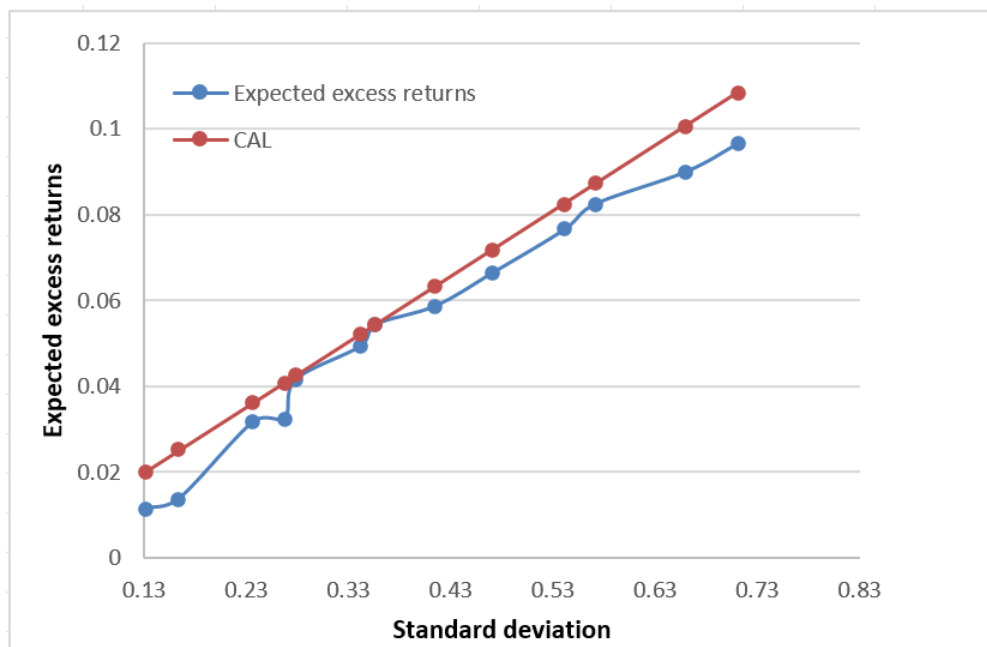
Metric	Max Sharpe Portfolio	Min Variance Portfolio	FTSE 250 Index
Expected Return	5.44%	1.15%	3.62%
Volatility (Risk)	35.67%	13.17%	18.4%
Sharpe Ratio	0.1526	0.0873	0.20

Variance Covariance Matrix:

COVARIANCE MATRIX															
	ATG	CCL	ENOG	ZIG	ALPH	SHED	PRSR	LRE	RAT	PAGPA	BGEO	BBOX	MTO	CMCX	FUTR
ATG	0.016523	0.016547	0.014665	0.018445	0.0163211	0.017174	0.016027	0.015501	0.017135	0.017308	0.019032	0.017086	0.017521	0.018463	0.019199
CCL	0.0165471	0.232102	0.022288	0.025276	0.0146384	0.017641	0.016879	0.016432	0.017327	0.024922	0.02335	0.017113	0.024307	0.01444	0.015947
ENOG	0.0146651	0.022288	0.014695	0.018434	0.1583411	0.016974	0.015378	0.016638	0.017258	0.017586	0.019187	0.01591	0.020657	0.014906	0.015572
ZIG	0.0184455	0.025276	0.018434	0.158341	0.0144672	0.018898	0.01704	0.017791	0.018624	0.022488	0.020038	0.019391	0.022851	0.017438	0.020481
ALPH	0.0163211	0.014638	0.015014	0.014467	0.0050508	0.014184	0.014693	0.014702	0.014948	0.015505	0.01486	0.01452	0.013387	0.015129	0.015049
SHED	0.0171743	0.017641	0.016974	0.018898	0.0141842	0.005826	0.017015	0.016433	0.016945	0.01842	0.016813	0.018741	0.01873	0.017903	0.019254
PRSR	0.016027	0.016879	0.015378	0.01704	0.0146932	0.017015	0.017103	0.01591	0.015998	0.017574	0.015411	0.017145	0.016951	0.015736	0.017735
LRE	0.0155014	0.016432	0.016638	0.017791	0.0147024	0.016433	0.01591	0.00853	0.016	0.018309	0.018958	0.016571	0.018326	0.015583	0.017038
RAT	0.0171348	0.017327	0.017258	0.018624	0.0149484	0.016945	0.015998	0.016	0.032033	0.018352	0.017077	0.017198	0.016363	0.01712	0.016727
PAGPA	0.0173082	0.024922	0.017586	0.022488	0.0155053	0.01842	0.017574	0.018309	0.018352	0.016244	0.02071	0.018625	0.020926	0.016463	0.017991
BGEO	0.0190318	0.02335	0.019187	0.020038	0.0148597	0.016813	0.015411	0.018958	0.017077	0.02071	0.024563	0.015905	0.023314	0.015617	0.013186
BBOX	0.0170859	0.017113	0.01591	0.019391	0.0145196	0.018741	0.017145	0.016571	0.017198	0.018625	0.015905	3.722868	0.01851	0.016876	0.020803
MTO	0.0175215	0.024307	0.020657	0.022851	0.0133868	0.01873	0.016951	0.018326	0.016363	0.020926	0.023314	0.01851	0.463778	0.016429	0.019585
CMCX	0.0184633	0.01444	0.014906	0.017438	0.0151285	0.017903	0.015736	0.015583	0.01712	0.016463	0.015617	0.016876	0.016429	0.031638	0.015692
FUTR	0.0191986	0.015947	0.015572	0.020481	0.015049	0.019254	0.017735	0.017038	0.016727	0.017991	0.013186	0.020803	0.019585	0.015692	60.12713

Minimum Variance Model:

constraint on risk premium	0.096646				OPTIMUM			MIN VAR							
Portfolio Expected Excess Return	0.090053	0.03174	0.04935	0.06652	0.0574946	0.05442	0.08254	0.04124	0.06201	0.0115	0.04673	0.04952	0.09225	0.09665	0.0742
Portfolio Standard deviation	0.660265	0.23694	0.34182	0.47147	0.4693031	0.35671	0.57164	0.28569	0.49812	0.13173	0.36379	0.42435	0.78913	0.71138	0.6241
Sharpe ratio	0.136389	0.13396	0.14439	0.14109	0.1225106	0.15256	0.14439	0.14435	0.12449	0.0873	0.12846	0.1167	0.11691	0.13586	0.1189



Conclusion & Reflection

The Max Sharpe Portfolio emerged as the most efficient choice, offering higher returns while maintaining a reasonable risk level. The Min Volatility Portfolio provided a safer alternative, particularly for conservative investors. Overall, our diversified selection strategy and risk-adjusted optimization proved effective in enhancing portfolio efficiency.

Moving forward, we could improve performance by implementing sector-based allocation strategies, considering macroeconomic factors, and introducing dynamic rebalancing techniques. These enhancements could refine future portfolio adjustments to maximize returns while effectively managing risk.

APPENDIX

Monthly data

Date	ATG	CCL	ENOG	ZIG	ALPH	SHED	PRSR	LRE	RAT	PAGPA	BGEO	BBOX	MTO	CMCX	FUTR	1 Month SONIA
Dec-18		899	789	87	997	99	9789	878	976	998	890	8	9	8908	8	
Jan-19		4,308.00	614.7	369.8	805	115.62	97.7	497.62	2,314.00	414.8	1,532.20	139.7	60.51	118.6	538	0.7034%
Feb-19		4,216.00	658.3	365.4	835	114.2	101.5	584.53	2,304.00	434.4	1,674.80	142.3	66.44	83.5	686	0.7077%
Mar-19		3,765.00	764.5	374	841.5	109.93	98.6	576.59	2,226.00	435.8	1,653.00	143.6	76.69	83.1	754	0.7061%
Apr-19		4,035.00	829	368	840	111.36	100.2	606.59	2,520.00	458.6	1,719.00	148.6	67.57	78.1	846	0.7092%
May-19		3,910.00	790	324.5	840	121.78	98.6	620.71	2,145.00	434.8	1,640.00	148.2	76.49	87.4	1,116.00	0.7100%
Jun-19		3,479.00	831	347.5	835.5	116.57	94	607.47	2,220.00	438.8	1,498.00	154.3	75.41	90	969	0.7085%
Jul-19		3,703.00	1,066.00	329	823	122.26	94.5	611.88	2,205.00	417	1,406.00	153	85.04	98	1,130.00	0.7095%
Aug-19		3,448.00	991	322.5	845	118.46	88.6	600.85	2,230.00	436.2	1,361.00	140.1	75.56	94.5	1,186.00	0.7127%
Sep-19		3,370.00	937	330	835	119.41	88.5	652.47	2,220.00	482.4	1,336.00	149.6	75.46	106	1,226.00	0.7093%
Oct-19		3,092.00	884	344.5	834.5	126.05	89	627.77	2,075.00	503.5	1,299.00	150.3	81.64	130	1,514.00	0.7107%
Nov-19		3,253.00	897	316	802.5	125.57	84	655.12	2,130.00	497	1,480.00	148.2	67.52	146.2	1,322.00	0.7100%
Dec-19		3,644.00	930	311	734	137.89	92	676.73	2,130.00	539	1,625.00	148.8	74.74	146.6	1,450.00	0.7098%
Jan-20		3,118.00	769	266	746.5	139.79	91.5	659.97	1,972.00	508	1,513.00	139.7	68.5	156.8	1,280.00	0.7099%
Feb-20		2,435.00	654	247	720.5	133.11	83	639.24	1,660.00	455	1,692.00	130	72.06	150	1,156.00	0.7098%
Mar-20		981.4	577	139	784	114.34	76.5	547.47	1,498.00	332.4	915	112.2	33.5	180	1,000.00	0.0714%
Apr-20		1,095.50	656	179.6	736	129.49	68	539.98	1,512.00	333.6	996	120.6	38.19	200.5	1,032.00	0.0666%
May-20		1,057.50	539	190.4	805	127.05	75	599.53	1,442.00	354.2	925	138.8	36.34	198.4	1,380.00	0.0683%
Jun-20		985.8	615	166	780	133.89	74.4	713.79	1,420.00	350	1,070.00	145	42.93	267	1,276.00	0.0636%
Jul-20		826.6	570	165.4	752	141.22	73.7	683.35	1,620.00	314.2	777	151.4	32.7	321	1,380.00	0.0602%
Aug-20		1,054.50	572.6	187.8	717	143.17	78.3	677.62	1,688.00	356	920	155.8	33.3	320	1,486.00	0.0545%
Sep-20		999	586	185	694	139.27	78.8	610.56	1,542.00	333	893	155	32.8	309.5	1,942.00	0.0533%
Oct-20		848.6	519.1	178	724	137	71.5	561.59	1,450.00	295.2	897	156.6	28.2	334	1,984.00	0.0540%
Nov-20		1,327.50	717.6	241.5	748	148.5	76.9	655.56	1,480.00	403.6	1,120.00	165.4	38.1	387.5	1,688.00	0.0535%
Dec-20		1,367.00	721.2	266	730	143	76.8	638.35	1,540.00	488.6	1,220.00	167.9	41	391	1,738.00	0.0483%
Jan-21		1,165.00	786.2	245.5	736	147.5	84.5	601.3	1,610.00	453.6	1,148.00	184.4	48	402.5	1,738.00	0.0487%
Feb-21		1,575.50	904.3	275	703	147	87	542.62	1,542.00	449	998	180.1	52.3	406	1,950.00	0.0512%
Mar-21	820	1,585.50	849.8	308	707	148	87.5	568.21	1,760.00	457.6	1,100.00	179.5	62.9	483	1,914.00	0.0480%
Apr-21	939	1,681.40	833	364	700	153.5	96.5	627.32	1,692.00	470.4	1,022.00	190.3	62.1	488	2,360.00	0.0499%

May-21	1,200.00	1,765.40	770.5	385	745	156.5	97.2	555.86	1,794.00	485.6	1,310.00	196.9	67.9	488	2,838.00	0.0493%
Jun-21	1,152.00	1,660.80	714	399	725	157	102	540.42	1,812.00	509.5	1,344.00	196.3	68	460	3,132.00	0.0466%
Jul-21	1,358.00	1,444.80	648	423	740	172.5	104.5	563.36	1,880.00	552.5	1,500.00	210.6	63.4	450	3,450.00	0.0504%
Aug-21	1,622.00	1,570.20	677.5	437	702	177	105.5	551.45	2,050.00	562	1,670.00	237	76	421.5	3,850.00	0.0507%
Sep-21	1,330.00	1,682.00	884	402	733	172	100	496.74	2,015.00	545.5	1,554.00	212.6	71	284	3,690.00	0.0495%
Oct-21	1,414.00	1,470.00	897.5	398	748	179	102	446.45	1,972.00	548.5	1,518.00	225	65.4	252.5	3,528.00	0.0485%
Nov-21	1,258.00	1,186.20	881.5	395	710	168	100.5	447.77	1,850.00	517.5	1,542.00	238	64.2	233	3,584.00	0.0465%
Dec-21	1,516.00	1,383.60	855	436.5	671	187	110	467.63	1,984.00	566.5	1,668.00	249	64.5	263.5	3,830.00	0.1929%
Jan-22	1,072.00	1,326.00	943.5	384.5	669	175.5	101	482.63	1,866.00	569.5	1,468.00	237.4	60	230	3,142.00	0.1957%
Feb-22	958	1,408.80	1,038.00	378.5	727	184	101.5	416.28	1,656.00	505.5	1,318.00	235.4	56	233.5	2,656.00	0.4449%
Mar-22	982	1,356.80	1,191.00	432	736	190.5	107.5	381.16	1,980.00	500	1,188.00	241.8	55.1	254.5	2,602.00	0.6901%
Apr-22	879	1,286.50	1,184.00	397	750	187	108	374.28	2,100.00	496	1,228.00	243.8	54.2	290	2,218.00	0.6896%
May-22	1,014.00	1,001.50	1,336.00	377	760	174	108	349.75	2,065.00	491.8	1,604.00	203.6	56.4	317	1,980.00	0.9384%
Jun-22	923	619.6	1,099.00	337	765	161.5	105.6	355.75	1,942.00	489.4	1,306.00	181.5	56	274	1,723.00	1.1874%
Jul-22	994	655.2	1,148.00	367	724	177.5	110	392.81	1,810.00	535	1,506.00	197.2	78.3	257.5	1,828.00	1.1909%
Aug-22	825	728.6	1,294.00	342.5	750	170	102.6	435.51	1,802.00	537	2,000.00	166.5	72.7	229.5	1,556.00	1.6905%
Sep-22	712	581.8	1,334.00	289.5	775	129.5	93.8	438.51	1,640.00	394.8	1,988.00	135.8	62.6	220.5	1,320.00	1.6910%
Oct-22	747	696.2	1,431.00	333	760	131.5	88	436.92	1,874.00	428	2,125.00	140.3	71.4	245.5	1,218.00	2.1853%
Nov-22	857	715.8	1,485.00	378	767	135.5	86	523.65	2,110.00	469.6	2,530.00	143	76.1	238	1,405.00	2.9278%
Dec-22	752	579.4	1,309.00	412	705	134.5	88.9	573.5	2,035.00	563.5	2,605.00	138.6	74.6	224	1,267.00	3.4281%
Jan-23	704	767.6	1,165.00	434	741	143.5	91	551.45	2,090.00	601	2,670.00	155.8	78	242	1,505.00	3.4281%
Feb-23	693	779.4	1,206.00	403.5	752	142	87.8	540.86	2,080.00	596.5	2,790.00	149.7	80.8	246.5	1,402.00	3.9270%
Mar-23	614	734.2	1,302.00	345.5	731	128	80.9	487.48	1,914.00	520	2,750.00	139.9	81.8	175.8	1,159.00	4.1767%
Apr-23	701	654.4	1,238.00	376	750	141.4	86.2	540.42	1,954.00	502.5	2,960.00	155.1	92	183.8	1,128.00	4.1775%
May-23	770	783.6	1,110.00	373.5	755	135.6	86	546.59	1,994.00	485.4	3,015.00	140	88.9	178.4	722	4.4285%
Jun-23	748	1,300.50	1,024.00	375	748	112	80.4	509.98	1,860.00	531	2,925.00	125	96.4	153.8	675	4.9274%
Jul-23	709	1,318.00	1,158.00	344	700	121.8	82.4	526.74	1,800.00	528	3,255.00	138.1	101.8	139.8	838.5	4.9306%
Aug-23	708	1,123.50	1,138.00	321	656	117.6	71.9	505.12	1,762.00	526.5	3,485.00	141.2	97.2	106	776.5	5.1852%
Sep-23	653	997.6	1,143.00	338	638	109.8	68.2	520.56	1,738.00	492	3,690.00	139.8	102.8	105.2	889	5.1867%
Oct-23	561	837.4	852	336	592	104.2	72.2	501.15	1,498.00	443.6	3,330.00	136.8	98.5	94.3	884.5	5.1873%
Nov-23	485	1,041.00	1,007.00	359	547	117.2	78.2	586.72	1,590.00	482.6	3,450.00	153.1	98	90	851	5.1879%
Dec-23	522	1,313.00	1,044.00	363.5	614	127.4	86.2	586.25	1,742.00	697.5	3,975.00	168.9	99.3	105	795.5	5.1863%
Jan-24	545	1,202.50	946	355	686	125.4	84.2	570.28	1,658.00	704	3,795.00	166.2	103.4	135.8	715	5.1881%
Feb-24	605	1,119.50	1,020.00	346	647	116	74.7	611.62	1,556.00	644	4,710.00	146.6	106.8	167	612.5	5.1885%

Mar-24	618	1,169.50	1,093.00	381.5	620	114.4	79.5	619	1,548.00	690.5	5,050.00	157.2	105	217.5	613	5.1892%
Apr-24	499	1,085.00	1,104.00	384.5	617	115.8	79.1	610	1,638.00	715.5	5,380.00	151.6	117	262	663	5.2000%
May-24	522	1,080.00	1,193.00	436	623	118.8	76.9	633	1,728.00	764.5	3,710.00	158	121.2	281.5	1,060.00	5.2000%
Jun-24	501	1,357.00	986	421.5	603	117.6	75.1	614	1,680.00	735	4,035.00	155.1	116.2	327	1,049.00	5.2000%
Jul-24	507	1,205.50	999	424	617	124.2	82	634	1,924.00	804	4,560.00	165.5	121.2	333.5	1,120.00	5.2000%
Aug-24	416.5	1,135.00	972.5	401.5	607	120.2	94.6	672	1,886.00	767.5	4,550.00	162.8	124	313.5	1,080.00	4.9500%
Sep-24	420	1,218.00	902	385	595	126.2	102.6	625.66	1,790.00	777.5	3,675.00	159.1	118.2	312.5	1,011.00	4.9500%
Oct-24	450.5	1,557.00	1,006.00	354.5	621	117.8	105.8	574.66	1,664.00	686	4,160.00	141.1	116.6	306.5	877.5	4.9500%
Nov-24	516	1,800.50	1,012.00	379.5	877	109.2	103.8	635	1,668.00	757.5	4,685.00	139.1	109	276.5	901.5	4.7000%
Dec-24	550	1,812.00	1,043.00	321.5	885	102.4	107.6	659	1,660.00	743.5	4,710.00	132.7	110	248	927	4.7003%

Returns

Date	ATG	CCL	ENOG	ZIG	ALPH	SHED	PRSR	LRE	RAT	PAGPA	BGEO	BBOX	MTO	CMCX	FUTR	1 Month SONIA
Jan-19		3.7920	-0.2209	3.2506	-0.1926	0.1679	-0.9900	-0.4332	1.3709	-0.5844	0.7216	16.4625	5.7233	-0.9867	66.2500	0.7034%
Feb-19		-0.0214	0.0709	-0.0119	0.0373	-0.0123	0.0389	0.1747	-0.0043	0.0473	0.0931	0.0186	0.0980	-0.2960	0.2751	0.7077%
Mar-19		-0.1070	0.1613	0.0235	0.0078	-0.0374	-0.0286	-0.0136	-0.0339	0.0032	-0.0130	0.0091	0.1543	-0.0048	0.0991	0.7061%
Apr-19		0.0717	0.0844	-0.0160	-0.0018	0.0130	0.0162	0.0520	0.1321	0.0523	0.0399	0.0348	-0.1189	-0.0602	0.1220	0.7092%
May-19		-0.0310	-0.0470	-0.1182	0.0000	0.0936	-0.0160	0.0233	-0.1488	-0.0519	-0.0460	-0.0027	0.1320	0.1191	0.3191	0.7100%
Jun-19		-0.1102	0.0519	0.0709	-0.0054	-0.0428	-0.0467	-0.0213	0.0350	0.0092	-0.0866	0.0412	-0.0141	0.0297	-0.1317	0.7085%
Jul-19		0.0644	0.2828	-0.0532	-0.0150	0.0488	0.0053	0.0073	-0.0068	-0.0497	-0.0614	-0.0084	0.1277	0.0889	0.1662	0.7095%
Aug-19		-0.0689	-0.0704	-0.0198	0.0267	-0.0311	-0.0624	-0.0180	0.0113	0.0460	-0.0320	-0.0843	-0.1115	-0.0357	0.0496	0.7127%
Sep-19		-0.0226	-0.0545	0.0233	-0.0118	0.0080	-0.0011	0.0859	-0.0045	0.1059	-0.0184	0.0678	-0.0013	0.1217	0.0337	0.7093%
Oct-19		-0.0825	-0.0566	0.0439	-0.0006	0.0556	0.0056	-0.0379	-0.0653	0.0437	-0.0277	0.0047	0.0819	0.2264	0.2349	0.7107%
Nov-19		0.0521	0.0147	-0.0827	-0.0383	-0.0038	-0.0562	0.0436	0.0265	-0.0129	0.1393	-0.0140	-0.1730	0.1246	-0.1268	0.7100%
Dec-19		0.1202	0.0368	-0.0158	-0.0854	0.0981	0.0952	0.0330	0.0000	0.0845	0.0980	0.0040	0.1069	0.0027	0.0968	0.7098%
Jan-20		-0.1443	-0.1731	-0.1447	0.0170	0.0138	-0.0054	-0.0248	-0.0742	-0.0575	-0.0689	-0.0612	-0.0835	0.0696	-0.1172	0.7099%
Feb-20		-0.2191	-0.1495	-0.0714	-0.0348	-0.0478	-0.0929	-0.0314	-0.1582	-0.1043	0.1183	-0.0694	0.0520	-0.0434	-0.0969	0.7098%
Mar-20		-0.5970	-0.1177	-0.4372	0.0881	-0.1410	-0.0783	-0.1436	-0.0976	-0.2695	-0.4592	-0.1369	-0.5351	0.2000	-0.1349	0.0714%
Apr-20		0.1163	0.1369	0.2921	-0.0612	0.1325	-0.1111	-0.0137	0.0093	0.0036	0.0885	0.0749	0.1400	0.1139	0.0320	0.0666%
May-20		-0.0347	-0.1784	0.0601	0.0938	-0.0188	0.1029	0.1103	-0.0463	0.0618	-0.0713	0.1509	-0.0484	-0.0105	0.3372	0.0683%
Jun-20		-0.0678	0.1410	-0.1282	-0.0311	0.0538	-0.0080	0.1906	-0.0153	-0.0119	0.1568	0.0447	0.1813	0.3458	-0.0754	0.0636%
Jul-20		-0.1615	-0.0732	-0.0036	-0.0359	0.0547	-0.0094	-0.0426	0.1408	-0.1023	-0.2738	0.0441	-0.2383	0.2022	0.0815	0.0602%
Aug-20		0.2757	0.0046	0.1354	-0.0465	0.0138	0.0624	-0.0084	0.0420	0.1330	0.1840	0.0291	0.0183	-0.0031	0.0768	0.0545%

Sep-20		-0.0526	0.0234	-0.0149	-0.0321	-0.0272	0.0064	-0.0990	-0.0865	-0.0646	-0.0293	-0.0051	-0.0150	-0.0328	0.3069	0.0533%
Oct-20		-0.1506	-0.1142	-0.0378	0.0432	-0.0163	-0.0926	-0.0802	-0.0597	-0.1135	0.0045	0.0103	-0.1402	0.0792	0.0216	0.0540%
Nov-20		0.5643	0.3824	0.3567	0.0331	0.0839	0.0755	0.1673	0.0207	0.3672	0.2486	0.0562	0.3511	0.1602	-0.1492	0.0535%
Dec-20		0.0298	0.0050	0.1014	-0.0241	-0.0370	-0.0013	-0.0263	0.0405	0.2106	0.0893	0.0151	0.0761	0.0090	0.0296	0.0483%
Jan-21		-0.1478	0.0901	-0.0771	0.0082	0.0315	0.1003	-0.0580	0.0455	-0.0716	-0.0590	0.0983	0.1707	0.0294	0.0000	0.0487%
Feb-21	0.0000	0.3524	0.1502	0.1202	-0.0448	-0.0034	0.0296	-0.0976	-0.0422	-0.0101	-0.1307	-0.0233	0.0896	0.0087	0.1220	0.0512%
Mar-21	0.0000	0.0063	-0.0603	0.1200	0.0057	0.0068	0.0057	0.0472	0.1414	0.0192	0.1022	-0.0033	0.2027	0.1897	-0.0185	0.0480%
Apr-21	0.1451	0.0605	-0.0198	0.1818	-0.0099	0.0372	0.1029	0.1040	-0.0386	0.0280	-0.0709	0.0602	-0.0127	0.0104	0.2330	0.0499%
May-21	0.2780	0.0500	-0.0750	0.0577	0.0643	0.0195	0.0073	-0.1139	0.0603	0.0323	0.2818	0.0347	0.0934	0.0000	0.2025	0.0493%
Jun-21	-0.0400	-0.0593	-0.0733	0.0364	-0.0268	0.0032	0.0494	-0.0278	0.0100	0.0492	0.0260	-0.0030	0.0015	-0.0574	0.1036	0.0466%
Jul-21	0.1788	-0.1301	-0.0924	0.0602	0.0207	0.0987	0.0245	0.0424	0.0375	0.0844	0.1161	0.0728	-0.0676	-0.0217	0.1015	0.0504%
Aug-21	0.1944	0.0868	0.0455	0.0331	-0.0514	0.0261	0.0096	-0.0211	0.0904	0.0172	0.1133	0.1254	0.1987	-0.0633	0.1159	0.0507%
Sep-21	-0.1800	0.0712	0.3048	-0.0801	0.0442	-0.0282	-0.0521	-0.0992	-0.0171	-0.0294	-0.0695	-0.1030	-0.0658	-0.3262	-0.0416	0.0495%
Oct-21	0.0632	-0.1260	0.0153	-0.0100	0.0205	0.0407	0.0200	-0.1012	-0.0213	0.0055	-0.0232	0.0583	-0.0789	-0.1109	-0.0439	0.0485%
Nov-21	-0.1103	-0.1931	-0.0178	-0.0075	-0.0508	-0.0615	-0.0147	0.0030	-0.0619	-0.0565	0.0158	0.0578	-0.0183	-0.0772	0.0159	0.0465%
Dec-21	0.2051	0.1664	-0.0301	0.1051	-0.0549	0.1131	0.0945	0.0444	0.0724	0.0947	0.0817	0.0462	0.0047	0.1309	0.0686	0.1929%
Jan-22	-0.2929	-0.0416	0.1035	-0.1191	-0.0030	-0.0615	-0.0818	0.0321	-0.0595	0.0053	-0.1199	-0.0466	-0.0698	-0.1271	-0.1796	0.1957%
Feb-22	-0.1063	0.0624	0.1002	-0.0156	0.0867	0.0484	0.0050	-0.1375	-0.1125	-0.1124	-0.1022	-0.0084	-0.0667	0.0152	-0.1547	0.4449%
Mar-22	0.0251	-0.0369	0.1474	0.1413	0.0124	0.0353	0.0591	-0.0844	0.1957	-0.0109	-0.0986	0.0272	-0.0161	0.0899	-0.0203	0.6901%
Apr-22	-0.1049	-0.0518	-0.0059	-0.0810	0.0190	-0.0184	0.0047	-0.0181	0.0606	-0.0080	0.0337	0.0083	-0.0163	0.1395	-0.1476	0.6896%
May-22	0.1536	-0.2215	0.1284	-0.0504	0.0133	-0.0695	0.0000	-0.0655	-0.0167	-0.0085	0.3062	-0.1649	0.0406	0.0931	-0.1073	0.9384%
Jun-22	-0.0897	-0.3813	-0.1774	-0.1061	0.0066	-0.0718	-0.0222	0.0172	-0.0596	-0.0049	-0.1858	-0.1085	-0.0071	-0.1356	-0.1298	1.1874%
Jul-22	0.0769	0.0575	0.0446	0.0890	-0.0536	0.0991	0.0417	0.1042	-0.0680	0.0932	0.1531	0.0865	0.3982	-0.0602	0.0609	1.1909%
Aug-22	-0.1700	0.1120	0.1272	-0.0668	0.0359	-0.0423	-0.0673	0.1087	-0.0044	0.0037	0.3280	-0.1557	-0.0715	-0.1087	-0.1488	1.6905%
Sep-22	-0.1370	-0.2015	0.0309	-0.1547	0.0333	-0.2382	-0.0858	0.0069	-0.0899	-0.2648	-0.0060	-0.1844	-0.1389	-0.0392	-0.1517	1.6910%
Oct-22	0.0492	0.1966	0.0727	0.1503	-0.0194	0.0154	-0.0618	-0.0036	0.1427	0.0841	0.0689	0.0331	0.1406	0.1134	-0.0773	2.1853%
Nov-22	0.1473	0.0282	0.0377	0.1351	0.0092	0.0304	-0.0227	0.1985	0.1259	0.0972	0.1906	0.0192	0.0658	-0.0305	0.1535	2.9278%
Dec-22	-0.1225	-0.1906	-0.1185	0.0899	-0.0808	-0.0074	0.0337	0.0952	-0.0355	0.2000	0.0296	-0.0308	-0.0197	-0.0588	-0.0982	3.4281%
Jan-23	-0.0638	0.3248	-0.1100	0.0534	0.0511	0.0669	0.0236	-0.0384	0.0270	0.0665	0.0250	0.1241	0.0456	0.0804	0.1878	3.4281%
Feb-23	-0.0156	0.0154	0.0352	-0.0703	0.0148	-0.0105	-0.0352	-0.0192	-0.0048	-0.0075	0.0449	-0.0392	0.0359	0.0186	-0.0684	3.9270%
Mar-23	-0.1140	-0.0580	0.0796	-0.1437	-0.0279	-0.0986	-0.0786	-0.0987	-0.0798	-0.1282	-0.0143	-0.0655	0.0124	-0.2868	-0.1733	4.1767%
Apr-23	0.1417	-0.1087	-0.0492	0.0883	0.0260	0.1047	0.0655	0.1086	0.0209	-0.0337	0.0764	0.1086	0.1247	0.0455	-0.0267	4.1775%
May-23	0.0984	0.1974	-0.1034	-0.0066	0.0067	-0.0410	-0.0023	0.0114	0.0205	-0.0340	0.0186	-0.0974	-0.0337	-0.0294	-0.3599	4.4285%
Jun-23	-0.0286	0.6596	-0.0775	0.0040	-0.0093	-0.1740	-0.0651	-0.0670	-0.0672	0.0939	-0.0299	-0.1071	0.0844	-0.1379	-0.0651	4.9274%

Jul-23	-0.0521	0.0135	0.1309	-0.0827	-0.0642	0.0875	0.0249	0.0329	-0.0323	-0.0056	0.1128	0.1048	0.0560	-0.0910	0.2422	4.9306%
Aug-23	-0.0014	-0.1476	-0.0173	-0.0669	-0.0629	-0.0345	-0.1274	-0.0410	-0.0211	-0.0028	0.0707	0.0224	-0.0452	-0.2418	-0.0739	5.1852%
Sep-23	-0.0777	-0.1121	0.0044	0.0530	-0.0274	-0.0663	-0.0515	0.0306	-0.0136	-0.0655	0.0588	-0.0099	0.0576	-0.0075	0.1449	5.1867%
Oct-23	-0.1409	-0.1606	-0.2546	-0.0059	-0.0721	-0.0510	0.0587	-0.0373	-0.1381	-0.0984	-0.0976	-0.0215	-0.0418	-0.1036	-0.0051	5.1873%
Nov-23	-0.1355	0.2431	0.1819	0.0685	-0.0760	0.1248	0.0831	0.1707	0.0614	0.0879	0.0360	0.1192	-0.0051	-0.0456	-0.0379	5.1879%
Dec-23	0.0763	0.2613	0.0367	0.0125	0.1225	0.0870	0.1023	-0.0008	0.0956	0.4453	0.1522	0.1032	0.0133	0.1667	-0.0652	5.1863%
Jan-24	0.0441	-0.0842	-0.0939	-0.0234	0.1173	-0.0157	-0.0232	-0.0272	-0.0482	0.0093	-0.0453	-0.0160	0.0413	0.2933	-0.1012	5.1881%
Feb-24	0.1101	-0.0690	0.0782	-0.0254	-0.0569	-0.0750	-0.1128	0.0725	-0.0615	-0.0852	0.2411	-0.1179	0.0329	0.2297	-0.1434	5.1885%
Mar-24	0.0215	0.0447	0.0716	0.1026	-0.0417	-0.0138	0.0643	0.0121	-0.0051	0.0722	0.0722	0.0723	-0.0169	0.3024	0.0008	5.1892%
Apr-24	-0.1926	-0.0723	0.0101	0.0079	-0.0048	0.0122	-0.0050	-0.0145	0.0581	0.0362	0.0653	-0.0356	0.1143	0.2046	0.0816	5.2000%
May-24	0.0461	-0.0046	0.0806	0.1339	0.0097	0.0259	-0.0278	0.0377	0.0549	0.0685	-0.3104	0.0422	0.0359	0.0744	0.5988	5.2000%
Jun-24	-0.0402	0.2565	-0.1735	-0.0333	-0.0321	-0.0101	-0.0234	-0.0300	-0.0278	-0.0386	0.0876	-0.0184	-0.0413	0.1616	-0.0104	5.2000%
Jul-24	0.0120	-0.1116	0.0132	0.0059	0.0232	0.0561	0.0919	0.0326	0.1452	0.0939	0.1301	0.0671	0.0430	0.0199	0.0677	5.2000%
Aug-24	-0.1785	-0.0585	-0.0265	-0.0531	-0.0162	-0.0322	0.1537	0.0599	-0.0198	-0.0454	-0.0022	-0.0163	0.0231	-0.0600	-0.0357	4.9500%
Sep-24	0.0084	0.0731	-0.0725	-0.0411	-0.0198	0.0499	0.0846	-0.0690	-0.0509	0.0130	-0.1923	-0.0227	-0.0468	-0.0032	-0.0639	4.9500%
Oct-24	0.0726	0.2783	0.1153	-0.0792	0.0437	-0.0666	0.0312	-0.0815	-0.0704	-0.1177	0.1320	-0.1131	-0.0135	-0.0192	-0.1320	4.9500%
Nov-24	0.1454	0.1564	0.0060	0.0705	0.4122	-0.0730	-0.0189	0.1050	0.0024	0.1042	0.1262	-0.0142	-0.0652	-0.0979	0.0274	4.7000%
Dec-24	0.0659	0.0064	0.0306	-0.1528	0.0091	-0.0623	0.0366	0.0378	-0.0048	-0.0185	0.0053	-0.0460	0.0092	-0.1031	0.0283	4.7003%

Excess returns

Date	ATG	CCL	ENOG	ZIG	ALPH	SHED	PRSR	LRE	RAT	PAGPA	BGEO	BBOX	MTO	CMCX	FUTR
Jan-19		3.7850	-0.2279	3.2435	-0.1996	0.1608	-0.9971	-0.4403	1.3639	-0.5914	0.7145	16.4555	5.7163	-0.9937	66.2430
Feb-19		-0.0284	0.0639	-0.0190	0.0302	-0.0194	0.0318	0.1676	-0.0114	0.0402	0.0860	0.0115	0.0909	-0.3030	0.2680
Mar-19		-0.1140	0.1543	0.0165	0.0007	-0.0445	-0.0356	-0.0206	-0.0409	-0.0038	-0.0201	0.0021	0.1472	-0.0119	0.0921
Apr-19		0.0646	0.0773	-0.0231	-0.0089	0.0059	0.0091	0.0449	0.1250	0.0452	0.0328	0.0277	-0.1260	-0.0673	0.1149
May-19		-0.0381	-0.0541	-0.1253	-0.0071	0.0865	-0.0231	0.0162	-0.1559	-0.0590	-0.0531	-0.0098	0.1249	0.1120	0.3120
Jun-19		-0.1173	0.0448	0.0638	-0.0124	-0.0499	-0.0537	-0.0284	0.0279	0.0021	-0.0937	0.0341	-0.0212	0.0227	-0.1388
Jul-19		0.0573	0.2757	-0.0603	-0.0221	0.0417	-0.0018	0.0002	-0.0139	-0.0568	-0.0685	-0.0155	0.1206	0.0818	0.1591
Aug-19		-0.0760	-0.0775	-0.0269	0.0196	-0.0382	-0.0696	-0.0252	0.0042	0.0389	-0.0391	-0.0914	-0.1186	-0.0428	0.0424
Sep-19		-0.0297	-0.0616	0.0162	-0.0189	0.0009	-0.0082	0.0788	-0.0116	0.0988	-0.0255	0.0607	-0.0084	0.1146	0.0266
Oct-19		-0.0896	-0.0637	0.0368	-0.0077	0.0485	-0.0015	-0.0450	-0.0724	0.0366	-0.0348	-0.0024	0.0748	0.2193	0.2278
Nov-19		0.0450	0.0076	-0.0898	-0.0454	-0.0109	-0.0633	0.0365	0.0194	-0.0200	0.1322	-0.0211	-0.1801	0.1175	-0.1339
Dec-19		0.1131	0.0297	-0.0229	-0.0925	0.0910	0.0881	0.0259	-0.0071	0.0774	0.0909	-0.0030	0.0998	-0.0044	0.0897

Jan-20		-0.1514	-0.1802	-0.1518	0.0099	0.0067	-0.0125	-0.0319	-0.0813	-0.0646	-0.0760	-0.0683	-0.0906	0.0625	-0.1243
Feb-20		-0.2261	-0.1566	-0.0785	-0.0419	-0.0549	-0.1000	-0.0385	-0.1653	-0.1114	0.1112	-0.0765	0.0449	-0.0505	-0.1040
Mar-20		-0.5977	-0.1185	-0.4380	0.0874	-0.1417	-0.0790	-0.1443	-0.0983	-0.2702	-0.4599	-0.1376	-0.5358	0.1993	-0.1357
Apr-20		0.1156	0.1362	0.2914	-0.0619	0.1318	-0.1118	-0.0143	0.0087	0.0029	0.0879	0.0742	0.1393	0.1132	0.0313
May-20		-0.0354	-0.1790	0.0595	0.0931	-0.0195	0.1023	0.1096	-0.0470	0.0611	-0.0720	0.1502	-0.0491	-0.0112	0.3365
Jun-20		-0.0684	0.1404	-0.1288	-0.0317	0.0532	-0.0086	0.1899	-0.0159	-0.0125	0.1561	0.0440	0.1807	0.3451	-0.0760
Jul-20		-0.1621	-0.0738	-0.0042	-0.0365	0.0541	-0.0100	-0.0432	0.1402	-0.1029	-0.2744	0.0435	-0.2389	0.2016	0.0809
Aug-20		0.2752	0.0040	0.1349	-0.0471	0.0133	0.0619	-0.0089	0.0414	0.1325	0.1835	0.0285	0.0178	-0.0037	0.0763
Sep-20		-0.0532	0.0229	-0.0154	-0.0326	-0.0278	0.0059	-0.0995	-0.0870	-0.0651	-0.0299	-0.0057	-0.0155	-0.0333	0.3063
Oct-20		-0.1511	-0.1147	-0.0384	0.0427	-0.0168	-0.0932	-0.0807	-0.0602	-0.1141	0.0039	0.0098	-0.1408	0.0786	0.0211
Nov-20		0.5638	0.3819	0.3562	0.0326	0.0834	0.0750	0.1668	0.0202	0.3667	0.2481	0.0557	0.3505	0.1596	-0.1497
Dec-20		0.0293	0.0045	0.1010	-0.0245	-0.0375	-0.0018	-0.0267	0.0401	0.2101	0.0888	0.0146	0.0756	0.0085	0.0291
Jan-21		-0.1483	0.0896	-0.0776	0.0077	0.0310	0.0998	-0.0585	0.0450	-0.0721	-0.0595	0.0978	0.1702	0.0289	-0.0005
Feb-21		0.3518	0.1497	0.1197	-0.0453	-0.0039	0.0291	-0.0981	-0.0427	-0.0107	-0.1312	-0.0238	0.0891	0.0082	0.1215
Mar-21	-0.0005	0.0059	-0.0607	0.1195	0.0052	0.0063	0.0053	0.0467	0.1409	0.0187	0.1017	-0.0038	0.2022	0.1892	-0.0189
Apr-21	0.1446	0.0600	-0.0203	0.1813	-0.0104	0.0367	0.1024	0.1035	-0.0391	0.0275	-0.0714	0.0597	-0.0132	0.0099	0.2325
May-21	0.2775	0.0495	-0.0755	0.0572	0.0638	0.0191	0.0068	-0.1144	0.0598	0.0318	0.2813	0.0342	0.0929	-0.0005	0.2020
Jun-21	-0.0405	-0.0597	-0.0738	0.0359	-0.0273	0.0027	0.0489	-0.0282	0.0096	0.0488	0.0255	-0.0035	0.0010	-0.0578	0.1031
Jul-21	0.1783	-0.1306	-0.0929	0.0596	0.0202	0.0982	0.0240	0.0419	0.0370	0.0839	0.1156	0.0723	-0.0682	-0.0222	0.1010
Aug-21	0.1939	0.0863	0.0450	0.0326	-0.0519	0.0256	0.0091	-0.0216	0.0899	0.0167	0.1128	0.1248	0.1982	-0.0638	0.1154
Sep-21	-0.1805	0.0707	0.3043	-0.0806	0.0437	-0.0287	-0.0526	-0.0997	-0.0176	-0.0299	-0.0700	-0.1034	-0.0663	-0.3267	-0.0421
Oct-21	0.0627	-0.1265	0.0148	-0.0104	0.0200	0.0402	0.0195	-0.1017	-0.0218	0.0050	-0.0237	0.0578	-0.0794	-0.1114	-0.0444
Nov-21	-0.1108	-0.1935	-0.0183	-0.0080	-0.0513	-0.0619	-0.0152	0.0025	-0.0623	-0.0570	0.0153	0.0573	-0.0188	-0.0777	0.0154
Dec-21	0.2032	0.1645	-0.0320	0.1031	-0.0569	0.1112	0.0926	0.0424	0.0705	0.0928	0.0798	0.0443	0.0027	0.1290	0.0667
Jan-22	-0.2948	-0.0436	0.1016	-0.1211	-0.0049	-0.0635	-0.0838	0.0301	-0.0614	0.0033	-0.1219	-0.0485	-0.0717	-0.1291	-0.1816
Feb-22	-0.1108	0.0580	0.0957	-0.0201	0.0822	0.0440	0.0005	-0.1419	-0.1170	-0.1168	-0.1066	-0.0129	-0.0711	0.0108	-0.1591
Mar-22	0.0182	-0.0438	0.1405	0.1344	0.0055	0.0284	0.0522	-0.0913	0.1888	-0.0178	-0.1055	0.0203	-0.0230	0.0830	-0.0272
Apr-22	-0.1118	-0.0587	-0.0128	-0.0879	0.0121	-0.0253	-0.0022	-0.0249	0.0537	-0.0149	0.0268	0.0014	-0.0232	0.1326	-0.1545
May-22	0.1442	-0.2309	0.1190	-0.0598	0.0039	-0.0789	-0.0094	-0.0749	-0.0261	-0.0179	0.2968	-0.1743	0.0312	0.0837	-0.1167
Jun-22	-0.1016	-0.3932	-0.1893	-0.1180	-0.0053	-0.0837	-0.0341	0.0053	-0.0714	-0.0168	-0.1977	-0.1204	-0.0190	-0.1475	-0.1417
Jul-22	0.0650	0.0455	0.0327	0.0771	-0.0655	0.0872	0.0298	0.0923	-0.0799	0.0813	0.1412	0.0746	0.3863	-0.0721	0.0490
Aug-22	-0.1869	0.0951	0.1103	-0.0837	0.0190	-0.0592	-0.0842	0.0918	-0.0213	-0.0132	0.3111	-0.1726	-0.0884	-0.1256	-0.1657
Sep-22	-0.1539	-0.2184	0.0140	-0.1717	0.0164	-0.2551	-0.1027	-0.0100	-0.1068	-0.2817	-0.0229	-0.2013	-0.1558	-0.0561	-0.1686
Oct-22	0.0273	0.1748	0.0509	0.1284	-0.0412	-0.0064	-0.0837	-0.0255	0.1208	0.0622	0.0471	0.0113	0.1187	0.0915	-0.0991

Nov-22	0.1180	-0.0011	0.0085	0.1059	-0.0201	0.0011	-0.0520	0.1692	0.0967	0.0679	0.1613	-0.0100	0.0365	-0.0598	0.1243
Dec-22	-0.1568	-0.2248	-0.1528	0.0557	-0.1151	-0.0417	-0.0006	0.0609	-0.0698	0.1657	-0.0046	-0.0651	-0.0540	-0.0931	-0.1325
Jan-23	-0.0981	0.2905	-0.1443	0.0191	0.0168	0.0326	-0.0107	-0.0727	-0.0073	0.0323	-0.0093	0.0898	0.0113	0.0461	0.1536
Feb-23	-0.0549	-0.0239	-0.0041	-0.1095	-0.0244	-0.0497	-0.0744	-0.0585	-0.0441	-0.0468	0.0057	-0.0784	-0.0034	-0.0207	-0.1077
Mar-23	-0.1558	-0.0998	0.0378	-0.1855	-0.0697	-0.1404	-0.1204	-0.1405	-0.1216	-0.1700	-0.0561	-0.1072	-0.0294	-0.3286	-0.2151
Apr-23	0.0999	-0.1505	-0.0909	0.0465	-0.0158	0.0629	0.0237	0.0668	-0.0209	-0.0754	0.0346	0.0669	0.0829	0.0037	-0.0685
May-23	0.0541	0.1531	-0.1477	-0.0509	-0.0376	-0.0853	-0.0466	-0.0329	-0.0238	-0.0783	-0.0257	-0.1416	-0.0780	-0.0737	-0.4042
Jun-23	-0.0778	0.6104	-0.1268	-0.0453	-0.0585	-0.2233	-0.1144	-0.1163	-0.1165	0.0447	-0.0791	-0.1564	0.0351	-0.1872	-0.1144
Jul-23	-0.1014	-0.0358	0.0816	-0.1320	-0.1135	0.0382	-0.0244	-0.0164	-0.0816	-0.0550	0.0635	0.0555	0.0067	-0.1403	0.1929
Aug-23	-0.0533	-0.1994	-0.0691	-0.1187	-0.1147	-0.0863	-0.1793	-0.0929	-0.0730	-0.0547	0.0188	-0.0294	-0.0970	-0.2936	-0.1258
Sep-23	-0.1296	-0.1639	-0.0475	0.0011	-0.0793	-0.1182	-0.1033	-0.0213	-0.0655	-0.1174	0.0070	-0.0618	0.0057	-0.0594	0.0930
Oct-23	-0.1928	-0.2125	-0.3065	-0.0578	-0.1240	-0.1029	0.0068	-0.0892	-0.1900	-0.1502	-0.1494	-0.0733	-0.0937	-0.1555	-0.0569
Nov-23	-0.1874	0.1913	0.1300	0.0166	-0.1279	0.0729	0.0312	0.1189	0.0095	0.0360	-0.0158	0.0673	-0.0570	-0.0975	-0.0898
Dec-23	0.0244	0.2094	-0.0151	-0.0393	0.0706	0.0352	0.0504	-0.0527	0.0437	0.3934	0.1003	0.0513	-0.0386	0.1148	-0.1171
Jan-24	-0.0078	-0.1360	-0.1458	-0.0753	0.0654	-0.0676	-0.0751	-0.0791	-0.1001	-0.0426	-0.0972	-0.0679	-0.0106	0.2415	-0.1531
Feb-24	0.0582	-0.1209	0.0263	-0.0772	-0.1087	-0.1268	-0.1647	0.0206	-0.1134	-0.1371	0.1892	-0.1698	-0.0190	0.1779	-0.1952
Mar-24	-0.0304	-0.0072	0.0197	0.0507	-0.0936	-0.0657	0.0124	-0.0398	-0.0570	0.0203	0.0203	0.0204	-0.0687	0.2505	-0.0511
Apr-24	-0.2446	-0.1243	-0.0419	-0.0441	-0.0568	-0.0398	-0.0570	-0.0665	0.0061	-0.0158	0.0133	-0.0876	0.0623	0.1526	0.0296
May-24	-0.0059	-0.0566	0.0286	0.0819	-0.0423	-0.0261	-0.0798	-0.0143	0.0029	0.0165	-0.3624	-0.0098	-0.0161	0.0224	0.5468
Jun-24	-0.0922	0.2045	-0.2255	-0.0853	-0.0841	-0.0621	-0.0754	-0.0820	-0.0798	-0.0906	0.0356	-0.0704	-0.0933	0.1096	-0.0624
Jul-24	-0.0400	-0.1636	-0.0388	-0.0461	-0.0288	0.0041	0.0399	-0.0194	0.0932	0.0419	0.0781	0.0151	-0.0090	-0.0321	0.0157
Aug-24	-0.2280	-0.1080	-0.0760	-0.1026	-0.0657	-0.0817	0.1042	0.0104	-0.0693	-0.0949	-0.0517	-0.0658	-0.0264	-0.1095	-0.0852
Sep-24	-0.0411	0.0236	-0.1220	-0.0906	-0.0693	0.0004	0.0351	-0.1185	-0.1004	-0.0365	-0.2418	-0.0722	-0.0963	-0.0527	-0.1134
Oct-24	0.0231	0.2288	0.0658	-0.1287	-0.0058	-0.1161	-0.0183	-0.1310	-0.1199	-0.1672	0.0825	-0.1626	-0.0630	-0.0687	-0.1815
Nov-24	0.0984	0.1094	-0.0410	0.0235	0.3652	-0.1200	-0.0659	0.0580	-0.0446	0.0572	0.0792	-0.0612	-0.1122	-0.1449	-0.0196
Dec-24	0.0189	-0.0406	-0.0164	-0.1998	-0.0379	-0.1093	-0.0104	-0.0092	-0.0518	-0.0655	-0.0417	-0.0930	-0.0378	-0.1501	-0.0187
Average	-0.0300	0.0386	-0.0095	0.0294	-0.0196	-0.0171	-0.0307	-0.0194	-0.0031	-0.0147	0.0151	0.2105	0.0763	-0.0147	0.9184

Expected excess returns

ATG	-0.03
CCL	0.038571
ENOG	-0.00953
ZIG	0.029441
ALPH	-0.01959
SHED	-0.01715
PSRS	-0.03075
LRE	-0.01936
RAT	-0.00315
PAGPA	-0.01469
BGEO	0.015115
BBOX	0.210481
MTO	0.076252
CMCX	-0.01469
FUTR	0.918404

Covariance matrix

	ATG	CCL	ENOG	ZIG	ALPH	SHED	PSRS	LRE	RAT	PAGPA	BGEO	BBOX	MTO	CMCX	FUTR
ATG	0.016523	0.016547	0.014665	0.018445	0.0163211	0.017174	0.016027	0.015501	0.017135	0.017308	0.019032	0.017086	0.017521	0.018463	0.019199
CCL	0.0165471	0.232102	0.022288	0.025276	0.0146384	0.017641	0.016879	0.016432	0.017327	0.024922	0.02335	0.017113	0.024307	0.01444	0.015947
ENOG	0.0146651	0.022288	0.014695	0.018434	0.1583411	0.016974	0.015378	0.016638	0.017258	0.017586	0.019187	0.01591	0.020657	0.014906	0.015572
ZIG	0.0184455	0.025276	0.018434	0.158341	0.0144672	0.018898	0.01704	0.017791	0.018624	0.022488	0.020038	0.019391	0.022851	0.017438	0.020481
ALPH	0.0163211	0.014638	0.015014	0.014467	0.0050508	0.014184	0.014693	0.014702	0.014948	0.015505	0.01486	0.01452	0.013387	0.015129	0.015049
SHED	0.0171743	0.017641	0.016974	0.018898	0.0141842	0.005826	0.017015	0.016433	0.016945	0.01842	0.016813	0.018741	0.01873	0.017903	0.019254
PSRS	0.016027	0.016879	0.015378	0.01704	0.0146932	0.017015	0.017103	0.01591	0.015998	0.017574	0.015411	0.017145	0.016951	0.015736	0.017735
LRE	0.0155014	0.016432	0.016638	0.017791	0.0147024	0.016433	0.01591	0.00853	0.016	0.018309	0.018958	0.016571	0.018326	0.015583	0.017038
RAT	0.0171348	0.017327	0.017258	0.018624	0.0149484	0.016945	0.015998	0.016	0.032033	0.018352	0.017077	0.017198	0.016363	0.01712	0.016727
PAGPA	0.0173082	0.024922	0.017586	0.022488	0.0155053	0.01842	0.017574	0.018309	0.018352	0.016244	0.02071	0.018625	0.020926	0.016463	0.017991
BGEO	0.0190318	0.02335	0.019187	0.020038	0.0148597	0.016813	0.015411	0.018958	0.017077	0.02071	0.024563	0.015905	0.023314	0.015617	0.013186
BBOX	0.0170859	0.017113	0.01591	0.019391	0.0145196	0.018741	0.017145	0.016571	0.017198	0.018625	0.015905	3.722868	0.01851	0.016876	0.020803
MTO	0.0175215	0.024307	0.020657	0.022851	0.0133868	0.01873	0.016951	0.018326	0.016363	0.020926	0.023314	0.01851	0.463778	0.016429	0.019585
CMCX	0.0184633	0.01444	0.014906	0.017438	0.0151285	0.017903	0.015736	0.015583	0.01712	0.016463	0.015617	0.016876	0.016429	0.031638	0.015692
FUTR	0.0191986	0.015947	0.015572	0.020481	0.015049	0.019254	0.017735	0.017038	0.016727	0.017991	0.013186	0.020803	0.019585	0.015692	60.12713

Adjusted covariance matrix

WEIGHTS		0.065291	0.05	0.109923	0.05	0.094002	0.05	0.05	0.05	0.052021	0.05	0.070286	0.156148	0.161745	0.05	0.055874
		ATG	CCL	ENOG	ZIG	ALPH	SHED	PSRS	LRE	RAT	PAGPA	BGEO	BBOX	MTO	CMCX	FUTR
0.065291287	ATG	0.016756	0.01678	0.014872	0.0187052	0.016551	0.017416	0.016253	0.01572	0.017376	0.017552	0.0193	0.017327	0.017768	0.018723	0.019469
0.05	CCL	0.01678	0.235371	0.022602	0.0256324	0.014845	0.017889	0.017117	0.016664	0.017571	0.025273	0.023679	0.017354	0.02465	0.014643	0.016172
0.109923095	ENOG	0.014872	0.022602	0.014902	0.018694	0.160571	0.017213	0.015594	0.016872	0.017501	0.017834	0.019457	0.016135	0.020948	0.015116	0.015791
0.05	ZIG	0.018705	0.025632	0.018694	0.1605713	0.014671	0.019165	0.01728	0.018041	0.018886	0.022805	0.02032	0.019664	0.023173	0.017684	0.02077
0.094002101	ALPH	0.016551	0.014845	0.015225	0.0146709	0.005122	0.014384	0.0149	0.014909	0.015159	0.015724	0.015069	0.014724	0.013575	0.015342	0.015261
0.05	SHED	0.017416	0.017889	0.017213	0.0191647	0.014384	0.005908	0.017255	0.016665	0.017184	0.018679	0.01705	0.019005	0.018994	0.018155	0.019525
0.05	PSRS	0.016253	0.017117	0.015594	0.0172797	0.0149	0.017255	0.017344	0.016134	0.016224	0.017822	0.015628	0.017386	0.01719	0.015958	0.017984
0.05	LRE	0.01572	0.016664	0.016872	0.0180412	0.014909	0.016665	0.016134	0.00865	0.016226	0.018567	0.019225	0.016804	0.018584	0.015803	0.017278
0.052021488	RAT	0.017376	0.017571	0.017501	0.0188864	0.015159	0.017184	0.016224	0.016226	0.032484	0.01861	0.017317	0.01744	0.016593	0.017361	0.016963
0.05	PAGPA	0.017552	0.025273	0.017834	0.0228047	0.015724	0.018679	0.017822	0.018567	0.01861	0.016473	0.021002	0.018888	0.021221	0.016695	0.018245
0.070286371	BGEO	0.0193	0.023679	0.019457	0.0203201	0.015069	0.01705	0.015628	0.019225	0.017317	0.021002	0.024909	0.016129	0.023642	0.015837	0.013372
0.156147814	BBOX	0.017327	0.017354	0.016135	0.019664	0.014724	0.019005	0.017386	0.016804	0.01744	0.018888	0.016129	3.775303	0.01877	0.017114	0.021096
0.161744602	MTO	0.017768	0.02465	0.020948	0.0231732	0.013575	0.018994	0.01719	0.018584	0.016593	0.021221	0.023642	0.01877	0.47031	0.01666	0.019861
0.05	CMCX	0.018723	0.014643	0.015116	0.017684	0.015342	0.018155	0.015958	0.015803	0.017361	0.016695	0.015837	0.017114	0.01666	0.032084	0.015913
0.055874427	FUTR	0.019469	0.016172	0.015791	0.0207697	0.015261	0.019525	0.017984	0.017278	0.016963	0.018245	0.013372	0.021096	0.019861	0.015913	60.97399
1		0.001258	0.001639	0.002122	0.0014552	0.002975	0.000965	0.000928	0.00093	0.001033	0.001062	0.00149	0.094682	0.015268	0.000957	0.191423
0.091134706	Portfolio Expected Excess Returns															
0.31818728	Portfolio Variance															
0.564080916	Portfolio Standard Deviation															
0.161563179	Sharpe ratio															

Efficient frontier(simulation)

constraint on risk premium	0.097					OPTI MUM				MIN VAR										
Portfolio Expected Excess Returns	0.090	0.032	0.049	0.067	0.057	0.054	0.083	0.041	0.062	0.012	0.047	0.050	0.092	0.097	0.074	0.014	0.032	0.077	0.059	0.042
Portfolio Standard deviation	0.660	0.237	0.342	0.471	0.469	0.357	0.572	0.286	0.498	0.132	0.364	0.424	0.789	0.711	0.624	0.164	0.268	0.541	0.415	0.278
Sharpe ratio	0.136	0.134	0.144	0.141	0.123	0.153	0.144	0.144	0.124	0.087	0.128	0.117	0.117	0.136	0.119	0.084	0.121	0.141	0.141	0.149
ATG	0.046	0.076	0.088	0.032	0.080	0.028	0.010	0.026	0.007	0.019	0.035	0.011	0.092	0.092	0.085	0.093	0.060	0.034	0.019	0.066
CCL	0.059	0.006	0.021	0.082	0.020	0.064	0.043	0.098	0.101	0.103	0.028	0.008	0.026	0.013	0.081	0.087	0.098	0.013	0.002	0.045
ENOG	0.037	0.009	0.026	0.106	0.039	0.059	0.105	0.093	0.074	0.033	0.018	0.037	0.026	0.003	0.088	0.003	0.036	0.087	0.031	0.092
ZIG	0.095	0.057	0.056	0.096	0.041	0.076	0.052	0.083	0.020	0.044	0.069	0.019	0.011	0.068	0.000	0.082	0.020	0.044	0.063	0.004
ALPH	0.044	0.050	0.054	0.066	0.058	0.011	0.036	0.076	0.039	0.060	0.000	0.028	0.084	0.012	0.013	0.093	0.082	0.033	0.077	0.083
SHED	0.067	0.085	0.047	0.027	0.064	0.034	0.049	0.038	0.076	0.024	0.074	0.032	0.046	0.022	0.058	0.070	0.044	0.040	0.044	0.059
PSRS	0.079	0.003	0.074	0.002	0.090	0.059	0.060	0.075	0.053	0.078	0.064	0.085	0.017	0.023	0.050	0.049	0.065	0.042	0.018	0.013
LRE	0.076	0.023	0.027	0.103	0.013	0.027	0.059	0.024	0.059	0.046	0.000	0.023	0.047	0.052	0.072	0.051	0.088	0.089	0.070	0.052
RAT	0.001	0.095	0.044	0.068	0.096	0.048	0.045	0.077	0.037	0.066	0.018	0.044	0.062	0.088	0.031	0.021	0.050	0.080	0.012	0.018
PAGPA	0.052	0.048	0.020	0.055	0.031	0.022	0.084	0.010	0.008	0.026	0.071	0.048	0.065	0.085	0.068	0.058	0.088	0.040	0.043	0.078
BGEO	0.086	0.100	0.062	0.067	0.067	0.052	0.033	0.063	0.061	0.025	0.077	0.096	0.023	0.022	0.078	0.016	0.018	0.019	0.035	0.001
BBOX	0.062	0.082	0.056	0.047	0.056	0.072	0.078	0.093	0.009	0.004	0.028	0.013	0.018	0.087	0.013	0.001	0.046	0.091	0.075	0.067
MTO	0.072	0.006	0.103	0.062	0.008	0.043	0.100	0.028	0.058	0.057	0.031	0.013	0.041	0.036	0.056	0.023	0.040	0.066	0.034	0.124
CMCX	0.073	0.030	0.050	0.015	0.082	0.066	0.051	0.085	0.054	0.082	0.074	0.001	0.024	0.061	0.024	0.002	0.078	0.082	0.059	0.006
FUTR	0.081	0.019	0.038	0.056	0.057	0.040	0.068	0.022	0.062	0.009	0.045	0.054	0.100	0.087	0.078	0.016	0.028	0.064	0.048	0.026
CAL	0.101	0.036	0.052	0.072	0.072	0.054	0.087	0.044	0.076	0.020	0.055	0.065	0.120	0.109	0.095	0.025	0.041	0.083	0.063	0.042

Using solver

MINIMUM VARIANCE	EFFICIENT FRONTIER	OPTIMAL PORTIFOLIO
0.564080916	0.5640809	0.1615632
15	15	15
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
TRUE	TRUE	TRUE
32767	FALSE	32767
0	32767	0
	0	

Efficient frontier and CAL

Standard deviation	Expected excess returns	CUMMULATIVE	efficiency	CAL
0.131726	0.0115002	0.0115002	TRUE	0.0200959
0.164365	0.013814	0.013814	TRUE	0.0250752
0.2369446	0.0317422	0.0317422	TRUE	0.0361478
0.2678642	0.0324685	0.0324685	TRUE	0.0408649
0.278209	0.041541	0.041541	TRUE	0.042443
0.3418203	0.0493545	0.0493545	TRUE	0.0521475
0.3567149	0.0544197	0.0544197	TRUE	0.0544197
0.4154781	0.0587613	0.0587613	TRUE	0.0633846

0.4714687	0.0665217	0.0665217	TRUE	0.0719264
0.5411985	0.0765426	0.0765426	TRUE	0.0825642
0.571641	0.0825409	0.0825409	TRUE	0.0872085
0.6602647	0.0900532	0.0900532	TRUE	0.1007287
0.7113847	0.0966464	0.0966464	TRUE	0.1085275

Performance evaluation

Performance evaluation							
Overview Factor Risk Custom Simulations Historical							
Column Set Default							
Hide/Show							
Classification	VaR (MC) Port	CVaR (MC) Port	Mkt Val Port	Pos Port	% Wgt Port	Partial VaR Port	Marginal VaR Port
▼ Total	30.14	39.96	11,131		100.00		
▼ Financials	11.72	15.30	3,594		32.29	-8.85	30.79
RATHBONES GROUP PLC	1.82	2.46	513	31.00	4.61	-1.29	24.81
LANCASHIRE HOLDINGS LTD	2.31	3.12	495	86.00	4.45	-1.18	28.19
LION FINANCE GROUP PLC	3.72	4.77	676	12.00	6.07	-1.65	29.50
CMC MARKETS PLC	3.09	3.89	476	220.00	4.28	-1.23	30.63
ALPHA GROUP INTERNATIONAL PL	5.35	6.79	939	38.00	8.43	-2.52	35.41
PARAGON BANKING GROUP PLC	2.29	3.04	494	67.00	4.44	-1.39	32.72
▼ Industrials	8.04	10.68	2,111		18.96	-4.95	28.98
MITIE GROUP PLC	7.00	9.45	1,614	1,421.00	14.50	-3.59	28.71
ZIGUP PLC	2.26	2.90	497	161.00	4.46	-1.40	29.84
▼ Communication Services	3.53	4.42	551		4.95	-1.38	30.97
FUTURE PLC	3.53	4.42	551	63.00	4.95	-1.38	30.97
▼ Real Estate	8.10	10.90	2,554		22.95	-5.57	26.65
PRS REIT PLC/THE	1.89	2.55	492	429.00	4.42	-0.96	18.68
URBAN LOGISTICS REIT PLC	2.02	2.71	498	379.00	4.47	-1.14	25.10
TRITAX BIG BOX REIT PLC	5.88	7.92	1,564	1,108.00	14.06	-3.84	29.64
▼ Consumer Discretionary	5.66	7.03	1,145		10.29	-3.60	35.40
AUCTION TECHNOLOGY GROUP	4.02	5.03	648	112.00	5.83	-1.75	36.02
CARNIVAL PLC	3.30	3.99	497	36.00	4.46	-1.50	34.60
▼ Energy	6.33	8.10	1,176		10.56	-3.31	32.32
ENERGEAN PLC	6.33	8.10	1,176	125.00	10.56	-3.31	32.32

All data used was retrieved from Bloomberg and investing.com

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