Minerva India Under-served Scorecard

The Minerva fund consistently performed better than its peers in different time periods. It was particularly interesting to see that the fund was able to protect its capital during times of significant market disruptions, changes in market conditions, and downturns. On average, the fund achieved twice the annualized returns compared to its benchmark, BSE Small Cap, delivering more than a 7% annualized return compared to the benchmark's 3.5% annualized return. We compared the fund's performance to Nifty 50, BSE Small Cap, and BSE Mid Cap against the broader BSE 500 index. The fund stood out in various statistical measures such as alpha, excess drawdown, information ratio, and had a tracking error similar to the BSE Small Cap.

Though machines can beat the market in most asset classes today, working in the under-served category in an emerging market is an extreme human skill, where machines don't have the advantage over humans, yet. It's a lot about forensics and looking for the needle in the haystack of information. This is why sometimes, we enjoy working with specialized fund managers, who are great in their niche and are open to augmentation.

We had the opportunity to work with Piyush Sharma from Minerva India Under-served fund, to assist him with a systematic view on his mandate, his process, simulations and the performance attribution.

Piyush Sharma launched the Minerva India Under-served strategy in 2011. Having spent time with Citigroup and BSE in India, he moved to United States in 2002, where he covered stocks within Business Services, Autos, Consumer Products and Financials with Sanford Bernstein, Longbow Research, and Avondale Partners, working in teams that received accolades from leading institutional research arbiters, including Institutional Investor (II) and Greenwich Associates. Piyush received an MBA from University of North Carolina at Chapel Hill, and BS in Accounting from University of Allahabad.

Over 12+ years, Minerva India Under-served has camped in the institutionally underowned/orphaned part of listed India. Strategy's highest conviction holdings have materially mis-priced idiosyncrasies, display accounting and structural clarity, are devoid of speculative froth, and yet are institutionally under-owned/orphaned. The fund strategy attempts to capitalize upon flawed overly-generalized narratives around this space. In the process, it has thoroughly debunked the narrative that investing in this space inevitably comes with elevated volatility.

Minerva fund delivered 663% since inception in April 2011. This translated into annualized returns above 18% till end of June 2023. During this period Nifty 50, BSE 500 and BSE Small Cap delivered 10.5%, 10.7% and 11.3% respectively.

The summary below presents 1461 portfolio simulations of Minerva India Under-Served (Minerva fund) alongside Nifty50, BSE Small Cap, BSE Mid Cap, and BSE 500. Among these, Minerva India Under-served had 65% of the data on the positive side of the vertical axis, which separated the data into positive and negative excess returns. Nifty 50 performed the poorest, with only 35% of the data in the desired half.

The information ratio is a financial metric that evaluates the risk-adjusted performance of an investment portfolio or fund. It measures the excess return generated by the portfolio in relation to its benchmark, considering the level of risk taken. Essentially, it helps investors assess whether a portfolio manager is delivering returns that justify the associated risk. A higher information ratio suggests that the portfolio is generating more excess return per unit of risk, indicating effective performance.

Having a higher information ratio indicates that the portfolio manager has successfully generated excess returns compared to the benchmark, considering the associated volatility or risk. A positive and higher information ratio is generally preferred as it signifies outperformance of the benchmark while effectively managing risk.

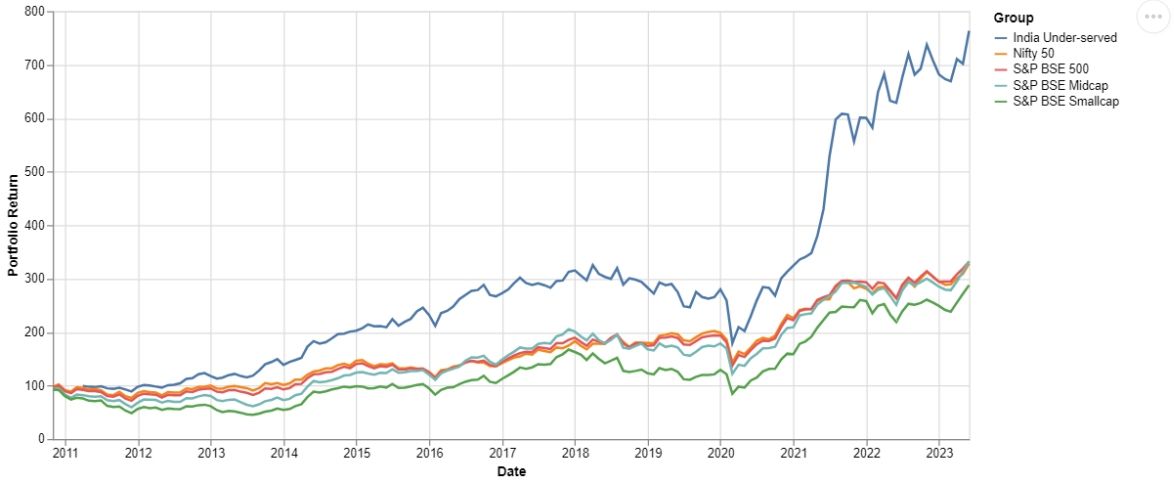
Typically, an information ratio above 0.5 is considered a strong performance indicator. It suggests that the portfolio consistently generates excess returns compared to the benchmark while effectively managing risk. However, it's important to consider the investment context and compare the information ratio to industry standards, peer funds, and historical performance.

To obtain the MPT statistics, we ran simulations on real performance data for the fund and its respective benchmarks. The Minerva fund showed an average information ratio above 0.5 for various holding periods.

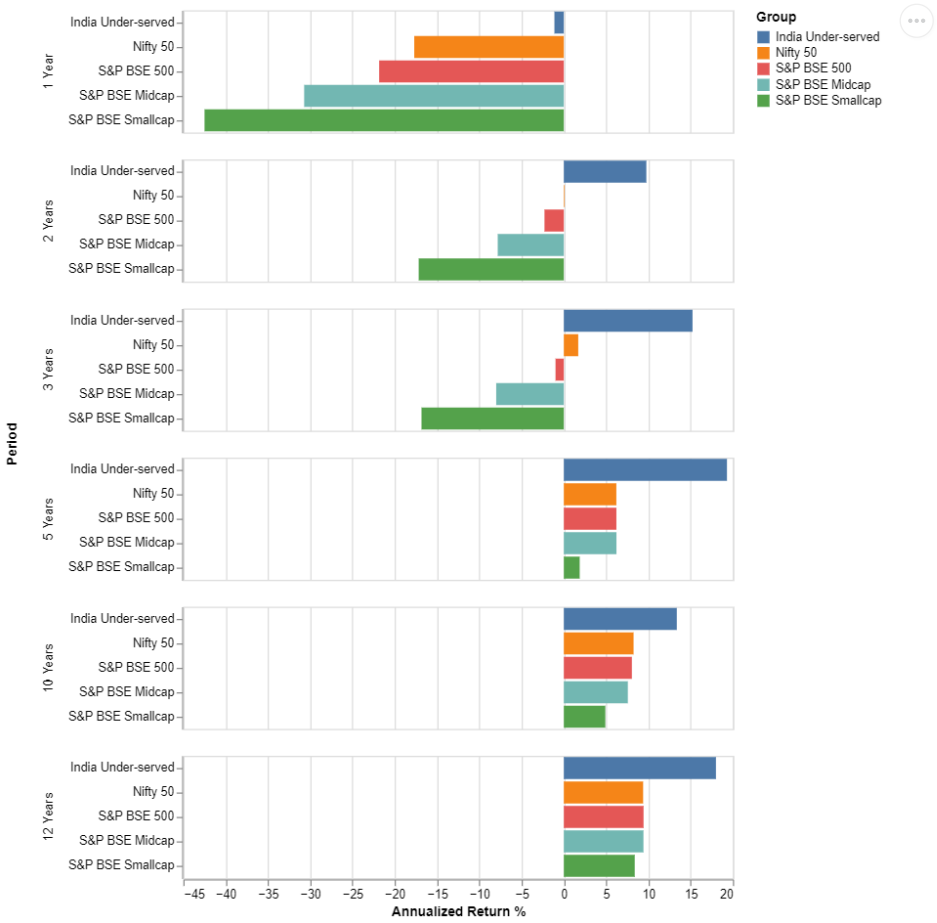
1: Performance plot and histogram since April 2011

1.1: Performance plot

Out[170…



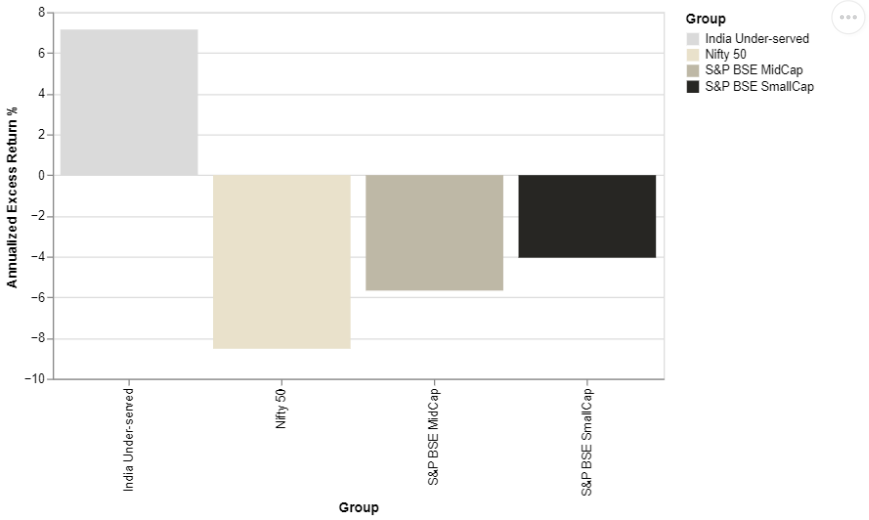
1.2: Performance comparatives on monthly data



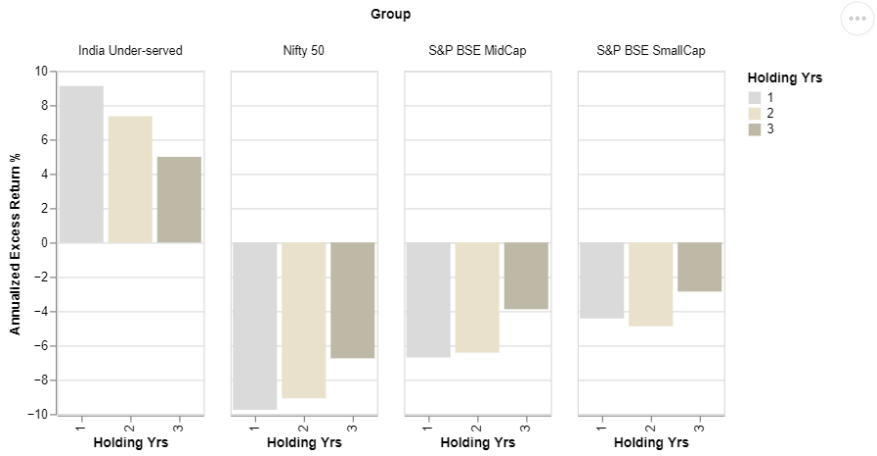
2: Average annualized excess returns histograms

The histogram illustrates the average annualized excess returns for the various groups, across the three different holding periods.

2.1: Average annualized excess returns for the various benchmarks along with Minerva India

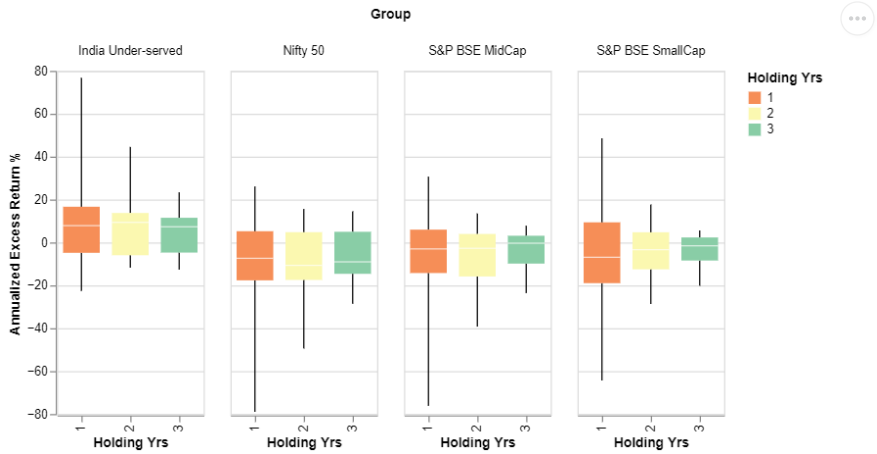


2.2: Average annualized excess returns across three different holding periods



3: Quartile boxplots for annualized excess returns

The Boxplots show minimum, first quartile, median, third quartile, and maximum annualized excess return for various groups and different holding periods.

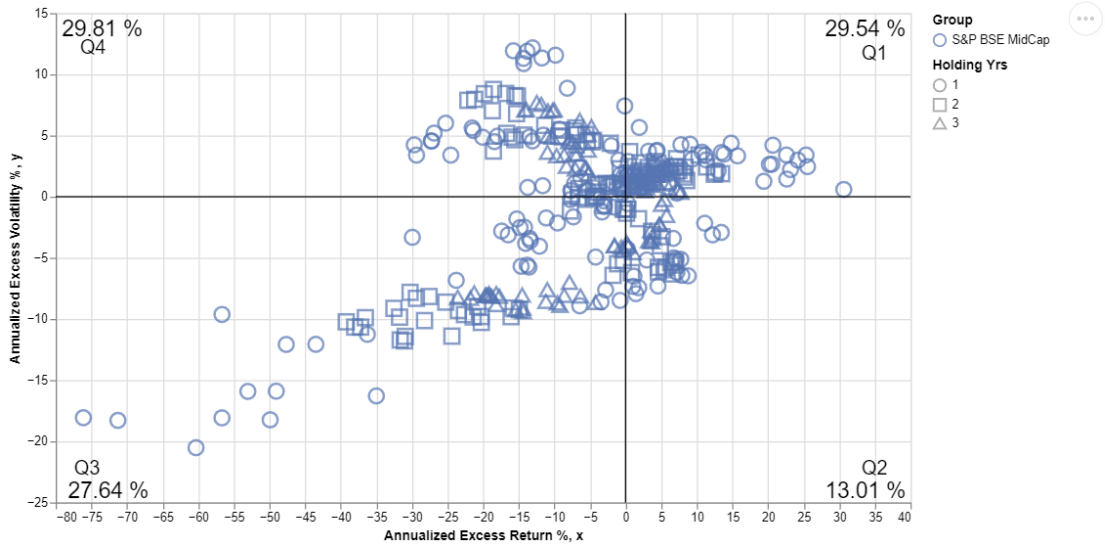


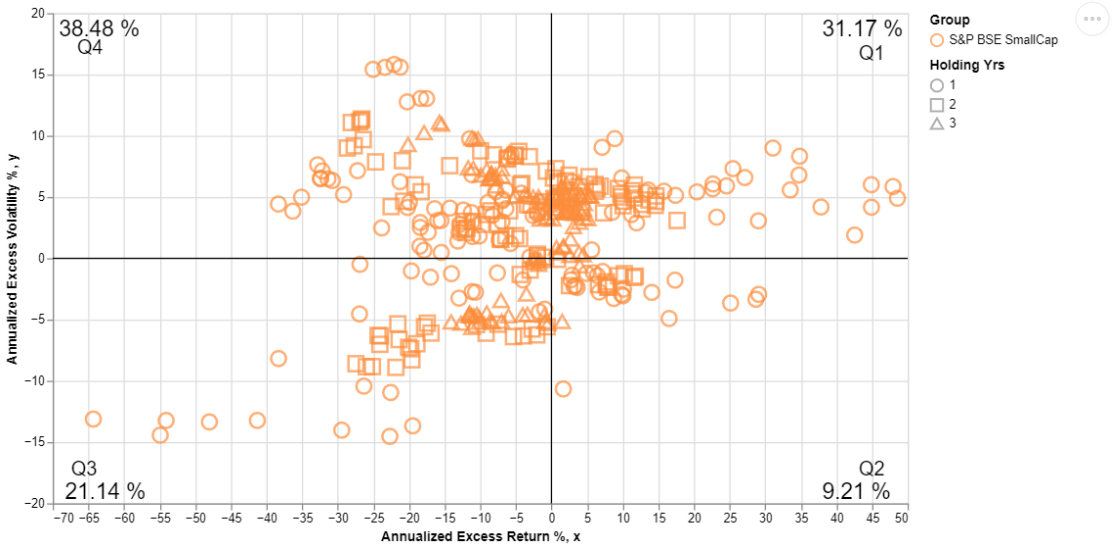
4: Cartesian plots for various statistical measures

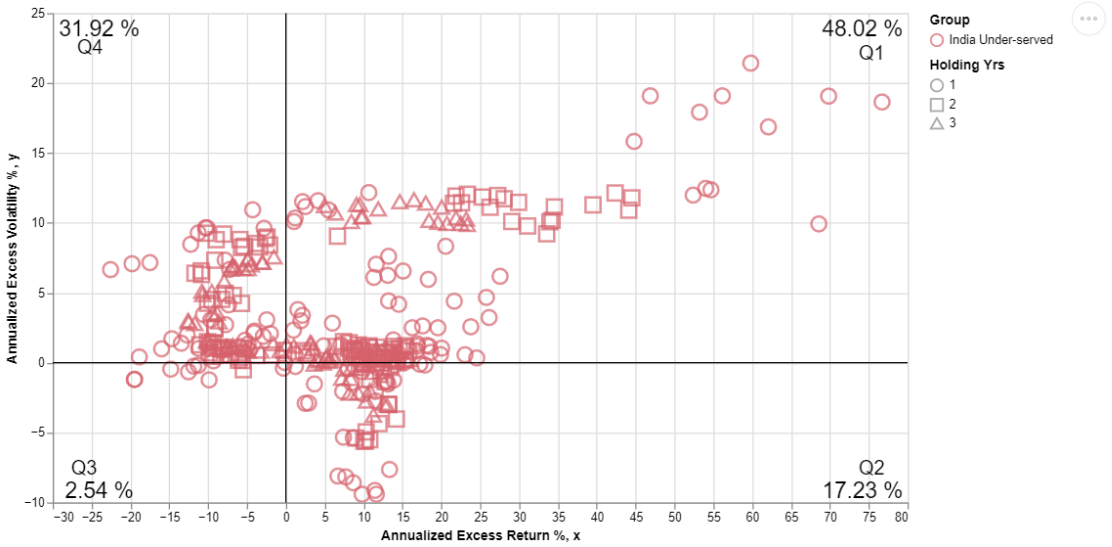
The Cartesian plots below illustrate annualized excess returns vs. annualized excess volatility, Information ratio vs. annualized returns, annualized volatility vs. Information ratio, Alpha vs. Beta and Tracking error vs Information ratio plotted for different groups and different holding periods.

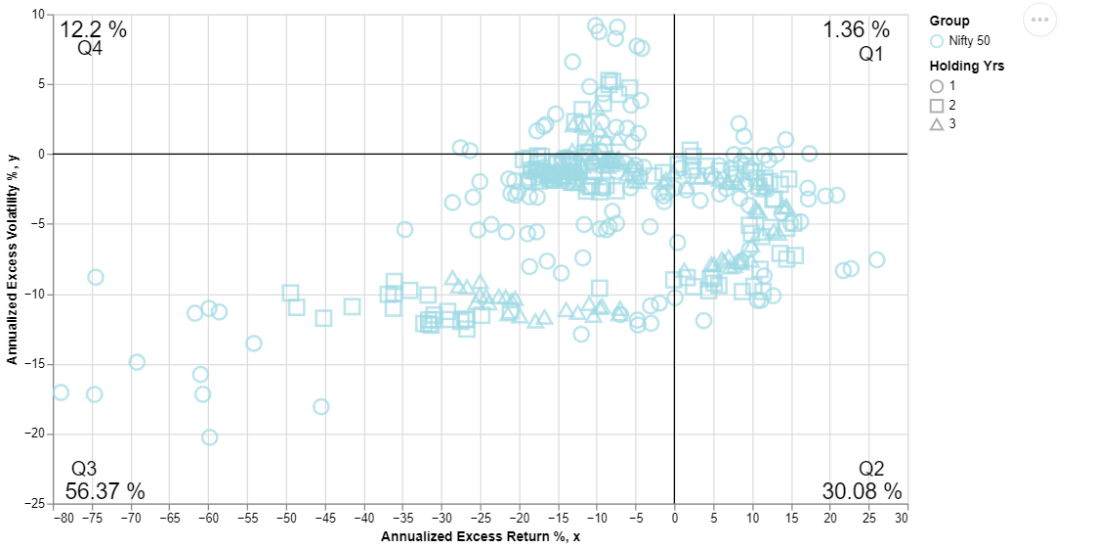
4.1: Annualized excess returns vs. annualized excess volatility

The Cartesian chart of annualized excess returns vs. annualized excess volatility plotted for different groups and different holding periods.



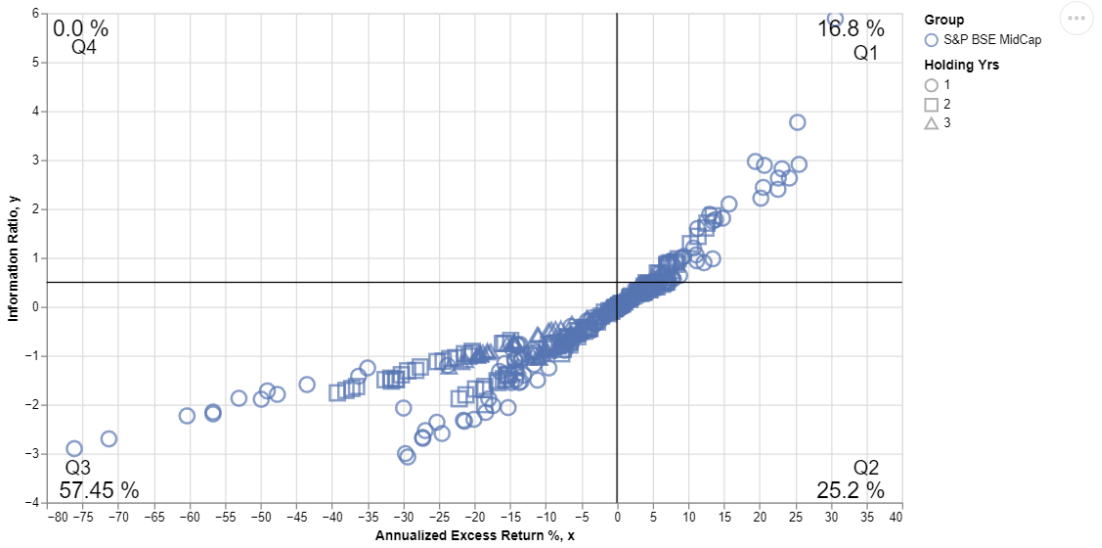

38.48 %
Q4
31.17 %
Q1
Q3
21.14 %
Q2
9.21 %
Annualized Excess Volatility %, y
Annualized Excess Return %, x
Group
S&P BSE SmallCap
Holding Yrs
1
2
3

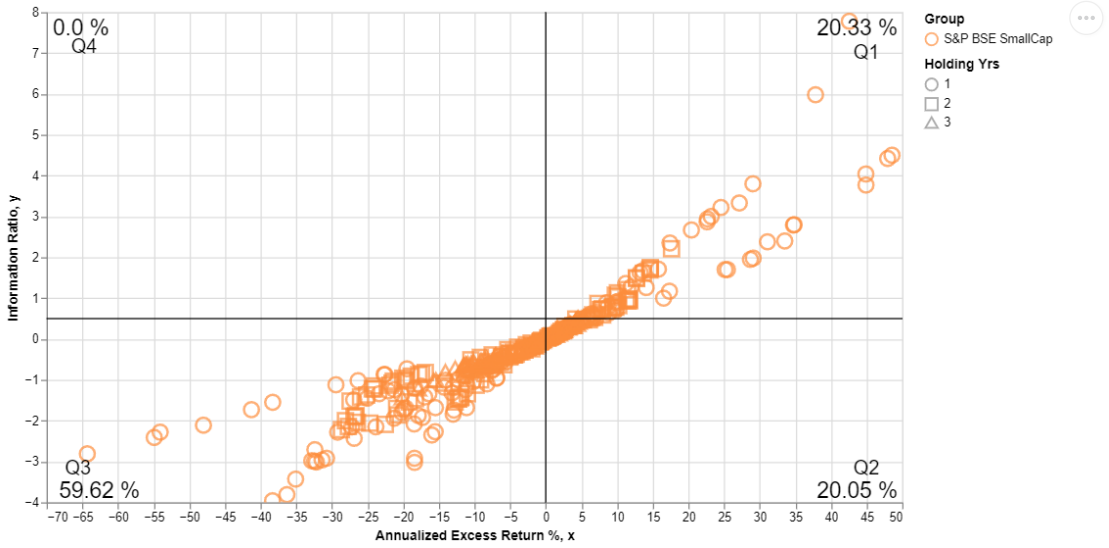

31.92 %
Q4
48.02 %
Q1
Q3
2.54 %
Q2
17.23 %
Annualized Excess Volatility %, y
Annualized Excess Return %, x
Group
India Under-served
Holding Yrs
1
2
3

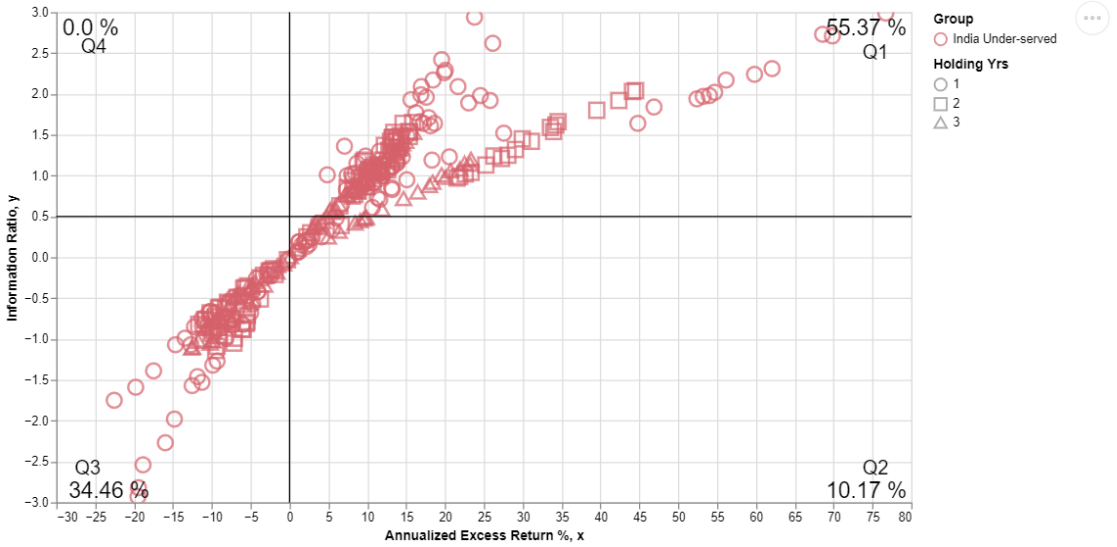

12.2 %
Q4
1.36 %
Q1
Q3
56.37 %
Q2
30.08 %
Annualized Excess Volatility %, y
Annualized Excess Return %, x
Group
Nifty 50
Holding Yrs
1
2
3

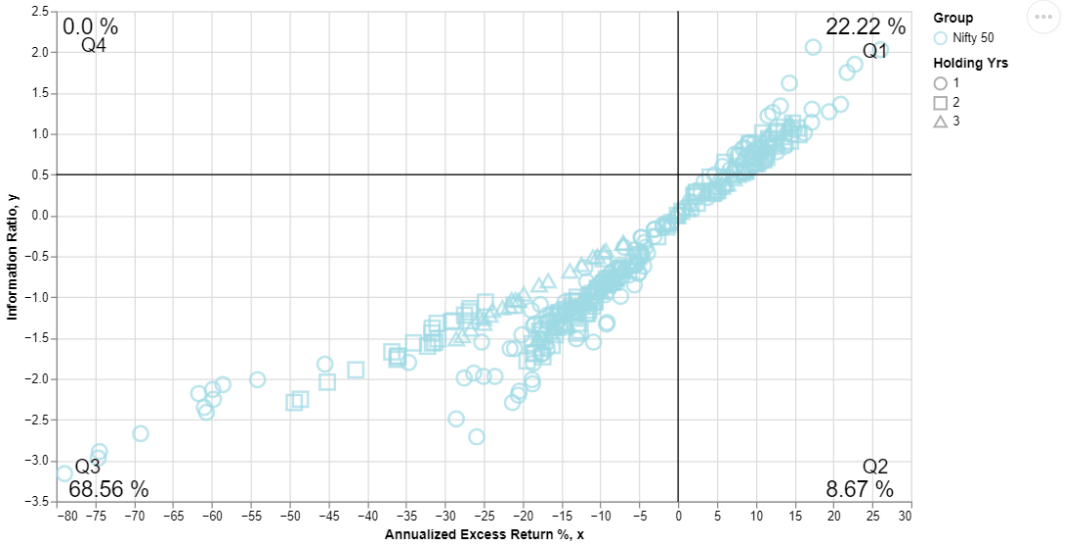
4.2: Annualized excess returns vs. Information ratio

The Cartesian chart of annualized excess returns vs. Information ratio plotted for different groups and different holding periods.



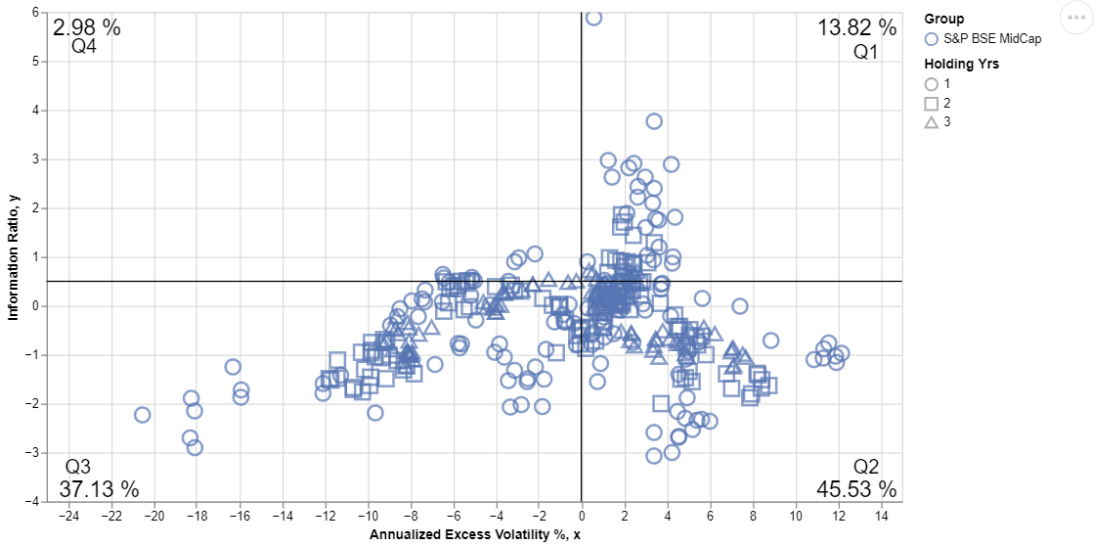


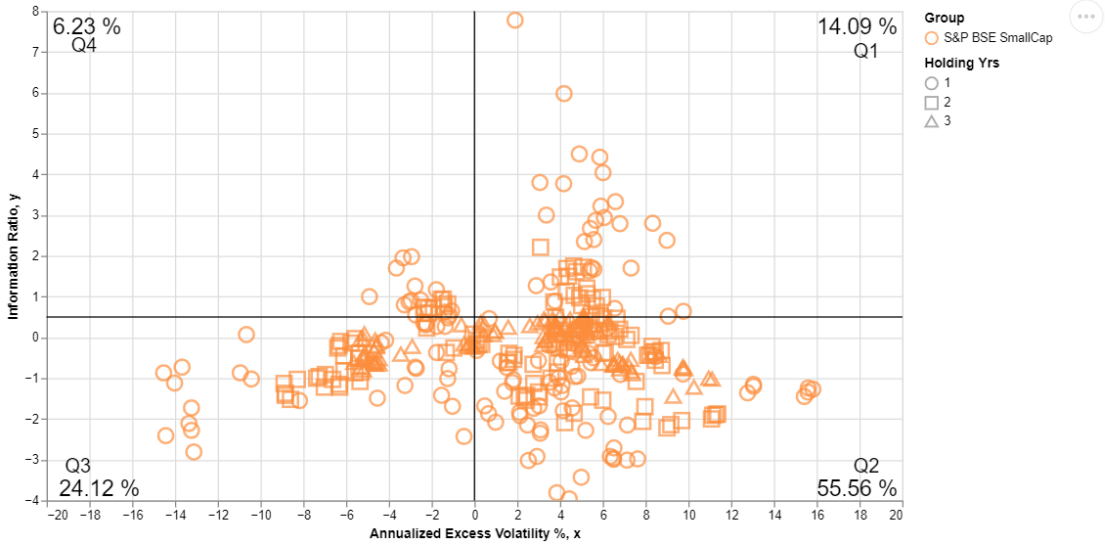


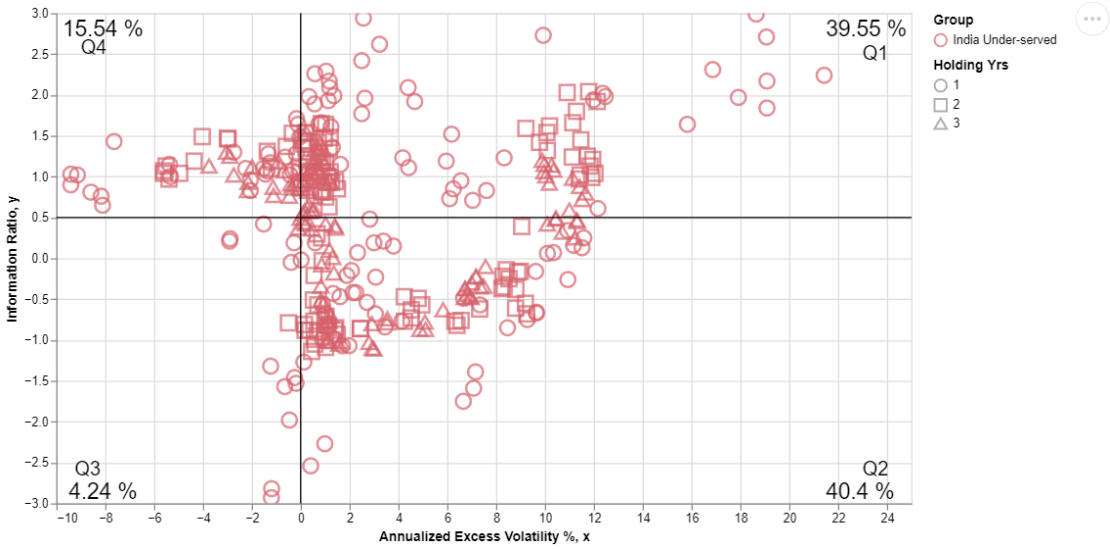


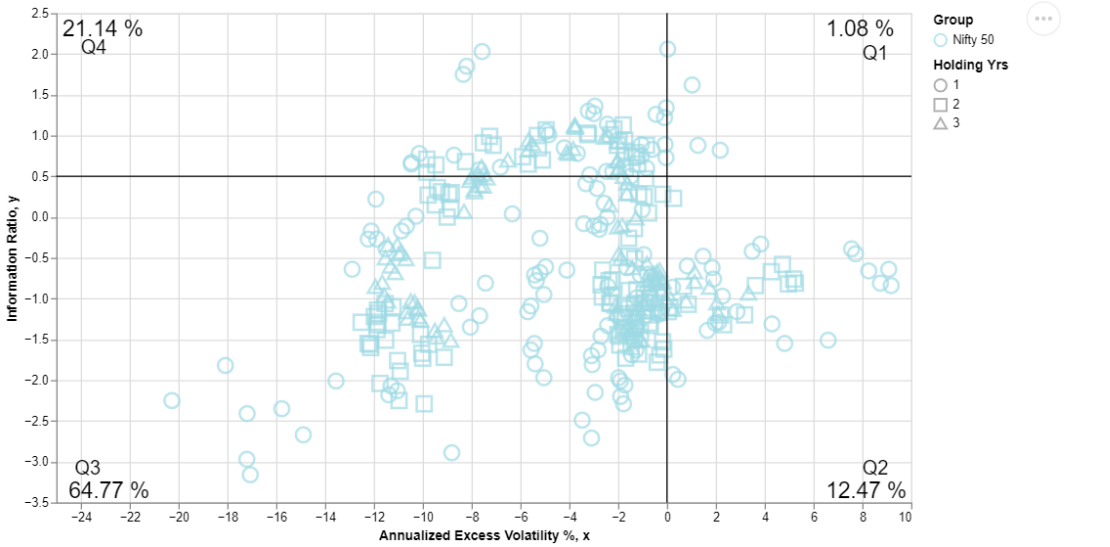
4.3: Annualized excess volatility vs. Information ratio

The Cartesian chart of annualized excess volatility vs. Information ratio plotted for different groups and different holding periods.



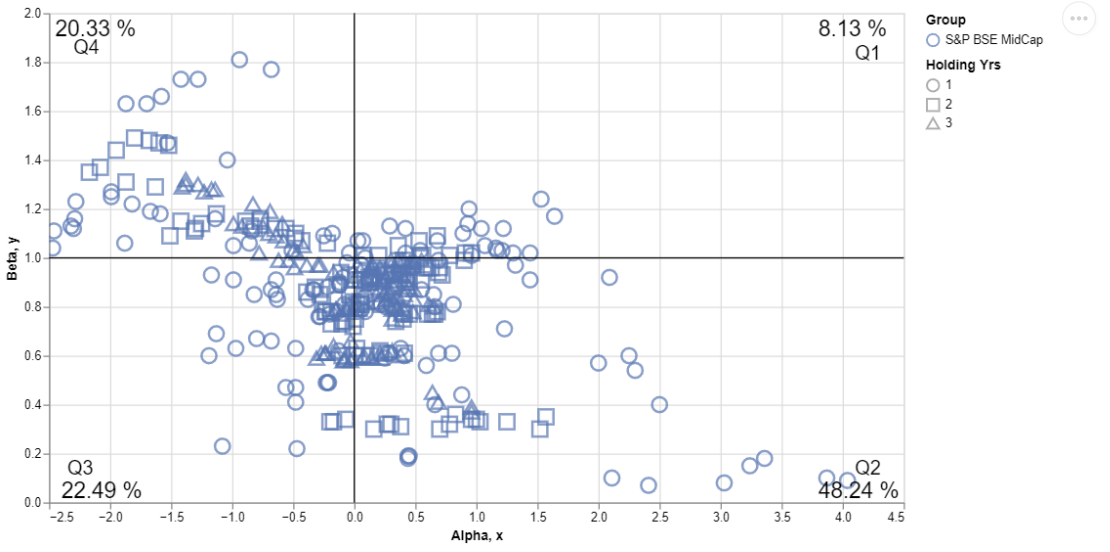


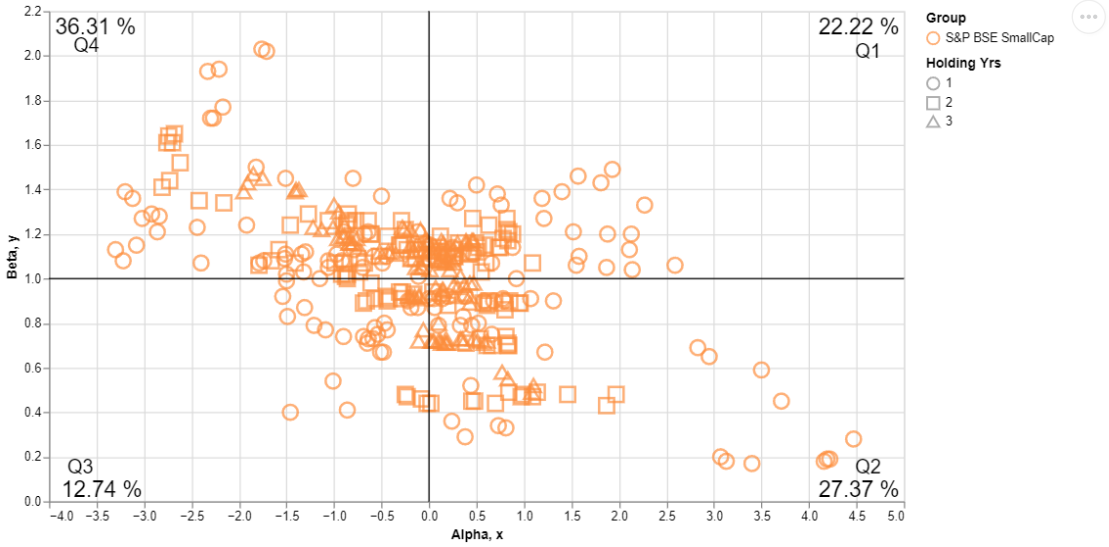


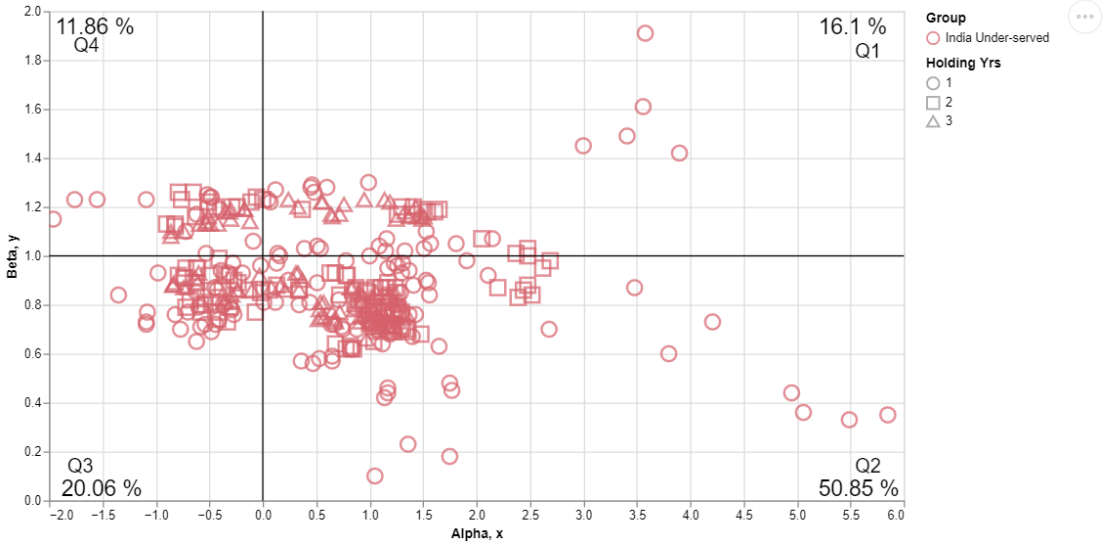


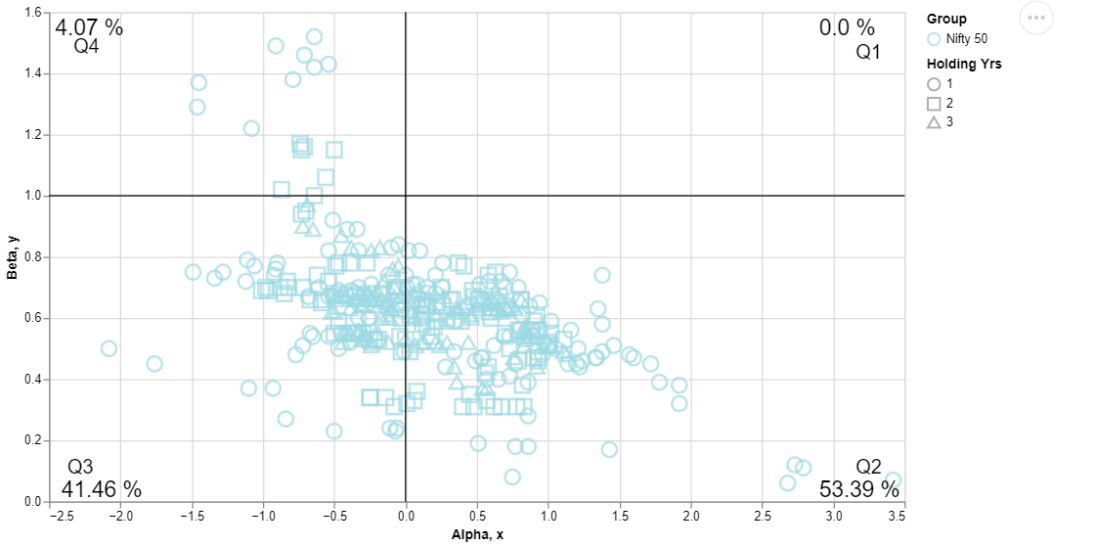
4.4: Alpha vs. Beta

The Cartesian chart of Alpha vs. Beta plotted for different groups and different holding periods.



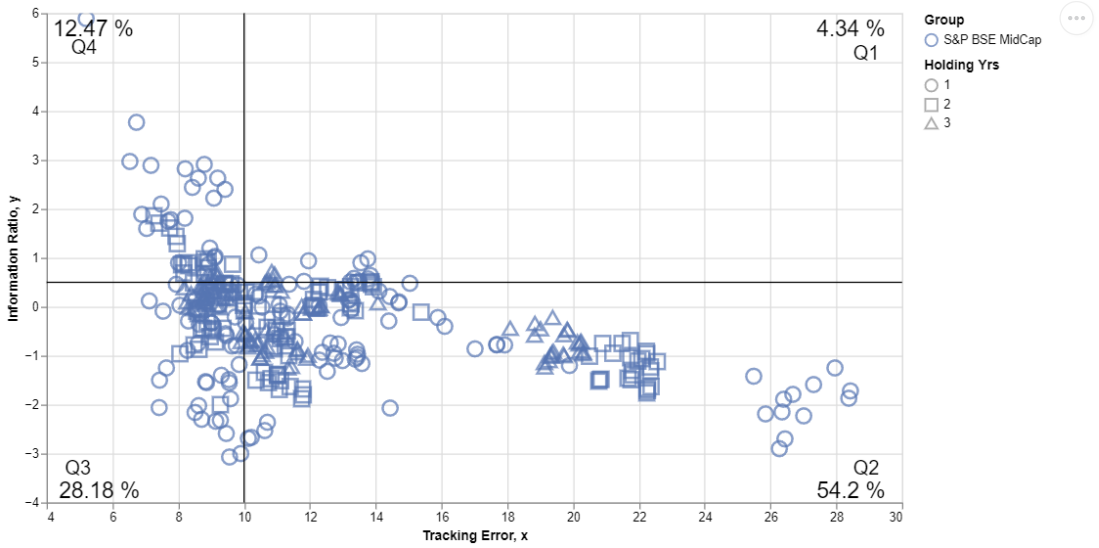

36.31 %
Q4
22.22 %
Q1
Q3
12.74 %
Q2
27.37 %
Beta, y
Alpha, x
Group
S&P BSE SmallCap
Holding Yrs
1
2
3

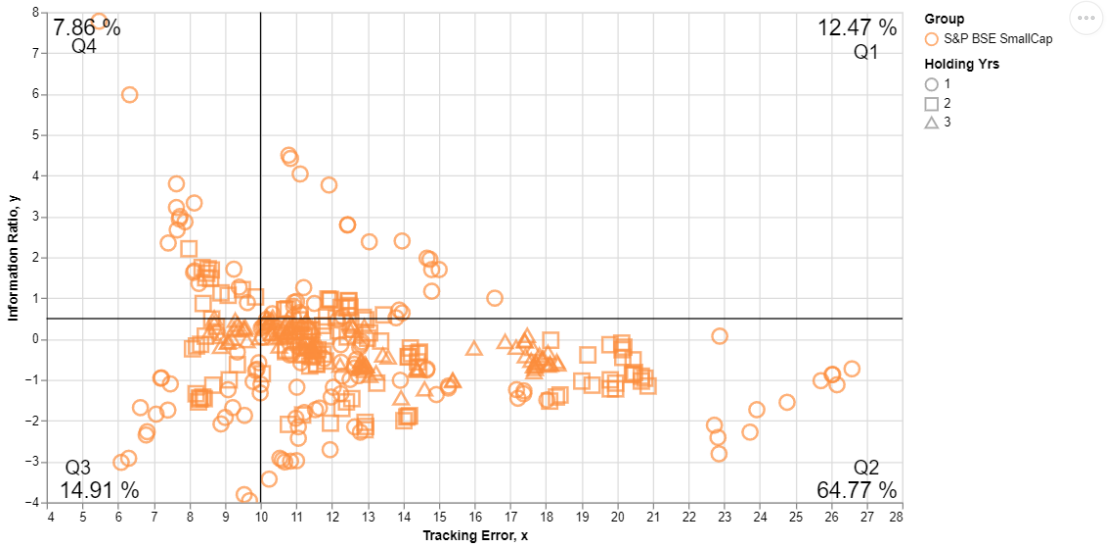

11.86 %
Q4
16.1 %
Q1
Q3
20.06 %
Q2
50.85 %
Beta, y
Alpha, x
Group
India Under-served
Holding Yrs
1
2
3

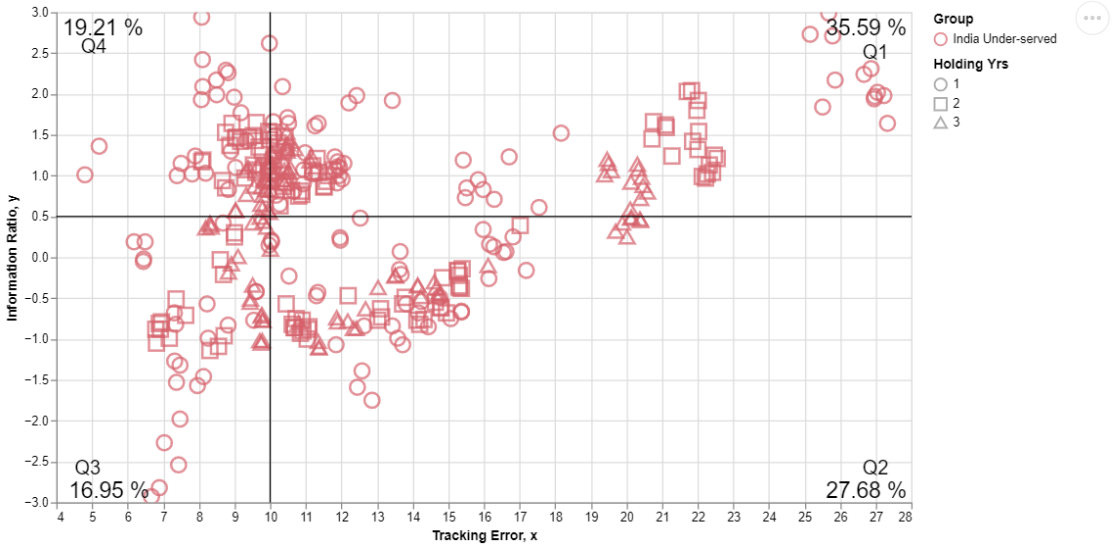

4.07 %
Q4
0.0 %
Q1
Q3
41.46 %
Q2
53.39 %
Beta, y
Alpha, x
Group
Nifty 50
Holding Yrs
1
2
3

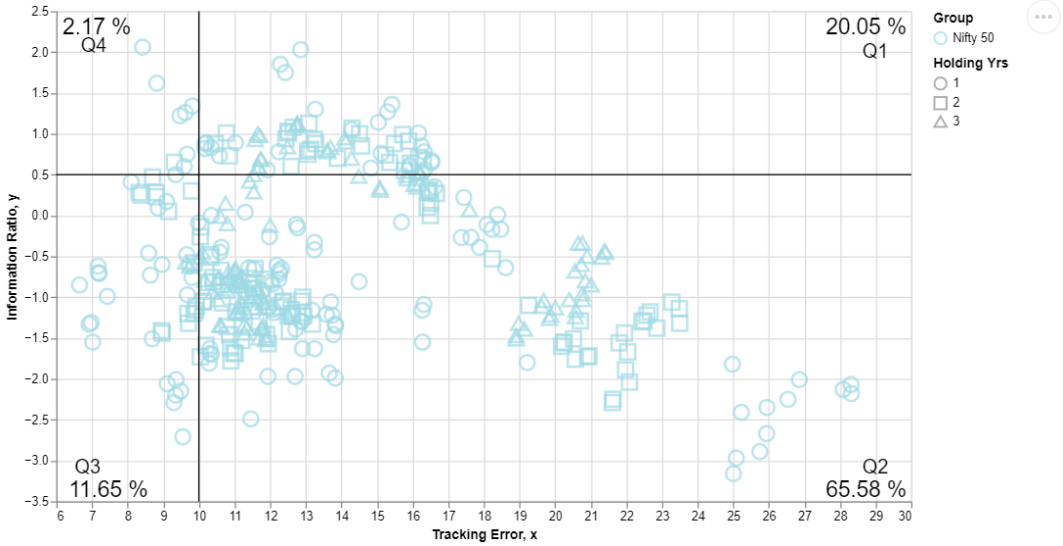
4.5: Tracking error vs. Information ratio

The Cartesian chart of Tracking error vs. Information ratio plotted for different groups and different holding periods.









4.6: Cartesian Cluster Analysis

The table below carries the cluster analysis across four quadrants, highlighting positive and negative skew in the dataset.

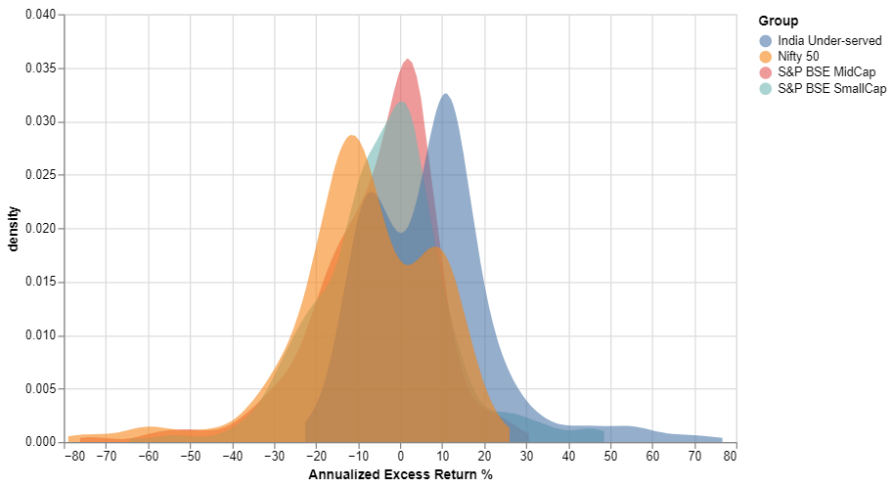
Statistics	Group	Q1	Q2	Q3	Q4	Q1+Q2	Q2+Q3	Q3+Q4	Q4+Q1	Q1+Q3	Q2+Q4
Annualized Excess Return % vs. Annualized Excess Volatility %	S&P BSE MidCap	29.54 %	13.01 %	27.64 %	29.81 %	42.55%	40.65%	57.45%	59.35%	57.18%	42.82%
	S&P BSE SmallCap	31.17 %	9.21 %	21.14 %	38.48 %	40.38%	30.35%	59.62%	69.65%	52.31%	47.69%
	India Under-served	48.02 %	17.23 %	2.54 %	31.92 %	65.25%	19.77%	34.46%	79.94%	50.56%	49.15%
	Nifty 50	1.36 %	30.08 %	56.37 %	12.2 %	31.44%	86.45%	68.57%	13.56%	57.73%	42.28%
Annualized Excess Return % vs. Information Ratio	S&P BSE MidCap	16.8 %	25.2 %	57.45 %	0.0 %	42.0%	82.65%	57.45%	16.8%	74.25%	25.2%
	S&P BSE SmallCap	20.33 %	20.05 %	59.62 %	0.0 %	40.38%	79.67%	59.62%	20.33%	79.95%	20.05%
	India Under-served	55.37 %	10.17 %	34.46 %	0.0 %	65.54%	44.63%	34.46%	55.37%	89.83%	10.17%
	Nifty 50	22.22 %	8.67 %	68.56 %	0.0 %	30.89%	77.23%	68.56%	22.22%	90.78%	8.67%
Annualized Excess Volatility % vs. Information Ratio	S&P BSE MidCap	13.82 %	45.53 %	37.13 %	2.98 %	59.35%	82.66%	40.11%	16.8%	50.95%	48.51%
	S&P BSE SmallCap	14.09 %	55.56 %	24.12 %	6.23 %	69.65%	79.68%	30.35%	20.32%	38.21%	61.79%
	India Under-served	39.55 %	40.4 %	4.24 %	15.54 %	79.95%	44.64%	19.78%	55.09%	43.79%	55.94%
	Nifty 50	1.08 %	12.47 %	64.77 %	21.14 %	13.55%	77.24%	85.91%	22.22%	65.85%	33.61%
Alpha vs. Beta	S&P BSE MidCap	8.13 %	48.24 %	22.49 %	20.33 %	56.37%	70.73%	42.82%	28.46%	30.62%	68.57%
	S&P BSE SmallCap	22.22 %	27.37 %	12.74 %	36.31 %	49.59%	40.11%	49.05%	58.53%	34.96%	63.68%
	India Under-served	16.1 %	50.85 %	20.06 %	11.86 %	66.95%	70.91%	31.92%	27.96%	36.16%	62.71%
	Nifty 50	0.0 %	53.39 %	41.46 %	4.07 %	53.39%	94.85%	45.53%	4.07%	41.46%	57.46%
Tracking Error vs. Information Ratio	S&P BSE MidCap	4.34 %	54.2 %	28.18 %	12.47 %	58.54%	82.38%	40.65%	16.81%	32.52%	66.67%
	S&P BSE SmallCap	12.47 %	64.77 %	14.91 %	7.86 %	77.24%	79.68%	22.77%	20.33%	27.38%	72.63%
	India Under-served	35.59 %	27.68 %	16.95 %	19.21 %	63.27%	44.63%	36.16%	54.8%	52.54%	46.89%
	Nifty 50	20.05 %	65.58 %	11.65 %	2.17 %	85.63%	77.23%	13.82%	22.22%	31.7%	67.75%

5: Statistical distributions

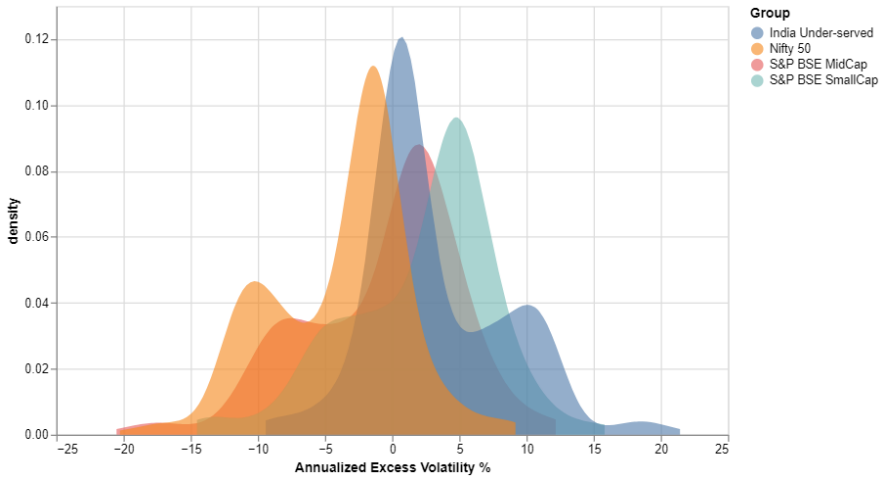
5.1: Area charts

The area charts below showcase the distribution of annualized excess returns, annualized excess volatility and Information ratio across various groups.

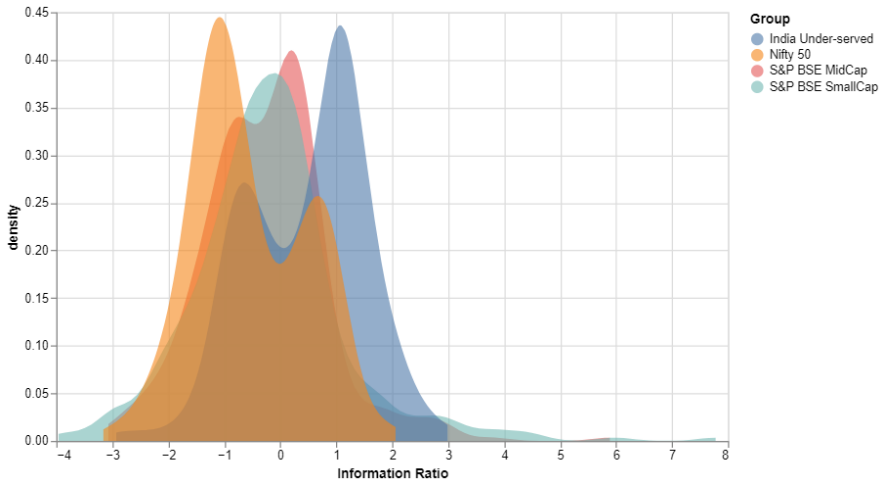
Out[182...



Out[183...



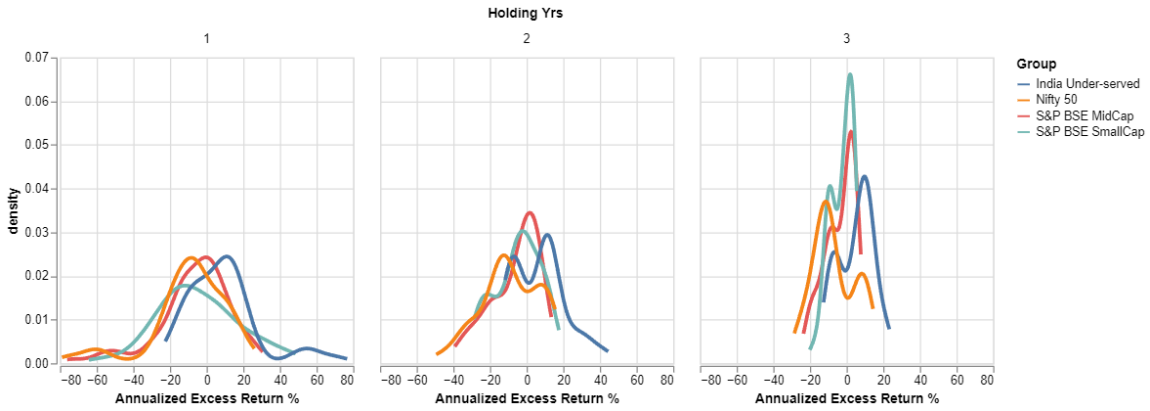
Out[184...



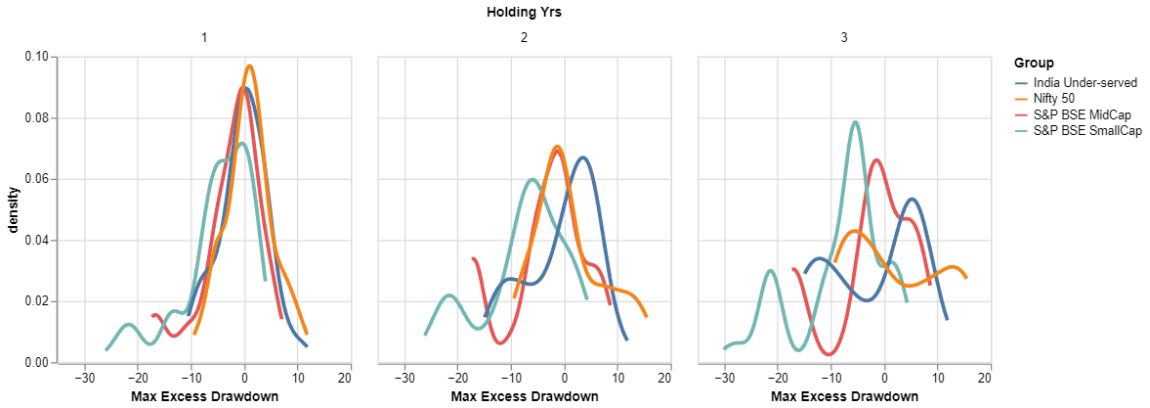
5.2: Line charts

The line charts below showcase the annualized excess returns distribution for each holding periods, max excess drawdown distribution for each holding periods and max excess drawdown distribution for each group. Max excess drawdown represents the difference between portfolio max excess drawdown and benchmark max excess drawdown.

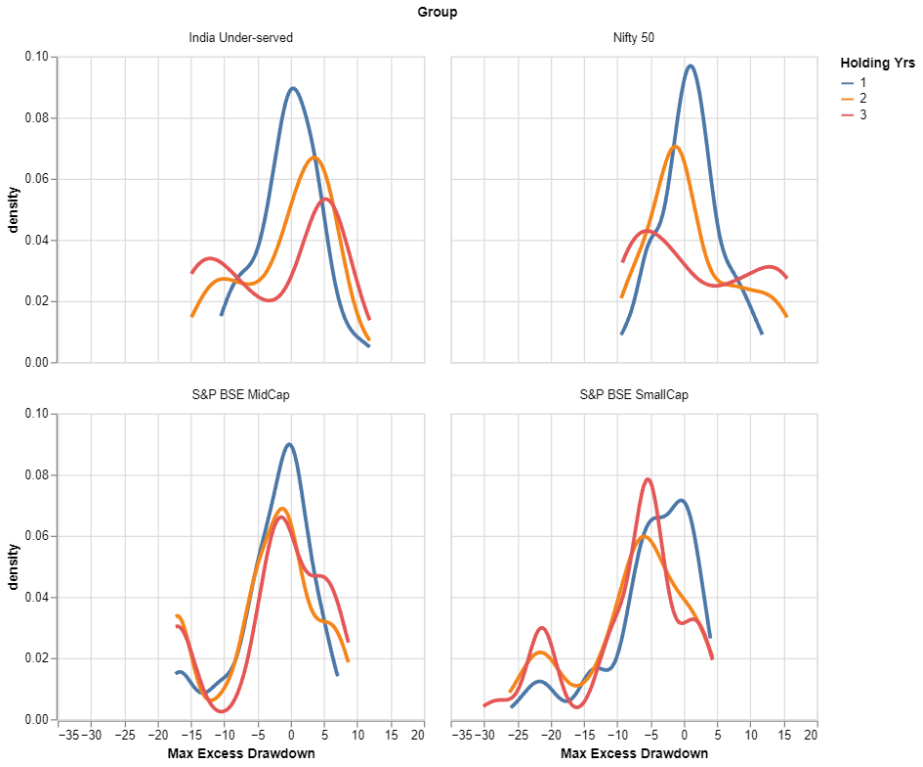
Out[185...



Out[186...



Out[187...



6: Modern portfolio theory (MPT) statistics

The table of averaged MPT statistics for each group and holding periods.

(**AR** - Annualized Excess Returns, **AV** - Annualized Excess Volatility, **TE** - Tracking Error, **IR** - Information Ratio, **Max Excess Dd** - Maximum Excess Drawdown)

Group	Holding Yrs	AR	AV	TE	IR	Alpha	Beta	Max Excess Dd
S&P BSE MidCap	1Y	-6.7	-0.65	12.22	-0.27	0.07	0.87	-2.66
S&P BSE MidCap	2Y	-6.42	-0.74	12.59	-0.32	-0.01	0.86	-3.51
S&P BSE MidCap	3Y	-3.89	-0.6	12.21	-0.21	-0.01	0.87	-2.48
S&P BSE SmallCap	1Y	-4.43	1.94	12.25	-0.2	-0.06	1.0	-5.52
S&P BSE SmallCap	2Y	-4.88	2.22	12.9	-0.27	-0.13	1.01	-7.62
S&P BSE SmallCap	3Y	-2.86	2.59	12.71	-0.16	-0.12	1.03	-8.09
India Under-served	1Y	9.11	3.23	12.54	0.54	0.81	0.87	-0.23
India Under-served	2Y	7.35	3.17	12.57	0.49	0.62	0.9	-0.71
India Under-served	3Y	4.99	3.21	12.37	0.39	0.48	0.93	-2.12
Nifty 50	1Y	-9.75	-3.61	13.5	-0.59	0.2	0.61	0.92
Nifty 50	2Y	-9.08	-4.06	14.03	-0.58	0.12	0.61	1.15
Nifty 50	3Y	-6.75	-4.09	13.89	-0.48	0.11	0.62	2.42

Bibliography

[1] Matia, Kaushik and Pal, Mukul and Stanley, H. Eugene and Salunkay, H., Scale-Dependent Price Fluctuations for the Indian Stock Market. EuroPhysics Letters, Aug 2003

[2] M. Pal, M. Shah, A. Mitroi, Temporal Changes in Shiller's Exuberance Data, SSRN, Feb 2011

[3] M. Pal, Mean Reversion Framework, SSRN, May 2015

[4] M. Pal, Markov and the Mean Reversion Framework, SSRN, May 2015

[5] M. Pal, Momentum and Reversion, Aug 2015

[6] M. Pal, What is Value, SSRN, Sep 2015

[7] M. Pal, M. Ferent, Stock Market Stationarity, SSRN, Sep 2015

[8] M. Pal, Reversion Diversion Hypothesis, SSRN, Nov 2015

[9] M. Pal, How Physics Solved your wealth problem, SSRN, Oct 2016

[10] M. Pal, Human AI, SSRN, Jul 2017

[11] M. Pal, The Size Proxy, Aug 2017

[12] M. Pal, The Beta Maths, SSRN, Mar 2017

[13] Maureen, O. Bhattacharya, A. ETFs and Systematic Risk. CFA Research Institute, Jan 2020

[14] M. Pal, [3N] model of life, SSRN, Apr 2021

[15] M. Pal, The S&P 500 Myth, SSRN, Jul 2022

[16] M. Pal, The Snowball Effect, SSRN, Jul 2022

[17] M. Pal, Mechanisms of Psychology, SSRN, Jun 2022

[18] M. Pal, The [3N] model of life, SSRN, Feb 2023

About the fund: Over 12+ years, Minerva India Under-served has camped in the institutionally underowned/orphaned part of listed India. Strategy's highest conviction holdings have materially mis-priced idiosyncrasies, display accounting and structural clarity, are devoid of speculative froth, and yet are institutionally under-owned/orphaned. The strategy attempts to capitalize upon flawed overly-generalized narratives around this space. In the process, it has thoroughly debunked the narrative that investing in this space inevitably comes with elevated volatility.

About the investment manager: Piyush Sharma launched the Minerva India Under-served strategy in 2011. Having spent time with Citigroup and BSE in India, he moved to United States in 2002, where he covered stocks within Business Services, Autos, Consumer Products and Financials with Sanford Bernstein, Longbow Research, and Avondale Partners, working in teams that received accolades from leading institutional research arbiters, including Institutional Investor (II) and Greenwich Associates. Piyush received an MBA from University of North Carolina at Chapel Hill, and BS in Accounting from University of Allahabad.

AlphaBlock provides data science services to Minerva India Under-served.

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