ENHANCING RETURNS USING STRIP & STRAP OPTION STRATEGIES

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Table of Contents

No.	Chapter	Page No.
1	INTRODUCTION	1
2	IDENTIFICATION AND ANALYSIS OF SECURITIES FOR INVESTMENT	
	2.1 List of Securities Identified	2
	2.2 Analysis of Securities Identified	2
	2.3 Objective and Choice of Options Strategy	13
	2.4 Theoretical Construct of Options Strategy	13
3	CONSTRUCTION OF PORTFOLIO	15
4	SUMMARY OF OPEN POSITIONS	18
5	STATEMENTS OF STANDALONE DAILY PERFORMANCE	19
6	OVERALL PORTFOLIO PERFORMANCE	24
7	THEORETICAL PERFORMANCE EXPECTATION	30
8	PORTFOLIO EVALUATION	31
9	CONCLUSION	32

1.
INTRODUCTION

Financial markets have evolved considerably over time. One major component of this evolution is the growth in the derivatives market - whether this has been in response to major financial crises (prominently the 2007-08 financial crisis) or simply due to the growth in knowledge and popularity of derivative instruments. The reality is that the nature of financial markets has grown in complexity due to the number of new derivative products and how they can be combined with other derivatives and with spot market positions. On the positive side, this has also led to improved trading outcomes for investors, speculators and arbitrageurs, especially if they have a sound working knowledge of modern day financial instruments.

In this report, we explore the effects of two such derivatives strategies - **Strip and Strap Options Strategies** - on a portfolio. The contents of this report can largely be grouped into three sections -

- Portfolio creation - covered in Chapters 2 to 4;
- Portfolio performance - covered in Chapters 5 to 8; and
- Conclusion - covered in Chapter 9

We first identify the choice of securities and then identify and justify the implementation of the appropriate options strategy in relation to the chosen securities in Chapter 2. Chapter 3 follows with the construction of the portfolio based on the desired position on the underlying on the date of expiry - 28 March 2024, the available funds, investment objective constraints and the constraint of lot sizes for the options on the corresponding securities. The open options positions are then summarised for brevity in Chapter 4.

Chapter 5 begins the process of portfolio evaluation by monitoring the daily performance of the individual options positions. Chapter 6 then provides an insight into the overall portfolio's performance on the date of expiry - 28 March 2024, the outcome of all open positions and the final profit/loss on that day. Chapter 7 then lays down the benchmark performance based on what an unhedged position would have resulted in for the chosen securities. Chapter 8 finally provides a summarised evaluation of the portfolio based in the contents of the previous chapters.

Finally, Chapter 9 concludes. It is important to note that the focus of this report is to demonstrate the efficiency of derivative instruments - specifically options, and through the use of Strip and Strap strategies - in generating higher returns on investments. In this process, for the purpose of this report, we have not given effect to transaction costs (other than option premium, if any), taxation and time value (except where time value has been directly or indirectly factored into prices and/or extrinsic values). However, this does not discount or compromise the conclusions derived from the immediate analysis performed.

2.

IDENTIFICATION AND ANALYSIS OF SECURITIES FOR INVESTMENT

List of Securities Identified

Our objective for the underlying investment portfolio is to have a diversified portfolio comprising of securities from different sectors. This follows the concept of diversification wherein by choosing securities that belong to different sectors and thus, that are less correlated with each other, we are able to achieve a lower total risk on the combined portfolio. As such, we chose the following securities:

Table 1: Stocks Selected for Portfolio		
Company Name	**Stock Code**	**Sector**
Hindustan Unilever Limited	HINDUNILVR	FMCG
ITC Limited	ITC	FMCG
Tata Consumer Products Limited	TATACONSUM	FMCG
Infosys Limited	INFY	IT

The following section involves the analyses - both fundamental and technical - of the selected securities in order to determine the optimal derivative strategy in relation to these. The analyses will also provide insight into our expectations for the stock's performance for the chosen time horizon and justify their selection.

Analysis of Securities Identified

We now perform analyses - fundamental and technical - on the selected securities to form an expectation on the stocks' performance for our investment horizon and accordingly conclude on a brief summary of our and/or market sentiment for the stock. Both frameworks of analysis - fundamental and technical - are performed in order to give a more comprehensive analysis of the stocks' performance expectations. While fundamental analysis will provide a more comprehensive, factor-based analysis of the risk-return characteristics of the stocks, technical analysis will provide insight into the stocks' performance in the market (thus also incorporating demand and supply characteristics and trends).

Together, this will provide significant guidance in the selection and justification of the options strategy in relation to the individual securities. Each sub-section of this section focuses on an individual security from the list provided in Table 1.

Before we commence the analyses, we would like to draw attention to the following aspects considered in determining the approach for the analyses:

- We have chosen quarterly intervals for fundamental analysis. This is because the investment horizon is very short (less than 1 month) and thus a short-term analysis of securities is more relevant. However, the most recent financial information available for listed companies is that as of 31 December 2023. As such, to provide a comprehensive evaluation, we will analyse financial information for the last 12 completed quarters (i.e. from QE 31 March 2021 to QE 31 December 2023).
- The methodology of, and data available for, technical analysis differs and thus, the time frame analysed will differ. For technical analysis, we will monitor stock price movements for 3 years up-to the date of investment - 10 March 2024 (i.e. from 11 March 2021 to 11 February 2024). This will also help to bridge the information gap between the period covered in the fundamental analysis and the date of investment.

Hindustan Unilever Limited (HINDUNILVR)

Hindustan Unilever Limited (HUL) is among India's largest "Fast Moving Consumer Goods (FMCG)" sector companies, with a 90 year presence in the Indian market. It is a subsidiary of the British company - Unilever PLC. The company has a portfolio of household consumption brands and boasts a high popularity - stating that "9 out of 10 Indian households use one or more of Unilever's brands".

Its popularity in its sector, in addition to the large scale of operations of the FMCG sector make it an exciting prospect for investment. While the company may have a large portfolio of products and brands, a good number of these are also not seasonal and of the nature of household "essentials", meaning the products themselves may have a relatively lower price elasticity of demand. Thus, key determinants of revenue would be market share and how this changes vis-à-vis main competition such as the P&G companies and their products or ITC Limited and its brands.

This also indicates a general expectation of volatility in stock prices in the sector, even if such volatility is not large in short windows of time. The sector itself is promising with consistent potential for growth. According to the "FMCG Quarterly Snapshot for Q4 2023" published by NielsenIQ,

> **"the Indian FMCG industry experienced a noteworthy 6% growth in value during Q4 2023, primarily attributed to a 6.4% increase in volume"**

An industry's growth, when it comes from a growth in volume sends stronger signals for overall opportunities (including for investment) in the sector. With this motivation, we take a closer look at the company's fundamentals to identify company specific factors driving investment expectations.

While the general FMCG industry outlook is often promising, Hindustan Unilever Limited's fundamentals have unfortunately had a different picture in their latest quarter. The company has witnessed a decline in all key fundamentals listed in Table 2 below - Total Operating Revenue, Gross Profit Ratio, Net Profit Ratio, and EPS have all fallen in QE 31 December 2023 vis-à-vis WE30 September 2023.

Table 2: Hindustan Unilever Limited - Fundamental Analysis Based on Quarterly Financial Information

Particulars	QE Mar-21	QE Jun-21	QE Sep-21	QE Dec-31	QE Mar-22	QE Jun-22	QE Sep-22	QE Dec-22	QE Mar-23	QE Jun-23	QE Sep-23	QE Dec-23
Total Operating Revenue (₹ crore)	12,132	11,915	12,724	13,092	13,462	14,272	14,751	15,228	14,893	15,148	15,276	15,188
Quarter on Quarter Growth in Total Operating Revenue		-1.79%	6.79%	2.89%	2.83%	6.02%	3.36%	3.23%	-2.20%	1.71%	0.84%	-0.58%
Gross Profit Ratio	22.94%	22.19%	23.01%	23.44%	22.60%	21.50%	21.65%	22.51%	22.22%	22.19%	23.37%	22.37%
Net Profit Ratio	17.51%	17.20%	17.04%	17.01%	17.13%	15.89%	17.60%	16.21%	16.95%	16.12%	17.46%	16.28%
EPS	₹ 9.12	₹ 8.77	₹ 9.31	₹ 9.55	₹ 9.90	₹ 9.74	₹ 11.13	₹ 10.67	₹ 10.86	₹ 10.52	₹ 11.56	₹ 10.72
P/E	266.61	281.79	290.20	247.14	206.93	229.01	242.27	240.02	235.76	254.58	213.29	248.50

As of QE 31 December 2023, based on stock prices prevailing on the NSE at the time - ₹ 2,663.95 - vis-à-vis the stock prices prevailing in the last quarter (QE 30 September 2023) - ₹ 2,465.60; and with the decline in the EPS across these quarters, we can infer that the P/E ratio of the stock has increased. In other words, the price of share is a higher multiple of its EPS - which in the light of poor fundamentals for the corresponding quarter would imply that the market would correct this through a bearish move in the immediate short-term.

This signals unfavourable fundamentals in the immediate short-term, and if the market heavily relies on this information in its pricing of the security and its derivative instruments, this will also reflect in a bearish trend in our technical analysis.

We thus confirm the findings of our fundamental analysis with our technical analysis. We commence with simple observations about price trend and forecasts. Based on a historical stock price analysis for three years up to date of investment (i.e. from 10 March 2021 to 7 March 2024).

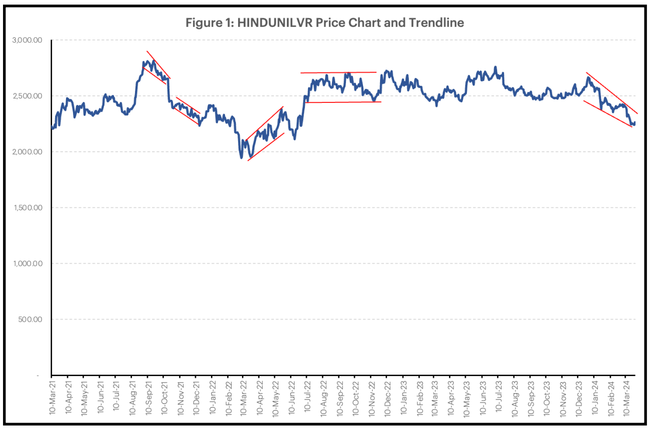

Figure 1: HINDUNILVR Price Chart and Trendline

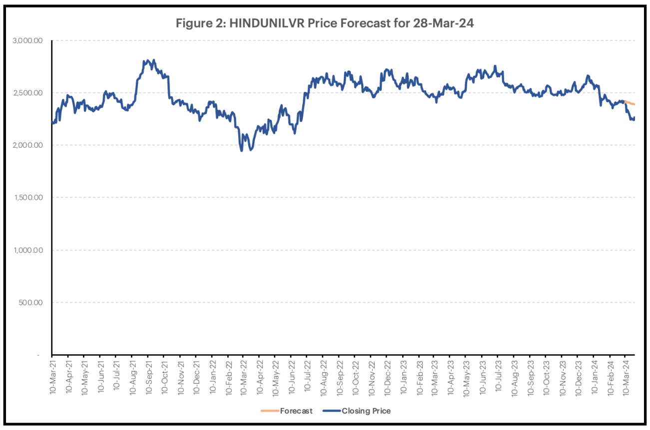

Figure 2: HINDUNILVR Price Forecast for 28-Mar-24

From Figure 1, we can observe that the stock of Hindustan Unilever Limited witnesses rising trends (channels and/or wedges) and falling trends for consecutive short-term periods followed by a change of trend. In light of this, we expect the last observed falling trend (falling wedge) for the short-term. Based on this and the consistent bearish expectation based on fundamental analysis, we create the forecast for price expectations in our investment horizon. At the time of completing this report, the investment horizon has completed and thus, we update the actual price movements to compare our expectations with the actual outturn of market.

While our expectation of falling prices was correct, the market has fallen further more, thus in retrospect also validating our outlook. We now conclude our technical analysis with two more indicators:

- Relative Strength Index (RSI) - The RSI is a momentum oscillator used in technical analysis to measure the speed and direction of change of price movements of financial instruments, typically a stock or a currency pair. The RSI is calculated based on the ratio of upward price movements to downward price movements over a specified period, often 14 days. The RSI value ranges from 0 to 100, with readings above 70 typically indicating that the instrument is overbought and may be due for a price reversal, while readings below 30 suggest that the instrument is oversold and may be poised for a price rebound. Traders use the RSI to identify potential buy or sell signals, the divergence between price and momentum, and to gauge the strength of a trend.
- Moving Average Convergence/Divergence (MACD) - It is a popular technical analysis indicator used by traders to identify trends and potential buy or sell signals for a financial instrument, typically a stock or currency pair. The MACD indicator is calculated by subtracting the 26-period Exponential Moving Average (EMA) from the 12-period EMA. Additionally, a nine-period EMA of the MACD line, called the signal line, is plotted on top of the MACD line, which helps traders identify potential buy or sell signals when the MACD line crosses above or below the signal line.

Figures 3 and 4 below graphically represent the information for the stock under the above two indicators.

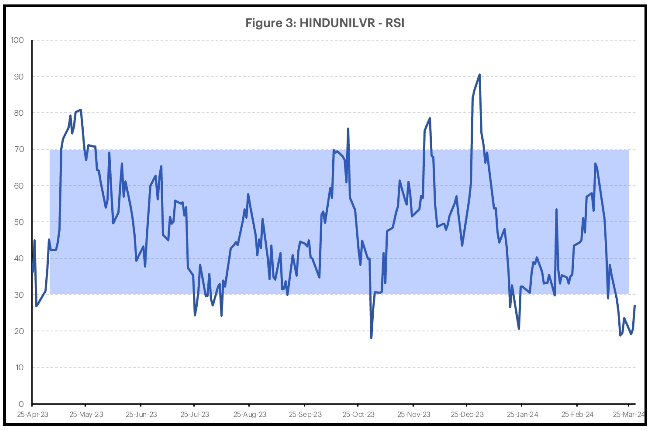
Figure 3: HINDUNILVR - RSI

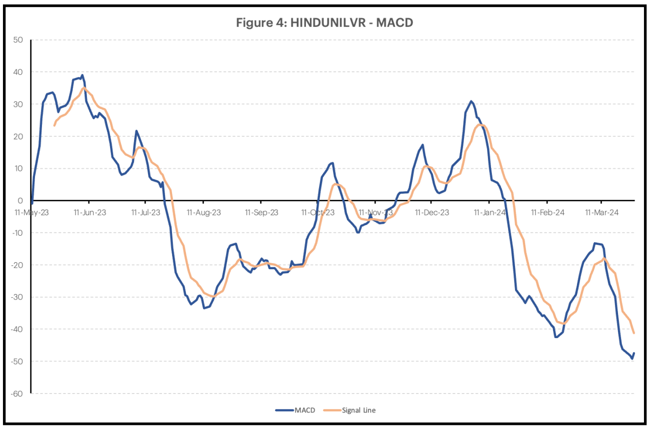

Figure 4: HINDUNILVR - MACD

Hindustan Unilever Limited has a Relative Strength Index of 64.74 as of 7 March 2024 (the investment date). This is close to the outbound of 70 that indicates that the security is overbought and that a correction by way of subsequent selling is expected. Thus, in the short-term, if not immediately, then at least by the end of the investment period, we expect this change to occur. In other words, we expect the bearish trend to settle in subsequent to the date of investment - sufficient to support the bearish expectation in the period of investment. The continuous negative trend of MACD since the start of February gives a strong signal of its continued bearish trend.

Infosys Limited (INFY)

Infosys Limited is among the world's top IT sector companies. In a global sector dominated by international technology companies (like Google, AWS, etc.), the Indian origin company has earned its stripes. Consecutive recent recognition - by being ranked in the top 3 IT services brands in the world - is a testament to its brand value and its public perception - aspects that are key in how markets engage with companies in the present-day financial markets. At a weight of 27.76%, it is also the NIFTY IT index's largest constituent (as of 29 February 2024).

Its popularity in the IT sector (both domestic and global), in addition to the dynamic environment of the IT sector make it an exciting prospect for investment. Historically too, the stock has witnessed significant movements to make it an attractive investment when monitored regularly. A fairly competitive domestic market - with main competition from companies like Tata Consultancy Services Limited, Wipro Limited and others - the IT sector has a promising future in the Indian economy, with the even international giants looking to increase their presence in the sector in India.

The technology industry is obviously affected by volatility especially due to increased focus on information sensitivity, and data confidentiality and privacy. Yet the prospects for the IT sector in India continue to be promising. According to the "Technology Sector in India: Strategic Review - 2024" published by Nasscom,

> **"India's technology industry revenue (including hardware) is estimated to reach $254 Bn (3.8% y-o-y growth) in FY2024, an addition of over $9 Bn over last year"**

The domestic growth is expected at 5.9% y-o-y and international growth at 3.3% y-o-y. With strong indicators for the industry, we now turn to the company's fundamentals to identify company specific factors driving investment expectations.

Table 3: Infosys Limited - Fundamental Analysis Based on Quarterly Financial Information

Particulars	QE Mar-21	QE Jun-21	QE Sep-21	QE Dec-31	QE Mar-22	QE Jun-22	QE Sep-22	QE Dec-22	QE Mar-23	QE Jun-23	QE Sep-23	QE Dec-23
Total Operating Revenue (₹ crore)	26,311	27,896	29,602	31,867	32,276	34,470	36,538	38,318	37,441	37,933	38,994	38,821
Quarter on Quarter Growth in Total Operating Revenue		6.02%	6.12%	7.65%	1.28%	6.8%	6%	4.87%	-2.29%	1.31%	2.8%	-0.44%
Gross Profit Ratio	25.82%	25.16%	24.72%	24.53%	22.92%	21.44%	22.60%	22.85%	22.21%	21.72%	22.13%	21.76%
Net Profit Ratio	18.91%	18.24%	18.02%	17.98%	17.30%	15.26%	16.23%	16.85%	16.09%	15.44%	15.68%	15.43%
EPS	₹ 11.96	₹ 12.24	₹ 12.88	₹ 13.86	₹ 13.56	₹ 12.78	₹ 14.35	₹ 15.72	₹ 14.79	₹ 14.37	₹ 15.01	₹ 14.76
P/E	114.39	129.15	130.06	136.20	140.62	114.39	98.50	95.94	96.55	92.94	95.63	104.53

Infosys Limited, similar to HUL, had poorer fundamentals in its latest completed quarter (QE 31 December 2023) vis-à-vis the quarter preceding it. Infosys Limited also witnessed a decline in all key fundamentals listed in Table 3 above - Total Operating Revenue, Gross Profit Ratio, Net Profit Ratio, and EPS - in QE 31 December 2023. As of QE 31 December 2023, based on stock prices prevailing on the NSE at the time - ₹ 1,542.90 - vis-à-vis the stock prices prevailing in the last quarter (QE 30 September 2023) - ₹ 1,435.45; and with the decline in the EPS across these quarters (from ₹ 15.01 to ₹ 14.76), we observe that the stock's P/E ratio has increased. In other words, the price of the share is a higher multiple of its EPS - which in the light of poor fundamentals for the corresponding quarter would imply that the market would correct this through a bearish move in the immediate short-term. This yet again signals unfavourable fundamentals in the immediate short-term, and if the market heavily relies on this information in its pricing of the security and its derivative instruments, this will also reflect in a bearish trend in our technical analysis.

We now turn to our technical analysis to confirm our previous findings. Through simple observations about price trend and forecasts based on a historical stock price analysis for three years up to date of investment (i.e. from 10 March 2021 to 7 March 2024), we first identify the trends in the stock price movement and accordingly forecast the expectations for the investment period.

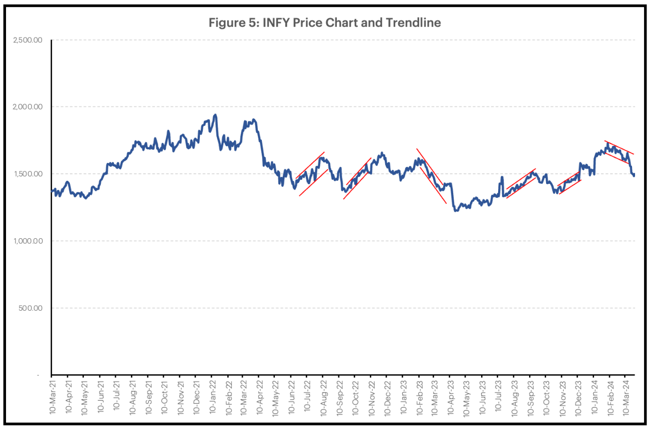
Figure 5: INFY Price Chart and Trendline

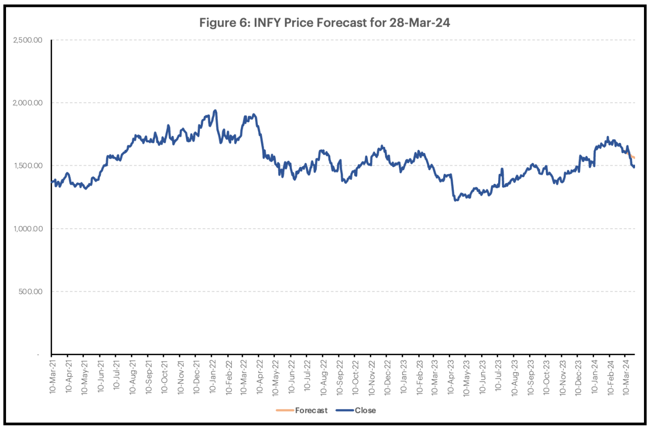

Figure 6: INFY Price Forecast for 28-Mar-24

From Figure 5, we can observe that the stock of Infosys Limited witnesses a falling trend in the short-term period immediately preceding 7 March 2024. We expect this to last for the short-term. Based on this and the bearish expectation based on fundamental analysis, we create the forecast for price expectations in our investment horizon, based on 5 day moving average of price movements. The average 5 day moving average for the last 13 days is considered to forecast for the next 13 days (up to 31 March 2024). We then compare our forecasts with the actual outturn of market. Yet again, while our expectation of falling prices was correct, the market has fallen further more. Further technical analysis, through the RSI and MACD in figures 7 and 8 follows.

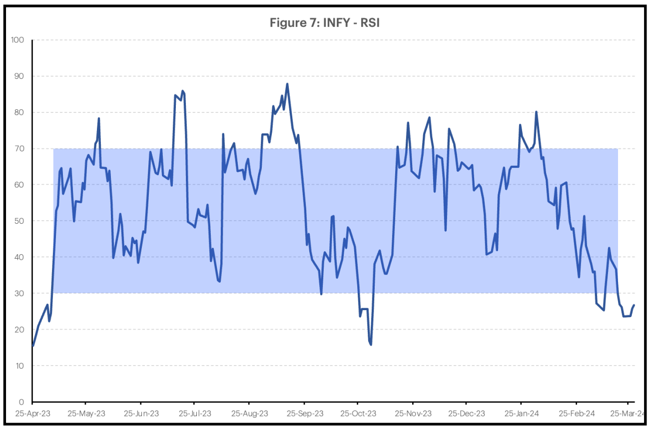
Figure 7: INFY - RSI

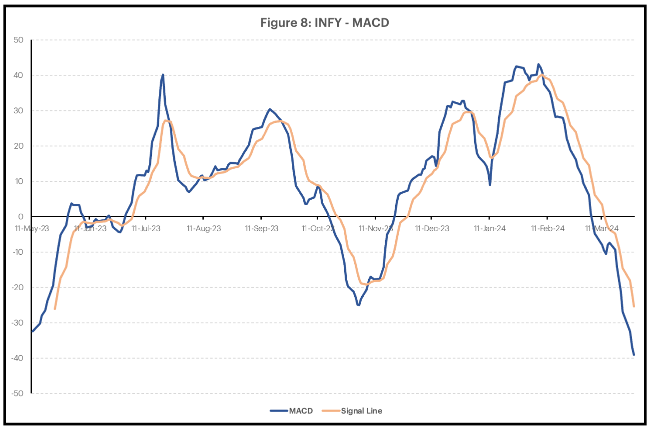

Figure 8: INFY - MACD

While the fall in the stock's RSI in the first week of March to 27.15 on 7 March 2024 - less than 30 - indicates that the security is oversold and suggests a change in trend to buying of the stock in the next short-term period, the MACD line displays a continuous decline in the one month preceding 7 March 2024. This is also consistent with the fundamental analysis. Not ignoring the conclusions of the RSI, we note that may be there is a short to medium-term bullish expectation for the stock of Infosys Limited, however from all there evidence, we do not expect this in the immediate short-term during which our investment horizon lies. **Therefore, for our investment window going from 7 March 2024 to 28 March 2024, we continue to expect a bearish market**, which may sharply turn towards bearish expectation at the end or soon thereafter.

ITC Limited (ITC)

ITC Limited, another giant in the FMCG industry is among the top companies in the sector, large enough to qualify being the largest constituent of the NIFTY FMCG index weighing 29.63% in the index's composition (as of 29 February 2024). With strong industry factors identified in our analysis on HUL earlier in this report (see page 6), we perform the fundamental analysis for ITC Limited.

Table 4: ITC Limited - Fundamental Analysis Based on Quarterly Financial Information

Particulars	QE Mar-21	QE Jun-21	QE Sep-21	QE Dec-31	QE Mar-22	QE Jun-22	QE Sep-22	QE Dec-22	QE Mar-23	QE Jun-23	QE Sep-23	QE Dec-23
Total Operating Revenue (₹ crore)	14,157	12,959	13,554	16,807	16,426	18,320	17,160	17,265	17,506	16,995	17,705	17,652
Quarter on Quarter Growth in Total Operating Revenue		-8.46%	4.59%	24%	-2.27%	11.53%	-6.34%	0.62%	1.39%	-2.92%	4.18%	-0.3%
Gross Profit Ratio	32.51%	29.99%	34.29%	31.17%	31.82%	29.73%	33.61%	36.82%	35.73%	36.97%	35.02%	35.82%
Net Profit Ratio	25.11%	22.51%	25.98%	23.59%	24.51%	22.38%	25.28%	27.74%	27.87%	27.69%	26.49%	29.66%
EPS	₹ 3.04	₹ 2.45	₹ 3.00	₹ 3.37	₹ 3.40	₹ 3.38	₹ 3.61	₹ 4.06	₹ 4.10	₹ 3.94	₹ 3.96	₹ 4.47
P/E	71.88	82.79	78.65	64.70	73.72	80.92	92.02	81.66	93.54	114.62	112.22	103.38

While ITC Limited has witnessed a quarter-on-quarter reduction in revenue in the latest reported quarter (QE 31 December 2023), it has witnessed improvements in both gross and net profit, EPS and P/E ratio. The higher EPS is explained by improved profitability. Yet if we measure the stock prices on the respective quarter ends (₹ 462.10 as on 31 December 2023 and ₹ 444.40 as on 30 September 2023) to the EPS for the corresponding quarters (₹ 4.47 and ₹ 3.96 respectively), the P/E ratio falls, indicating that the stock price is a lesser multiple of its EPS now, which with the higher EPS provides positive motivation to buy the stock. Investors will want to buy a stock at a time when it is not more expensive in relation to what is earned on the share. This indicates a bullish expectation, which even if short lived can provide opportunity for gains in our short-term investment horizon.

The findings of our technical analysis follow. Through simple observations about price trend and forecasts based on a historical stock price analysis for three years up to date of investment (i.e. from 10 March 2021 to 7 March 2024), we first identify the trends in the stock price movement and accordingly forecast the expectations for the investment period.

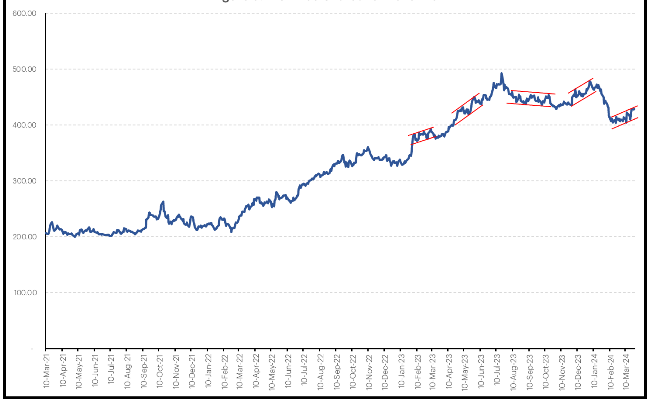

Figure 9: ITC Price Chart and Trendline

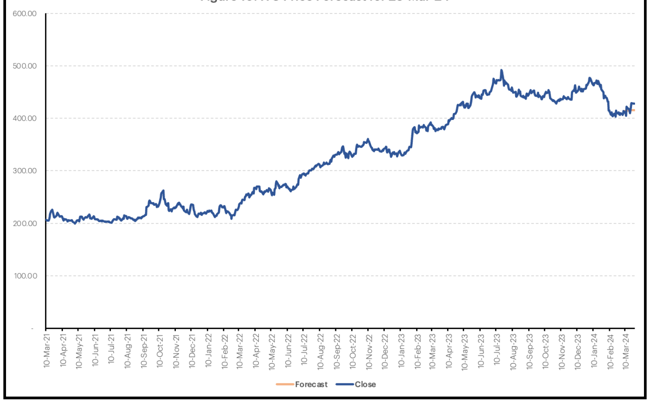

Figure 10: ITC Price Forecast for 28-Mar-24

From Figure 9, we observe that the stock of ITC Limited witnesses a rising trend in the short-term period immediately preceding 7 March 2024. This is expected to last for the near short-term. Based on this and the bullish expectation in our fundamental analysis, we create the forecast for price expectations in our investment horizon. We then compare our forecasts with the actual outturn of market (since this data is available as of the date of submission of this report). We note that the market has followed the bullish expectation, however the price rise has been higher than expected. Further technical analysis, through the RSI and MACD in figures 11 and 12 follows.

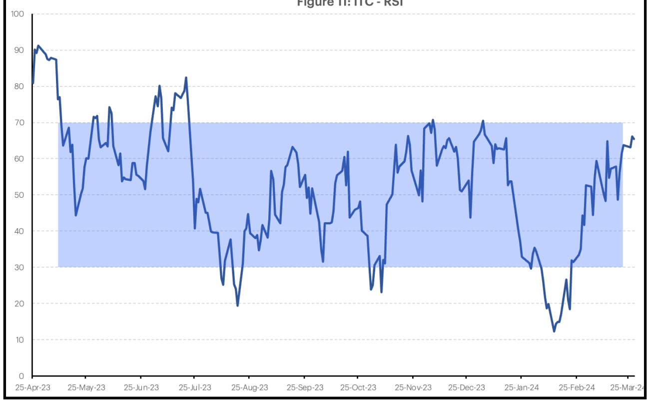

Figure 11: ITC - RSI

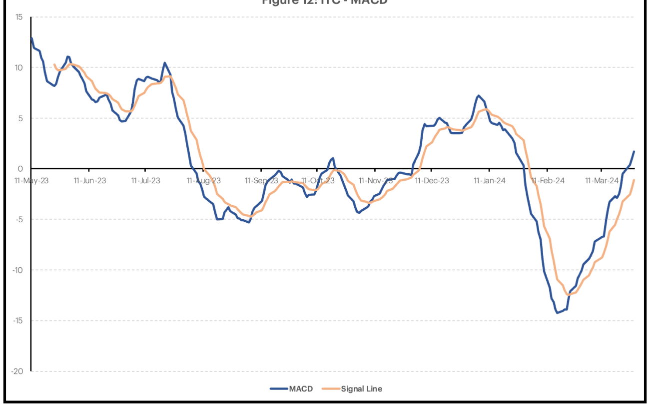

Figure 12: ITC - MACD

ITC Limited has an RSI in the range of about 35 at the end of February. Being in the lower levels (though just above the lower bound of 30), this still signals a trend of the stock being oversold up to this time now and thus signalling a bullish trend going ahead. This is held true in the subsequent changes in RSI in the first week of March (prior to investment date) and is expected to continue in the short-term thereafter. Moreover, the switch in MACD after reaching the lowest point in about a year suggests that the stock has switched to a bullish movement, which can be expected to continue in the short-term, particularly in our investment period (7 March 2024 to 28 March 2024). **Therefore, for our investment window from 7 March 2024 to 28 March 2024, we expect the continuation of a bullish market.**

Tata Consumer Products Limited (TATACONSUM)

Tata Consumer Products (TCP) Limited is an FMCG sector company that is a subsidiary of Tata Sons. Also a constituent of the NIFTY FMCG index, it is part of one of India's largest conglomerates - Tata Sons - the principal investment holding company and promoter of Tata companies. TCP wasted as India's 4th most valuable Indian F&B category brand in the 2022 Report of Brand Finance India 100. The Group and its leaders are known for philanthropy, with 66% of the equity share capital of Tata Sons held by philanthropic trusts. The global reach of a number of group companies also improves the market access and growth potential for the other companies in the group.

With strong strategic partnerships and growth strategies over time - including recent announcements of acquisition of Capital Foods and Organic India - TCP remains an attractive stock to invest in. However, investors must merely pay attention to analysing the immediate trend the stock is expected to witness in order to take the appropriate position on the stock and use appropriate strategies to improve profitability.

We move to the fundamental analysis to identify company specific factors for assessing the stock's short-term performance expectations.

Table 5: Tata Consumer Products Limited - Fundamental Analysis Based on Quarterly Financial Information

Particulars	QE Mar-21	QE Jun-21	QE Sep-21	QE Dec-31	QE Mar-22	QE Jun-22	QE Sep-22	QE Dec-22	QE Mar-23	QE Jun-23	QE Sep-23	QE Dec-23
Total Operating Revenue (₹ crore)	1,850	1,966	1,988	2,030	1,948	2,077	2,131	2,153	2,178	2,316	2,360	2,352
Quarter on Quarter Growth in Total Operating Revenue		6.26%	1.1%	2.16%	-4.04%	6.59%	2.6%	1.06%	1.14%	6.35%	1.88%	-0.31%
Gross Profit Ratio	6.89%	17.88%	12.68%	12.73%	14.26%	14.95%	14.69%	14.91%	15.51%	15.89%	15.58%	16.24%
Net Profit Ratio	4.35%	14.38%	9.33%	9.13%	10.38%	10.93%	10.65%	10.80%	11.31%	11.96%	11.10%	11.77%
EPS	₹ 0.89	₹ 3.30	₹ 2.04	₹ 2.03	₹ 2.24	₹ 2.53	₹ 2.49	₹ 2.56	₹ 2.70	₹ 3.07	₹ 2.88	₹ 3.02
P/E	717.87	228.61	398.82	366.23	347.05	279.19	322.43	299.59	262.54	280.42	304.48	359.87

While Tata Consumer Products Limited has witnessed a small quarter-on-quarter reduction in revenue in the latest reported quarter (QE 31 December 2023), it has witnessed improvements in profits (both gross and net) and EPS. Yet if we measure the stock prices on the respective quarter ends (₹ 1,086,80 as on 31 December 2023 and ₹ 876.90 as on 30 September 2023) to the EPS for the corresponding quarters (₹ 3.02 and ₹ 2.88 respectively), the P/E ratio rises, due to a larger increase in stock price than in EPS. The increase in P/E is also significant indicating that the stock price is a higher multiple of its EPS creating a market perception of a stock that is much more expensive vis-à-vis what it earns. This presents indicators for a bearish expectation, especially in the short-term period.

We turn to technical analysis to find evidence if market movements also signal a bearish expectation for the stock in the short-term. Through simple observations about price trend and forecasts based on a historical stock price analysis for three years up to date of investment (i.e. from 10 March 2021 to 7 March 2024), we first identify the trends in the stock price movement and accordingly forecast the expectations for the investment period.

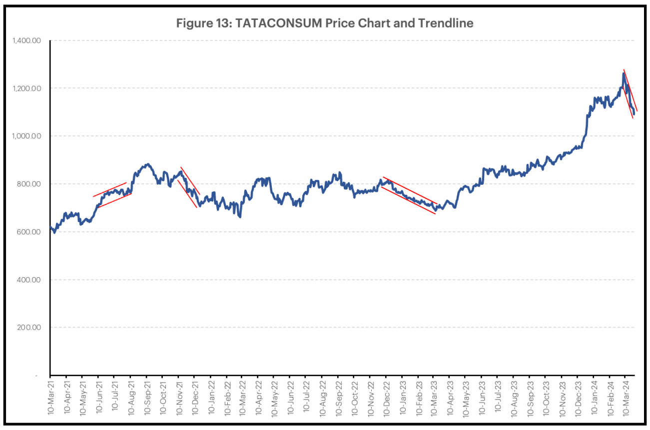

Figure 13: TATACONSUM Price Chart and Trendline

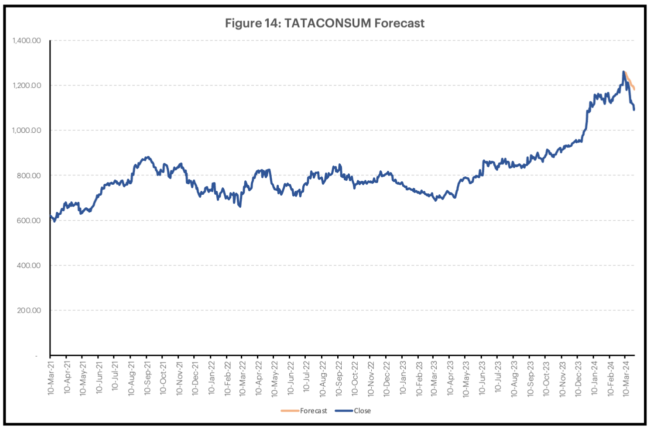

Figure 14: TATACONSUM Forecast

From Figure 13, we observe that the stock of Tata Consumer Products Limited witnesses a falling trend in the short-term period immediately preceding 7 March 2024. This is expected to last for the near short-term. Based on this and the bearish expectation in our fundamental analysis, we create the forecast for price expectations in our investment horizon. We then compare our forecasts with the actual outturn of market (since this data is available as of the date of submission of this report). We note that the market has followed the bearish expectation, however the prices have fallen more than expected. Further technical analysis, through the RSI and MACD in figures 15 and 16 follows.

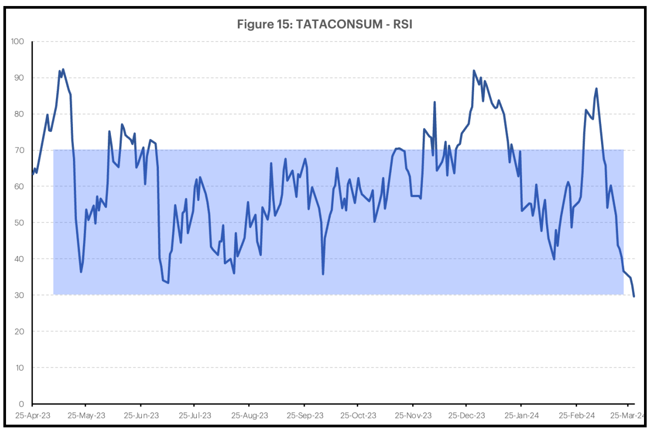

Figure 15: TATACONSUM - RSI

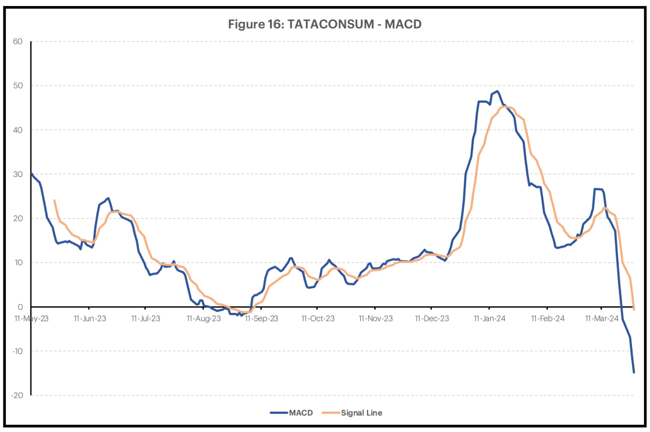

Figure 16: TATACONSUM - MACD

Tata Consumer Products Limited has a high RSI in weeks immediately preceding the investment date - breaching the upper limit of 70 on 29 February 2024 and continuing to do so till 7 February 2024. This sends strong signals that the stock is overbought and that a negative trend (bearish market phase) is to follow. The continuous falling trend of MACD since the start of February 2024 slowly shows that the stock is going to dip in the near future, thus our technical analysis confirms a bearish expectation for the stock of Tata Consumer Products Limited.

Objective and Choice of Options Strategy

In the previous section, we have performed fundamental and technical analysis to form expectations on the direction of change in prices of the selected securities in our investment period. Importantly, this has led us to conclude that some of the selected stocks have a bullish expectation and others, bearish.

Taking a conservative investment objective of reducing risk significantly while still having the potential to earn higher profits, we conclude that the Strip and Strap options strategies will be efficient to meet such objective. In line with this, Table 6 below sets out the specific strategy for each security in light of its market expectations.

Table 6: Options Strategy for Selected Securities

Company Name	Expectation	Strategy
Hindustan Unilever Limited	Bearish	Strip
ITC Limited	Bullish	Strap
Tata Consumer Products Limited	Bearish	Strip
Infosys Limited	Bearish	Strip

Theoretical Construct of Chosen Options Strategy

In this report, we thus analyse the efficiency of the Strip and Strap options strategies in generating better profits on the desired investment portfolio. This choice has been made based on the securities chosen for investment as outlined in the previous sections. We have chosen a combination of stocks expecting high price volatility, some of which have bullish expectation and others bearish. The objective is to "limit the potential for loss while retaining the potential to earn unlimited profit on large volatility movements in prices".

The Strip and Strap options strategies are similar in the manner in which they are executed - they each use only long positions on options and the options calls and puts are used in the ratio of 2:1 or 1:2. This use (or ratio) of individual options (calls and puts) in Strip and Strap differs on market expectations - bearish and bullish respectively. Strap is more suited to a bullish market and thus uses 2 calls to 1 put; whereas Strip is more suited to a bearish market and thus uses 2 puts to 1 call. Each option selected is an at-the-money (discussed below) option and all expire on the same date.

Options are in-the-money if they have an intrinsic value. In other words, options are in-the-money if the relationship between their spot price and strike price is such that exercising the option provides a financial benefit to its holder. On the other hand, options are out-of-the-money if they don't have any intrinsic value (IV = 0) - because an option is worthless if unexercised but does not have a negative intrinsic value.

An option is at-the-money if its spot and strike are the same. While taking a position in options, this evaluation is performed for the date of purchase or sale of the options. This evaluation is also also performed until the option's expiry to identify when the position must be squared off, if possible; and whether to exercise or lapse on the day of expiry.

Thus, an option that is at-the-money on the date of its purchase or sale may not be profitable if exercised at present (on the date of purchase), however since there is time to its expiry, it has a time value and may end up in-the-money on the date of expiry.

It is, however, paramount to note that stocks take a range of values in the spot market (every possible positive rational number). However, there cannot be options to this degree of precision in strike prices. And thus, generally and quite frequently, near-the-money options must be substituted for at-the-money options. While this is a limitation of the derivatives market, this also offers a small degree of flexibility in structuring the strategy. In light of this, Table 7 below documents the desired strike prices for the options on the chosen securities based on closest prices available to the spot on the date of investment - 7 March 2024.

Table 7: Desirable Strike Prices for Options

Stock Name	Spot$_{\text{7 March 2024}}$	Closest Strike Price Available
Hindustan Unilever Limited	₹ 2,419.55	₹ 2,420.00
ITC Limited	₹ 413.55	₹ 412.50
Tata Consumer Products Limited	₹ 1,261.55	₹ 1,260.00
Infosys Limited	₹ 1,616.45	₹ 1,620.00

We use the information from the sections of this chapter, outline the investment constraints and accordingly create our options portfolio for 7 March 2024 in the following chapter.

3.
CONSTRUCTION OF PORTFOLIO

Based on our selection of securities and the outlook for these determined using fundamental and technical analysis, we now create a portfolio for options positions to be taken on these securities on 7 March 2024. Before we do this, we will outline some investment constraints that affect the creation of our portfolio:

- The maximum amount available for investment is ₹ 10,00,000
- Portfolio is to be created using closing prices on 10 March 2024. However, 10 March 2024 was a Sunday and 8 March 2024 (Friday) was a Bank Holiday. Therefore, we consider closing prices on 7 March 2024 for the creation of our portfolio
- The investment horizon is very short-term dating from 7 March 2024 to 28 March 2024
- The options have defined lot sizes, which have been extracted from the NSE website. All positions must be taken in multiples of these.

In light of the above constraints, we create our portfolio as follows:

1. To create our portfolio, we use weights for the chosen based on the concept of an efficient portfolio. We compute the daily returns for the securities (from 12 March 2021 to 6 March 2021) based on daily closing prices (for the period 10 March 2021 to 6 March 2021).
2. We then estimate the summary statistics - mean returns, standard deviation of returns and variance of returns.
3. We generate the variance-covariance matrix for the securities and label the range of values in the table "VARCOVARIANCE".
4. We then create an equal weighted portfolio of the chosen 4 securities, and compute the expected portfolio return, portfolio standard deviation and portfolio variance.
5. Using the "Solver" add-in in excel, we optimise the portfolio by minimising the portfolio variance using the weights as the variable for change.
6. This gives us the ideal weights for the selected securities for a spot market investment portfolio. These weights are given below:

Hindustan Unilever Limited (HINDUNILVR)	0.31
Infosys Limited (INFY)	0.22
ITC Limited (ITC)	0.30
Tata Consumer Products Limited (TATACONSUM)	0.17

We use the same weights for the associated options positions in these securities.

7. Using the weights identified, we allocate the available funds for investment - ₹ 10,00,000 - to determine the maximum amount that can be invested in each security's options strategy.

8. We identify the number of calls and puts under the chosen strategy for each security; identify the lot sizes of the options for each security and compute the total premium on 1 unit of the strategy (Strip or Strap) applicable to the security.

9. Using the maximum amount that can be invested in each security's options strategy and the total premium value of one unit of the applicable options strategy, we derive the maximum multiples of the options strategy that can be implemented on the respective security (while adhering to the weights determined earlier).

10. We then compute the total amount invested (while adhering to the determined weights) and identify the any uninvested funds. We identify that ₹ 97,615 is not invested. Three additional units of complete strategy of Hindustan Unilever Limited can be invested using these residual funds (HUL also having highest weight in the portfolio, it is more preferred to increase its allocation before increasing others) and therefore, for best utilisation of funds, we invest in an additional 3 units of the options strategy of Hindustan Unilever Limited.

    Note that as a result the risk-return characteristic of the portfolio will change slightly due to the effect on change in weights as a result of this.

11. As a result of the above, our total amount invested in options strategies of the securities is ₹ 9,93,690 and the residual ₹ 6,310 is invested at risk-free rate.

Table 8 below captures the process described in steps 7 to 11 above.

Table 8: Creation of Options Portfolio

	HINDUNILVR	INFY	ITC	TATACONSUM
Weights	0.31	0.22	0.30	0.17
Max. Amt. of Invt.	₹ 3,07,738.43	₹ 2,18,502.15	₹ 3,04,627.67	₹ 1,69,131.75
Lot Size	300	400	1,600	900
Option Strategy	Strip	Strip	Strap	Strip
No. of call options under strategy	1	1	2	1
Call premium (7 March 2024)	₹ 38.55	₹ 35.45	₹ 9.70	₹ 35.25
Value of required call options	₹ 11,565.00	₹ 14,180.00	₹ 31,040.00	₹ 31,725.00

Table 8: Creation of Options Portfolio				
	HINDUNILVR	INFY	ITC	TATACONSUM
No. of put options under strategy	2	2	1	2
Put premium (7 March 2024)	₹ 31.45	₹ 35.20	₹ 7.40	₹ 30.25
Value of required put options	₹ 18,870.00	₹ 28,160.00	₹ 11,840.00	₹ 54,450.00
Total premium value of strategy	₹ 30,435.00	₹ 42,340.00	₹ 42,880.00	₹ 86,175.00
Maximum multiples of strategy that can be bought	10	5	7	1
No. of call option lots	10	5	14	1
Total value of call option lots	₹ 1,15,650.00	₹ 70,900.00	₹ 2,17,280.00	₹ 31,725.00
No. of put option lots	20	10	7	2
Total value of put option lots	₹ 1,88,700.00	₹ 1,40,800.00	₹ 82,880.00	₹ 54,450.00
Amount invested	₹ 3,04,350.00	₹ 2,11,700.00	₹ 3,00,160.00	₹ 86,175.00
Uninvested funds				₹ 97,615.00
Strategy multiples bought	13	5	7	1
No. of call option lots	13	5	14	1
Total value of call option lots	₹ 1,50,345.00	₹ 70,900.00	₹ 2,17,280.00	₹ 31,725.00
No. of put option lots	26	10	7	2
Total value of put option lots	₹ 2,45,310.00	₹ 1,40,800.00	₹ 82,880.00	₹ 54,450.00
Amount invested	₹ 3,95,655.00	₹ 2,11,700.00	₹ 3,00,160.00	₹ 86,175.00
Uninvested funds				₹ 6,310.00

4.

SUMMARY OF OPEN POSITIONS

For brevity, we summarise the open positions in all securities and their corresponding options strategies in Table 9 below.

Table 9: Summary of Open Options Positions

	HINDUNILVR	INFY	ITC	TATACONSUM
Option Strategy	Strip	Strip	Strap	Strip
No. of strategy multiples bought	13	5	7	1
No. of call options lots	13	5	14	1
No. of put options lots	26	10	7	2
Lot size	300	400	1,600	900
Strike	₹ 2,420.00	₹ 1,620.00	₹ 412.50	₹ 1,260.00
Expiry	28-Mar-2024	28-Mar-2024	28-Mar-2024	28-Mar-2024
Call premium	₹ 38.55	₹ 35.45	₹ 9.70	₹ 35.25
Put premium	₹ 31.45	₹ 35.20	₹ 7.40	₹ 30.25
Total premium	₹ 3,95,655.00	₹ 2,11,700.00	₹ 3,00,160.00	₹ 86,175.00

5.

STATEMENTS OF STANDALONE DAILY PERFORMANCE

In this chapter, we monitor the daily performance of the open options positions taken. We have used European call and put options as these are used in the Indian Derivatives Market. This means that while these options cannot be exercised/lapsed before the expiry date, the position in these options can be squared off before the expiry by entering into a reverse trade. In this case, the gain or loss will be equal to the difference in the premiums incurred and earned on entering and squaring off respectively.

Strip and Strap options strategies involve going long on calls and puts (in the ratio 1:2 and 2:1 respectively), which means that on the date of entering into the strategies, premium is incurred. Thereafter, the daily changes in premium will affect the profit or loss on the open position. Squaring off a long position involves going short on the same asset/instrument. In relation to the applicable options, this means that upon squaring off, premium will be received. Thus, when the premium increases in the days leading to the date of expiry, the option holder will earn a profit and if the premium falls in the days leading to the date of expiry, the option holder will suffer a loss.

Tables 10 to 13 provide the daily tracking of profit or loss on an option for a single unit of the combined strategy on each security and the cumulative profit or loss before the day of expiry on the total position under their corresponding strategy.

The steps in computation of notional P/L are as follows:

1. The premium per lot is computed as the premium per share multiplied by the lot size.
2. The total premium on one unit of the strategy is computed as:
   - (1 x premium on 1 lot of call) + (2 x premium on 1 lot of put) - in case of Strip strategy; and
   - (2 x premium on 1 lot of call) + (1 x premium on 1 lot of put) - in case of Strap strategy
3. Daily notional P/L is the difference in movement of the total premium as calculated above.
4. Sum of daily notional premium gives the total notional P/L up to the date of expiry on 1 unit of the strategy (1 lot of call and 2 lots of put in case of Strip; and 2 lots of call and 1 lot of put in case of Strap).
5. To get total notional P/L up to the date of expiry, we multiply the P/L received in step 4 with the number of multiples of strategy.

Table 10: HINDUNILVR - Summary of Daily P/L

Strategy: Strip (Long 1 Call and Long 2 Put on 7 March 2024)

Strike = $Spot_{7\ Mar\ 2024}$ = ₹ 2,420

Expiry: 28 March 2024

Date	Call Premium (per share)	Call Premium (per lot)	Put Premium (per share)	Put Premium (per lot)	Total Premium	P/L on 1 unit of strategy (1 lot of call and 2 lots of put)
07-Mar-2024	₹ 38.55	₹ (11,565.00)	₹ 31.45	₹ (9,435.00)	₹(30,435.00)	
11-Mar-2024	₹ 25.90	₹ 7,770.00	₹ 43.60	₹ 13,080.00	₹ 33,930.00	₹ 3,495.00
12-Mar-2024	₹ 19.90	₹ 5,970.00	₹ 51.60	₹ 15,480.00	₹ 36,930.00	₹ 3,000.00
13-Mar-2024	₹ 8.05	₹ 2,415.00	₹ 105.70	₹ 31,710.00	₹ 65,835.00	₹ 28,905.00
14-Mar-2024	₹ 8.85	₹ 2,655.00	₹ 80.10	₹ 24,030.00	₹ 50,715.00	₹ (15,120.00)
15-Mar-2024	₹ 6.80	₹ 2,040.00	₹ 89.95	₹ 26,985.00	₹ 56,010.00	₹ 5,295.00
18-Mar-2024	₹ 3.95	₹ 1,185.00	₹ 116.95	₹ 35,085.00	₹ 71,355.00	₹ 15,345.00
19-Mar-2024	₹ 2.00	₹ 600.00	₹ 143.30	₹ 42,990.00	₹ 86,580.00	₹ 15,225.00
20-Mar-2024	₹ 1.05	₹ 315.00	₹ 174.50	₹ 52,350.00	₹ 1,05,015.00	₹ 18,435.00
21-Mar-2024	₹ 1.00	₹ 300.00	₹ 174.55	₹ 52,365.00	₹1,05,030.00	₹ 15.00
22-Mar-2024	₹ 0.45	₹ 135.00	₹ 160.80	₹ 48,240.00	₹ 96,615.00	₹ (8,415.00)
26-Mar-2024	₹ 0.30	₹ 90.00	₹ 173.00	₹ 51,900.00	₹1,03,890.00	₹ 7,275.00
27-Mar-2024	₹ 0.25	₹ 75.00	₹ 175.15	₹ 52,545.00	₹ 1,05,165.00	₹ 1,275.00
Total P/L on 1 unit of strategy						₹ 74,730.00
Total P/L on 13 units of strategy						₹ 9,71,490.00

In the case of Hindustan Unilever Limited, the value of the stock has fallen in the days leading to the expiry of the options. This has made the put option for the given strike price more valuable as it allows its holder the right to sell the stock at a higher price than its market price. With the trend continuing, the put continued to gain more in its value and the call simultaneously lost value. However, the gain on the put was larger than the loss on the call, thus yielding a net profit. As of 27 March 2024, the price trend does not appear to reverse overnight and thus, the put can be expected to expire in-the-money; the call - out-of-the-money; and the combined strategy - in-the-money and profitable.

Table 11: INFY - Summary of Daily P/L

Strategy: Strip (Long 1 Call and Long 2 Put on 7 March 2024)

Strike = $\text{Spot}_{7\text{ Mar }2024}$ = ₹ 1,620

Expiry: 28 March 2024

Date	Call Premium (per share)	Call Premium (per lot)	Put Premium (per share)	Put Premium (per lot)	Total Premium	P/L on 1 unit of strategy (1 lot of call and 2 lots of put)
07-Mar-2024	₹ 35.45	₹ (14,180.00)	₹ 35.20	₹ (14,080.00)	₹(42,340.00)	
11-Mar-2024	₹ 28.25	₹ 11,300.00	₹ 40.00	₹ 16,000.00	₹ 43,300.00	₹ 960.00
12-Mar-2024	₹ 32.70	₹ 13,080.00	₹ 30.80	₹ 12,320.00	₹ 37,720.00	₹ (5,580.00)
13-Mar-2024	₹ 30.55	₹ 12,220.00	₹ 33.40	₹ 13,360.00	₹ 38,940.00	₹ 1,220.00
14-Mar-2024	₹ 47.60	₹ 19,040.00	₹ 13.95	₹ 5,580.00	₹ 30,200.00	₹ (8,740.00)
15-Mar-2024	₹ 37.50	₹ 15,000.00	₹ 16.70	₹ 6,680.00	₹ 28,360.00	₹ (1,840.00)
18-Mar-2024	₹ 19.30	₹ 7,720.00	₹ 31.25	₹ 12,500.00	₹ 32,720.00	₹ 4,360.00
19-Mar-2024	₹ 5.95	₹ 2,380.00	₹ 57.50	₹ 23,000.00	₹ 48,380.00	₹ 15,660.00
20-Mar-2024	₹ 4.15	₹ 1,660.00	₹ 63.05	₹ 25,220.00	₹ 52,100.00	₹ 3,720.00
21-Mar-2024	₹ 3.05	₹ 1,220.00	₹ 62.85	₹ 25,140.00	₹ 51,500.00	₹ (600.00)
22-Mar-2024	₹ 0.70	₹ 280.00	₹ 106.55	₹ 42,620.00	₹ 85,520.00	₹ 34,020.00
26-Mar-2024	₹ 0.40	₹ 160.00	₹ 125.10	₹ 50,040.00	₹1,00,240.00	₹ 14,720.00
27-Mar-2024	₹ 0.15	₹ 60.00	₹ 135.70	₹ 54,280.00	₹1,08,620.00	₹ 8,380.00
Total P/L on 1 unit of strategy						₹ 66,280.00
Total P/L on 5 units of strategy						₹3,31,400.00

In the case of Infosys Limited too, the value of the stock has fallen significantly (in light of the short-term window) in the days leading to the expiry of the options. This has made the put option for the given strike price more valuable as it allows its holder the right to sell the stock at a higher price than its market price. With the trend continuing, the put continued to gain more in its value and the call simultaneously lost value. However, the gain on the put was larger than the loss on the call, thus yielding a net profit. As of 27 March 2024, the price trend does not appear to reverse overnight and thus, the put can be expected to expire in-the-money; the call - out-of-the-money; and the combined strategy - in-the-money and profitable.

Table 12: ITC - Summary of Daily P/L

Strategy: Strap (Long 2 Call and Long 1 Put on 7 March 2024)

Strike = Spot$_{7\ Mar\ 2024}$ = ₹ 412.50

Expiry: 28 March 2024

Date	Call Premium (per share)	Call Premium (per lot)	Put Premium (per share)	Put Premium (per lot)	Total Premium	P/L on 1 unit of strategy (2 lots of call and 1 lot of put)
07-Mar-2024	₹ 9.70	₹ (15,520.00)	₹ 7.40	₹ (11,840.00)	₹(42,880.00)	
11-Mar-2024	₹ 8.30	₹ 13,280.00	₹ 10.25	₹ 16,400.00	₹ 42,960.00	₹ 80.00
12-Mar-2024	₹ 6.70	₹ 10,720.00	₹ 12.35	₹ 19,760.00	₹ 41,200.00	₹ (1,760.00)
13-Mar-2024	₹ 13.70	₹ 21,920.00	₹ 2.70	₹ 4,320.00	₹ 48,160.00	₹ 6,960.00
14-Mar-2024	₹ 12.20	₹ 19,520.00	₹ 2.65	₹ 4,240.00	₹ 43,280.00	₹ (4,880.00)
15-Mar-2024	₹ 10.70	₹ 17,120.00	₹ 2.05	₹ 3,280.00	₹ 37,520.00	₹ (5,760.00)
18-Mar-2024	₹ 9.00	₹ 14,400.00	₹ 2.30	₹ 3,680.00	₹ 32,480.00	₹ (5,040.00)
19-Mar-2024	₹ 4.65	₹ 7,440.00	₹ 5.90	₹ 9,440.00	₹ 24,320.00	₹ (8,160.00)
20-Mar-2024	₹ 6.35	₹ 10,160.00	₹ 2.40	₹ 3,840.00	₹ 24,160.00	₹ (160.00)
21-Mar-2024	₹ 9.60	₹ 15,360.00	₹ 0.65	₹ 1,040.00	₹ 31,760.00	₹ 7,600.00
22-Mar-2024	₹ 15.60	₹ 24,960.00	₹ 0.15	₹ 240.00	₹ 50,160.00	₹ 18,400.00
26-Mar-2024	₹ 15.95	₹ 25,520.00	₹ 0.15	₹ 240.00	₹ 51,280.00	₹ 1,120.00
27-Mar-2024	₹ 15.50	₹ 24,800.00	₹ 0.10	₹ 160.00	₹ 49,760.00	₹ (1,520.00)
Total P/L on 1 unit of strategy						₹ 6,880.00
Total P/L on 7 units of strategy						₹ 48,160.00

In the case of ITC Limited, the value of the stock has risen in the days leading to the expiry of the options. While this rise has not been significant in terms of amount, it is large enough to compensate the premium on the options. Prima facie, the rise in prices and the corresponding changes in premiums, just about cover the initial premium cost, allowing for small profits. The price rise has made the call option for the given strike more valuable as it allows its holder the right to buy the stock at a lower price than the market. As of 27 March 2024, the price trend does not appear to reverse overnight and thus, the call can be expected to expire in-the-money, the put - out-of-the-money; and the combined strategy, in-the-money and profitable (though the profits may not be very large).

Table 13: TATACONSUM - Summary of Daily P/L

Strategy: Strip (Long 1 Call and Long 2 Put on 7 March 2024)

Strike = Spot$_{7\ \mathrm{Mar}\ 2024}$ = ₹ 1,260

Expiry: 28 March 2024

Date	Call Premium (per share)	Call Premium (per lot)	Put Premium (per share)	Put Premium (per lot)	Total Premium	P/L on 1 unit of strategy (1 lot of call and 2 lots of put)
07-Mar-2024	₹ 35.25	₹ (31,725.00)	₹ 30.25	₹ (27,225.00)	₹ (86,175.00)	
11-Mar-2024	₹ 15.40	₹ 13,860.00	₹ 51.25	₹ 46,125.00	₹ 1,06,110.00	₹ 19,935.00
12-Mar-2024	₹ 12.70	₹ 11,430.00	₹ 48.65	₹ 43,785.00	₹ 99,000.00	₹ (7,110.00)
13-Mar-2024	₹ 5.35	₹ 4,815.00	₹ 79.40	₹ 71,460.00	₹ 1,47,735.00	₹ 48,735.00
14-Mar-2024	₹ 6.90	₹ 6,210.00	₹ 62.00	₹ 55,800.00	₹ 1,17,810.00	₹ (29,925.00)
15-Mar-2024	₹ 7.20	₹ 6,480.00	₹ 47.30	₹ 42,570.00	₹ 91,620.00	₹ (26,190.00)
18-Mar-2024	₹ 3.15	₹ 2,835.00	₹ 71.75	₹ 64,575.00	₹ 1,31,985.00	₹ 40,365.00
19-Mar-2024	₹ 1.15	₹ 1,035.00	₹ 111.70	₹1,00,530.00	₹2,02,095.00	₹ 70,110.00
20-Mar-2024	₹ 0.70	₹ 630.00	₹ 134.10	₹1,20,690.00	₹2,42,010.00	₹ 39,915.00
21-Mar-2024	₹ 0.55	₹ 495.00	₹ 120.00	₹1,08,000.00	₹ 2,16,495.00	₹ (25,515.00)
22-Mar-2024	₹ 0.30	₹ 270.00	₹ 135.90	₹ 1,22,310.00	₹2,44,890.00	₹ 28,395.00
26-Mar-2024	₹ 0.20	₹ 180.00	₹ 147.00	₹1,32,300.00	₹2,64,780.00	₹ 19,890.00
27-Mar-2024	₹ 0.15	₹ 135.00	₹ 168.70	₹ 1,51,830.00	₹3,03,795.00	₹ 39,015.00
Total P/L on 1 unit of strategy						₹ 2,17,620.00
Total P/L on 1 unit of strategy						₹ 2,17,620.00

In the case of Tata Consumer Products Limited, the stock price has fallen significantly in the days leading to the expiry of the options. This made the put option for the given strike more valuable as it allows its holder the right to sell the stock at a higher price than its market price. As of 27 March 2024, the price trend is not expected to reverse overnight and thus, the put is expected to expire in-the-money, the call - out-of-the-money; and the combined strategy, in-the-money and profitable.

It must be noted that the P/L computed in Tables 10 to 13 are solely for the purpose of recording daily notional profits. In other words, these have not been realised. P/L is only be realised on European options on their expiry date - based on initial premium, and the difference between strike price and spot price on the date of expiry. This has been computed in the chapter that follows.

6.
OVERALL PORTFOLIO PERFORMANCE

We compute the overall performance of the options strategies on each security and the cumulative profit or loss on the complete portfolio on the date of expiry - 28 March 2024. Tables 14 to 17 capture the realised profit or loss on the options strategy for each security and the net portfolio activity in respect of the security.

The steps in computations are as follows:

1. The strategy for each security and the terms associated to it (strike price, expiry date, lot size and number of lots) are identified and listed for easy reference. The spot price on 28 March 2024 (expiry date) is also listed to facilitate calculation of payoff in later steps.
2. The call option premium and put option premium is computed for one lot. The total premium is then computed for 1 unit of the strategy as:
    - (1 x premium on 1 lot of call) + (2 x premium on 1 lot of put) - in case of Strip strategy; and
    - (2 x premium on 1 lot of call) + (1 x premium on 1 lot of put) - in case of Strap strategy
3. The payoff for the call and put is computed for the date of expiry. The payoffs for 1 unit and the total number of positions in the combined strategy are then computed.
4. The total payoff is the sum of the payoff on call positions and the payoff on the put positions for the total number of positions in the strategy. Note that only one of the two options (call and put) will be exercised (in each case) and the exercised option will contribute to the total payoff of the strategy.
5. The total premium on the total number of positions in the strategy is computed as the product of the total premium on 1 unit of the strategy and the number of strategy lots bought/ invested in.
6. The total P/L of the strategy is the difference of the sums derived in steps 4 and 5 above; i.e. the total payoff for the total number of lots of the strategy minus the total premium for the total number of lots of the strategy.
7. The above steps only capture the efficiency of the options strategies. However, these must also be executed. Thus, the next part of the table computes the net effect on portfolio from engaging in options.
8. We compute the final P/L on the security as a component of an investment portfolio by subtracting its cost of purchase (if call option is exercised, then at strike; else at the spot rate on 28 March 2024) and the total premium (computed in step 5 above), from the sales proceeds (if put option is exercised, then at its strike; else at the spot rate on 28 March 2024).

Table 14: HINDUNILVR - P/L Realised
Strategy: Strip (Long 1 Call and Long 2 Put on 7 March 2024) Strike = $\text{Spot}_{7\ \text{Mar}\ 2024}$ = ₹ 2,420 Expiry: 28 March 2024 Lot size: 300 No. of lots: 13 $\text{Spot}_{28\ \text{Mar}\ 2024}$ = ₹ 2,264.35

Date	Call Premium (per share)	Call Premium (per lot)	Put Premium (per share)	Put Premium (per lot)	Total Premium on 1 unit of strategy
07-Mar-2024	₹ 38.55	₹ (11,565.00)	₹ 31.45	₹ (9,435.00)	₹ (30,435.00)

Option	Exercise/ Lapse	Payoff on 1 share	Payoff on 2 shares	Payoff (1 strategy unit)	Payoff on 13 lots
Call option	Lapse	₹ 0.00	-	₹ 0.00	₹ 0.00
Put option	Exercise	-	₹ 311.30	₹ 93,390.00	₹ 12,14,070.00

Total payoff	₹ 12,14,070.00
(-) Premium	₹ (3,95,655.00)
Total strategy P/L on 13 lots	₹ 8,18,415.00

Net portfolio activity with respect to Hindustan Unilever Limited			
Action	**Price**	**No. of shares (no. of lots x lot size)**	**Amount**
Sell @ Strike	₹ 2,420.00	3900	₹ 94,38,000.00
Buy @ $\text{Spot}_{28\ \text{Mar}\ 2024}$	₹ 2,264.35	3900	₹ 88,30,965.00
Total Premium			₹ 3,95,655.00
Final P/L			**₹ 2,11,380.00**

Due to the large volatility in the spot market, we have been able to gain on the put options side of our Strip strategy. Thus, we will exercise our right to sell @ Strike - ₹ 2,420. However, this will be short-selling and thus to honour this, we will also buy @ $\text{Spot}_{28\ \text{Mar}\ 2024}$ - ₹ 2,264.35, earning a profit on the price front. While premium is a sunk cost and thus should be irrelevant to our analysis of profitability, we consider it to determine the cumulative effect on our money/worth. Thus, we determine a final profit of ₹ 2,11,380.

Table 15: INFY - P/L Realised
Strategy: Strip (Long 1 Call and Long 2 Put on 7 March 2024) Strike = $\text{Spot}_{7\ \text{Mar}\ 2024}$ = ₹ 1,620 Expiry: 28 March 2024 Lot size: 400 No. of lots: 5 $\text{Spot}_{28\ \text{Mar}\ 2024}$ = ₹ 1,498.05

Date	Call Premium (per share)	Call Premium (per lot)	Put Premium (per share)	Put Premium (per lot)	Total Premium on 1 unit of strategy
07-Mar-2024	₹ 35.45	₹ (14,180.00)	₹ 35.20	₹ (14,080.00)	₹ (42,340.00)

Option	Exercise/ Lapse	Payoff on 1 share	Payoff on 2 shares	Payoff (1 strategy unit)	Payoff on 5 lots
Call option	Lapse	₹ 0.00	-	₹ 0.00	₹ 0.00
Put option	Exercise	-	₹ 243.90	₹ 97,560.00	₹ 4,87,800.00

Total payoff	₹ 4,87,800.00
(-) Premium	₹ (2,11,700.00)
Total strategy P/L on 4 lots	₹ 2,76,100.00

Net portfolio activity with respect to Infosys Limited			
Action	Price	No. of shares (no. of lots x lot size)	Amount
Sell @ Strike	₹ 1,620.00	2000	₹ 32,40,000.00
Buy @ $\text{Spot}_{28\ \text{Mar}\ 2024}$	₹ 1,498.05	2000	₹ 29,96,100.00
Total Premium			₹ 2,11,700.00
Total P/L			**₹ 32,200.00**

Due to the large volatility in the spot market, we have been able to gain on the put options side of our Strip strategy. Thus, we will exercise our right to sell @ Strike - ₹ 1,620. However, this will be short-selling and thus to honour this, we will also buy @ $\text{Spot}_{28\ \text{Mar}\ 2024}$ - ₹ 1,498.05, earning a profit on the price front. While premium is a sunk cost and thus should be irrelevant to our analysis of profitability, we consider it to determine the cumulative effect on our money/worth. Thus, we determine a final profit of ₹ 32,200.

Table 16: ITC - P/L Realised
Strategy: Strap (Long 2 Call and Long 1 Put on 7 March 2024) Strike = Spot$_{7\ Mar\ 2024}$ = ₹ 412.50 Expiry: 28 March 2024 Lot size: 1,600 No. of lots: 7 Spot$_{28\ Mar\ 2024}$ = ₹ 428.35

Date	Call Premium (per share)	Call Premium (per lot)	Put Premium (per share)	Put Premium (per lot)	Total Premium on 1 unit of strategy
07-Mar-2024	₹ 9.70	₹ (15,520.00)	₹ 7.40	₹ (11,840.00)	₹ (42,880.00)

Option	Exercise/ Lapse	Payoff on 1 share	Payoff on 2 shares	Payoff (1 strategy unit)	Payoff on 7 lots
Call option	Exercise	-	₹ 31.70	₹ 50,720.00	₹ 3,55,040.00
Put option	Lapse	₹ 0.00	-	₹ 0.00	₹ 0.00

Total payoff	₹ 3,55,040.00
(-) Premium	₹ (3,00,160.00)
Total P/L on 9 lots	₹ 54,880.00

Net portfolio activity with respect to ITC Limited			
Action	**Price**	**No. of shares (no. of lots x lot size)**	**Amount**
Sell @ Spot$_{28\ Mar\ 2024}$	₹ 428.35	11200	₹ 47,97,520.00
Buy @ Strike	₹ 412.50	11200	₹ 46,20,000.00
Total Premium			₹ 3,00,160.00
Total P/L			**₹ (1,22,640.00)**

Due to the large volatility in the spot market, we have been able to gain on the call options side of our Strap strategy. Thus, we will exercise our right to buy @ Strike - ₹ 412.50. Note that on a price front alone (ignoring the sunk cost - premium), we are still gaining a gross profit. However, considering the premium to determine the cumulative effect on our money/worth, we are incurring a loss of ₹ 1,22,640. However, please refer to the note on page 29 for a more detailed analysis.

Table 17: TATACONSUM - P/L Realised
Strategy: Strip (Long 1 Call and Long 2 Put on 7 March 2024) Strike = $\text{Spot}_{7\ \text{Mar}\ 2024}$ = ₹ 1,260 Expiry: 28 March 2024 Lot size: 900 No. of lots: 1 $\text{Spot}_{28\ \text{Mar}\ 2024}$ = ₹ 1,096.20

Date	Call Premium (per share)	Call Premium (per lot)	Put Premium (per share)	Put Premium (per lot)	Total Premium on 1 unit of strategy
07-Mar-2024	₹ 35.25	₹ (31,725.00)	₹ 30.25	₹ (27,225.00)	₹ (86,175.00)

Option	Exercise/ Lapse	Payoff on 1 share	Payoff on 2 shares	Payoff (1 strategy unit)	Payoff on 1 lot
Call option	Lapse	₹ 0.00	-	₹ 0.00	₹ 0.00
Put option	Exercise	-	₹ 327.60	₹ 2,94,840.00	₹ 2,94,840.00

Total payoff	₹ 2,94,840.00
(-) Premium	₹ (86,175.00)
Total P/L on 9 lots	₹ 2,08,665.00

Net portfolio activity with respect to Tata Consumer Products Limited			
Action	**Price**	**No. of shares (no. of lots x lot size)**	**Amount**
Sell @ Strike	₹ 1,260.00	900	₹ 11,34,000.00
Buy @ $\text{Spot}_{28\ \text{Mar}\ 2024}$	₹ 1,096.20	900	₹ 9,86,580.00
Total Premium			₹ 86,175.00
Total P/L			**₹ 61,245.00**

Due to the large volatility in the spot market, we have been able to gain on the put options side of our Strip strategy. Thus, we will exercise our right to sell @ Strike - ₹ 1,260. However, this will be short-selling and thus to honour this, we will also buy @ $\text{Spot}_{28\ \text{Mar}\ 2024}$ - ₹ 1,096.05, earning a profit on the price front. While premium is a sunk cost and thus should be irrelevant to our analysis of profitability, we consider it to determine the cumulative effect on our money/worth. Thus, we determine a final profit of ₹ 61,245.

NOTE FOR ITC LIMITED

Since we have a net loss after giving effect to the total premium (a sunk cost), an investor may decide to hold the bought securities. However, our investment fund is ₹ 10,00,000 only and we are able to trade in a larger volume only due to the use of options and the ability to short-sell (and thus collecting the sales proceeds first an during that to compensate the activity on the buy side). Due to this limitation alone, in this case, we are forced to face a loss on the net portfolio position on these securities.

If an investor had a greater fund availability, he/she could only execute the beneficial part of the trade - i.e. exercising the call and then hold the security. In this case too, an alternative could be to exercise a small number of options and let the remaining lapse; and then to hold the purchased securities for a longer horizon. This would still result in the immediate settlement (buy and sell on 28 March 2024) of the other securities - Hindustan Unilever Limited, Infosys Limited and Tata Consumer Products Limited; but will mean a smaller outlay on the shares of ITC Limited on 28 March 2024 and the ability to hold these securities until they take a profitable turn (in terms of rising prices after 28 March 2024).

The total P/L for the total investment portfolio with the fund of ₹ 10,00,000 is calculated in Table 18 below, as the sum of the final P/L of each security computed in Tables 14 to 17 and the return for 22 days on the uninvested funds @ R_f.

Table 18: Total P/L on Investment Portfolio		
Stock Name	**Final P/L**	
Hindustan Unilever Limited	₹	2,11,380.00
Infosys Limited	₹	32,200.00
ITC Limited	₹	(1,22,640.00)
Tata Consumer Products Limited	₹	61,245.00
Return on ₹ 6,310 invested @ Rf = 7.20% (annualised)	₹	26.45
TOTAL INVESTMENT PORTFOLIO P/L	**₹**	**1,82,211.45**

We still compare if and how the use of options has reduced the loss on any position on the selected securities in the combined portfolio in the chapter that follows.

7.

THEORETICAL PERFORMANCE EXPECTATIONS

We analysed the performance of the Strip and Strap options strategies on the selected securities. While this resulted in a loss, we have not yet explored the outcome of an investment in the spot market. If we had not invested through options, we would have invested ₹ 10,00,000 in the securities in the spot market in the ratio of the weights we determined for these securities to achieve the minimum variance portfolio. The investment activity would have contained two steps:

- Buy shares of the selected securities @ $Spot_{7\ Mar\ 2024}$ in the ratio of weights determined; and
- Sell shares of the selected securities @ $Spot_{28\ Mar\ 2024}$ to square off.

This investment activity - that only takes place in the spot market is also called the unhedged investment or unhedged portfolio.

Even if the position is not squared off on 28 March 2024, we compute the P/L for this date and consider it terminal P/L for our analysis as all positions are squared off under the options method, and this will help a like for like analysis. We now analyse the portfolio's performance under this method of investment.

Table 19: P/L of Spot Market Investment Portfolio (Unhedged Portfolio)

Stock Code	Weight	Max. Amt. for Invt.	$Spot_{7\ Mar\ 2024}$	No. of Shares Bought	Amt. Invested	$Spot_{28\ Mar\ 2024}$	P/L
HINDUNILVR	0.31	₹ 3,07,738	₹ 2,419.55	127	₹ 3,07,283	₹ 2,264.35	₹ (19,710)
INFY	0.22	₹ 2,18,502	₹ 1,616.45	135	₹ 2,18,221	₹ 1,498.05	₹ (15,984)
ITC	0.30	₹ 3,04,628	₹ 413.55	736	₹ 3,04,373	₹ 428.35	₹ 10,893
TATACONSUM	0.17	₹ 1,69,132	₹ 1,261.55	134	₹ 1,69,048	₹ 1,096.20	₹ (22,157)
	1.00				**₹ 9,98,924**		**₹ (46,959)**

The uninvested amount of ₹ 1,076 can be invested @ Rf = 7.20% (annualised) to earn ₹ 4.51. This brings our net loss to ₹ 46,953.99.

8.

PERFORMANCE EVALUATION

Prima facie, the options portfolio has earned us a greater return than the unhedged portfolio. However, the following are additionally noted to understand the characteristics of both returns:

1. Time value of money is ignored: The purchase of securities in the case of unhedged portfolio takes place on 7 March 2024 and the sale takes place on 28 March 2024. The time value of money between these dates has not been accounted for. In the case of options portfolio, only premium expense is incurred on 7 March 2024 - which is a sunk cost. However, both arms of the actual transactions in the underlying take place on 28 March 2024. Thus, the loss under the unhedged portfolio is greater if time value of money is considered.

2. Size and scale of investment activity: The size and scale of the investment activity and the portfolio is very large under the options portfolio vis-à-vis the unhedged portfolio. This is because the options portfolio allows more investment due to only premium commitment on the date of initial activity whereas unhedged (spot) market investments require complete commitment to the share according to its ongoing value. Moreover, on the date of expiry, since both trades are conducted simultaneously (selling and buying at spot/strike), no new funds are needed to be committed because the sale can be sequenced first (short-selling) and that itself can finance the buy side. Therefore, when using options, one only needs to have funds for the premium commitment. If both buy and sell in the underlying are to be done on expiry, these can be net-financed.

3. Investment constraints: The single largest reason we have suffered loss on a security (ITC Limited) in our option portfolio is the fact that due to investment constraints, we are unable to execute a buy and hold strategy for the security. If this constraint was removed, there would only be a new investment commitment to the shares of ITC Limited; and a net profit of ₹ 3,04,825 (₹ 2,11,380 + ₹ 32,200 + ₹ 61,245 - refer Table 18 on page 28) would be earned on 28 March 2024, which is a substantially superior result to the unhedged portfolio's performance, the erstwhile options portfolio's performance and which could possibly not be matched by any other portfolio combination (spot and/or derivative) of these securities.

4. Transaction costs: The most important transaction cost for options is the premium, which has been accounted for in determining the options portfolio's P/L. However, no transaction costs have been considered in computing the P/L on the unhedged portfolio, which suggests that the loss on the unhedged portfolio would be greater when these are considered.

5. Time horizon and risk: It must also be noted that the risk-return characteristics of the options portfolio and the unhedged portfolio differ remarkably. While the unhedged portfolio does little to reduce the risk of the investor (only to the extent of diversification), the options portfolio reduces the risk further. In light of the very short investment period, this must be seen in a different light - making the investor appreciate the profit under the options portfolio more.

9.
CONCLUSION

We thus conclude that using appropriate options based on a sound market sentiment analysis does help in improving the risk-return characteristic of an investment portfolio. In the instant case, we have achieved a significant growth in the monetary worth of the funds available for investment (at about 18%). Our strategy is further more sound if the sunk costs are ignored and the conclusions of our fundamental and technical analysis were correct.

For the only stock with the negative performance outturn - ITC Limited - more favourable investment conditions (lesser investment constraints and perhaps a longer time horizon) would perhaps have allowed our expectations for the securities manifest in the spot market and would have allowed us to take single positions (long) on the underlying. Thus, while in this case, the strategy may not have been as profitable as desired on the stock of ITC Limited, the signs are promising. With a longer investment horizon, the market would take a more concrete direction and the outcome could differ.

We must also highlight that our results have been achieved in the presence of another investment constraint - the selection of options with a specific expiry date - 28 March 2024. Ideally, by choosing an option with a further expiry date, we could also have more opportunities to earn by playing on premium movements, and entering and exiting into multiple trades till maturity. This may or may not (based on market changes and volatility in the investment horizon) have had potential to further enhance our profitability.

Irrespective the above factors that could have potentially affected the outcome, the results derived have been remarkable especially considering the scale of activity undertaken in the underlying securities through the options portfolio.

Thus, important lessons can be taken from the portfolio constructed in this report in executing successful options strategies.