Group Number: 27

Instrument Names: ICICIGI,Indigo

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An Analysis Report on

Underlying Assets &

Deliverable Equity & Futures

Submitted in the partial fulfillment of

FIN F311/ ECON F354 : Derivatives and Risk Management

Under the Supervision of

Dr. Thota Nagaraju

Acknowledgement

I am extremely thankful to Dr. Thota Nagaraju for providing this opportunity to work on this project.This assignment was a fantastic way to put what I had learned in class into practise through evaluating data, none of which would have been possible without his assistance and critical suggestions.I am also like to convey our heartfelt gratitude to him for his patience and time coaching us through every step of this process. I am also grateful to BITS Hyderabad Economics Department for creating opportunities for students to participate in interesting, innovative initiatives that allow me to put my knowledge into practise.

Abstract

This paper aims to examine the stock and derivatives returns of ICICIGI and Indigo Companies, both of which are in the insurance and aviation sectors, respectively.The chosen time range for analysis is from May 3rd to October 29th, 2021.

For each company in the portfolio, a brief description of the nature of the business, ownership structure, market impact, importance, and overall greatness of Company is explained.Followed by Quantitative study of The daily, weekly, and monthly returns on equity were calculated and plotted on a graph against dates.

The equity derivatives of such stocks were then studied using Comparative analysis. For the above-mentioned time frame, futures prices were taken from the Bhav-Copies available on NSE website for daily, weekly, and monthly rates. The returns were then risk-adjusted by subtracting the T-Bill rate for the same frequency to create a more practical outlook. A comparison between equity returns and futures returns has also been performed. After analysing the trends, a note on contango and backwardation was added.

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MODULE-1 ICICIGI

M1:Section I - Underlying Assets - Equity

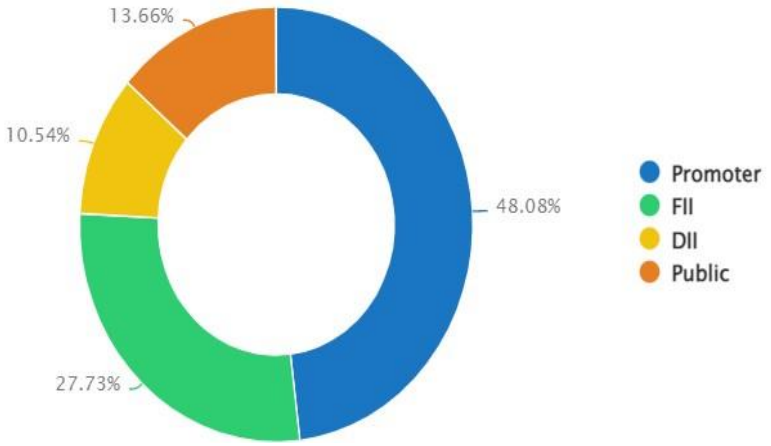
M1:1. Introduction

M1:1.1 Nature of Business

The ICICI Lombard General Insurance Company Limited is a general insurance company based in India. General insurance, reinsurance, insurance claims management, and investment management are some of the services it provides. The firm's Gross Written Premium (GWP) is 143.20 billion dollars (FY 2021). Through its intermediaries and website, the company provides policy insurance and renewal. Car Insurance, Health Insurance, International Travel Insurance, Overseas Student Travel Insurance, Two Wheeler Insurance, Home Insurance, and Weather Insurance are some of the assurance products it sells. ICICI Lombard has 273 physical locations and 840 virtual locations around the country.

M1:1.2 Ownership of Business

The company was incorporated as a joint venture between ICICI Bank, India's largest private sector bank by consolidated total assets (Rs 9.9 trillion as of March 2017), and Fairfax Financial Holdings, a Canadian holding company with US$ 43.38 billion in total assets as of December 2016. ICICI Lombard General Insurance Company Limited is a public limited company that was founded on October 30, 2000. The Registrar of Companies in Mumbai issued the company a certificate of incorporation on January 11, 2001.



Name	Holding(%)
ICICI Bank Limited	48.08
GOVERNMENT PENSION FUND GLOBAL	1.30
GIBA HOLDINGS PRIVATE LIMITED	3.72

M1:1.3 Business Commencement Circumstance

Certificate of Business circumstances will be given based on the leadership quality of the company policies and emergence.Pursuant of the section 149 (3) of The Companies Act,1956.ICICI Banking Corporation Limited was incorporated under the duly verification in the prescribed form under different sections entitled within it.

M1:1.4 Industry of the Business

ICICI Lombard has a market capitalization of $9.96 billion as of November 2021. According to our statistics, ICICI Lombard is the 1627th most valuable company in the world by market capitalization. Through different distribution channels, the company offers a comprehensive and well-diversified range of products, including vehicle insurance, health insurance, personal accident insurance, crop insurance, fire insurance, marine insurance, and engineering and liability insurance. Direct sales, individual agents, bank partners, other corporate agents, brokers, and online are the

company's primary distribution methods via which it serves its corporate and government clients.

M1:1.5 Overall Greatness of the Company

ICICI Bank held a 64 per cent share in the joint venture, while Fairfax held a 36 per cent stake. Fairfax Financial Holdings Limited and India's second-largest bank. A Toronto-based financial services firm.The largest private sector general insurance firmin India is ICICI Lombard General Insurance. In fiscal 2016, ICICI Bank sold a 9.0 per cent stake in ICICI General to Fairfax Financial Holdings, valuing the company at 172.25 billion rupees. Following the purchase, ICICI Bank and Fairfax Financial Holdings Limited own roughly 64 per cent and 35 percent of ICICI Lombard General Insurance Company, respectively. In 2019, ICICI Lombard partnered with Karur Vysya Bank to sell bancassurance products.

ICICI Lombard General Insurance Company announced on August 20, 2018, that it had launched India's first Artificial Intelligence (AI)-based solution to assist quick health insurance claim approval. As a result, the usual cashless claim request, which takes an average of 60 minutes to process, has been cut in half thanks to AI. ICICI Lombard General Insurance Company declared on August 23, 2018, that it has implemented a number of efforts to assist clients affected by the Kerala floods.

M1:2. Risk-Unadjusted Returns

The unadjusted returns for ICICIGI are shown in the table and graphs below for Daily, Weekly, and Monthly frequencies. The appropriate frequency sample results are calculated in excel and presented here for your convenience. (All percentages are used to maintain consistency across the report.)

As seen in the table below, mean returns for all three frequencies are positive, implying that the company has been able to protect shareholder wealth and offer good returns on any short term of investment on an average that is advantageous to investors.

Returns	Daily	Weekly	Monthly
Mean(%)	0.0398	0.2824	0.7983
Max(%)	5.8831	4.9434	9.5756
Min(%)	-4.0742	-4.009	-6.1269
Standard Deviation	1.423899	2.431817	6.543596175

(Table. 1: Risk Unadjusted Returns (%) on ICICIGI for Various Frequencies)

M1:3. Risk-Adjusted Returns

The adjusted returns for ICICIGI are shown in the table and graphs below for Daily, Weekly, and Monthly frequencies. The appropriate frequency sample results are calculated in excel and presented here for your convenience. (All percentages are used to maintain consistency across the report.)Risk-adjusted returns for the past year were all positive, with daily returns of 0.0058%, weekly returns of 0.248363%, and monthly returns of 0.7640511%, indicating that the stock has outperformed risk-free returns and safeguarded owners' wealth.

(Table. 2: Risk-Adjusted Returns (%) on ICICIGI for Various Frequencies)

Returns	Daily	Weekly	Monthly
Mean(%)	0.0058	0.248363	0.7640511
Max(%)	5.85	4.909308	9.5425677
Min(%)	-4.1072	-4.04387	-6.1628855
Standard Deviation	1.423978	2.432046	5.981082956

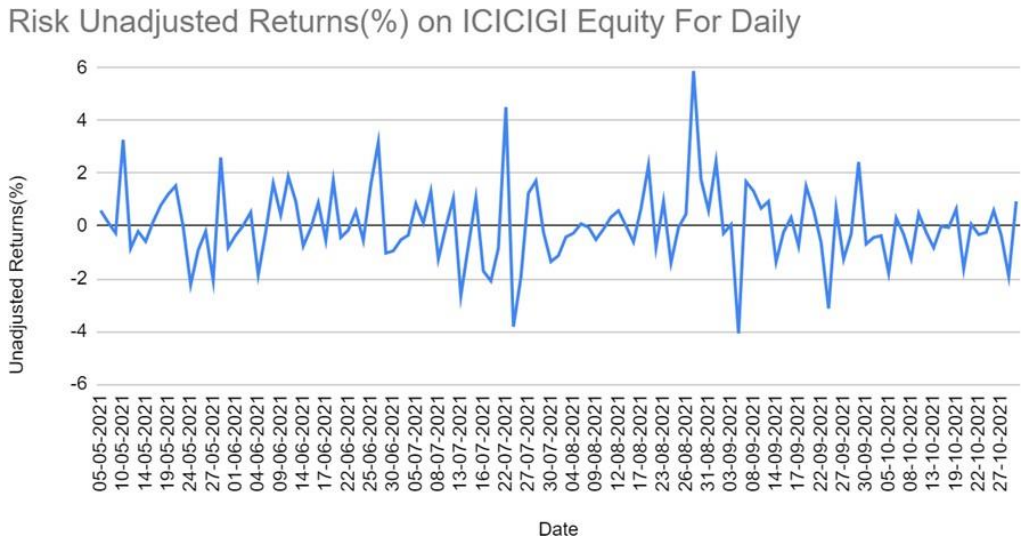
M1:4. Economic Interpretation

Returns calculated without taking into account the risk-free rate do not provide us with a complete picture (Risk Unadjusted returns). When the risk is factored in, the return reveals if it is worthwhile to take the risk in exchange for a higher rate of return than the risk-free rate. The Sharpe Ratio is a popular metric for calculating risk-adjusted returns. A risk-adjusted return is a return on an investment that is higher than a risk-free return. As a result, an investor should always invest after evaluating risk-adjusted returns in order to get the best reward-to-risk ratio. This ratio is critical for determining how much return an investor can expect for a certain level of risk or vice versa. Because it is a more economically reasonable/practical indication, a risk-adjusted return will always be lower than a risk-unadjusted return. This means that if the Sharpe ratio is negative, the investor may be better off avoiding this investment. The Sharpe ratio indicates the return on investment. The higher the Sharpe ratio, the better the return on investment.

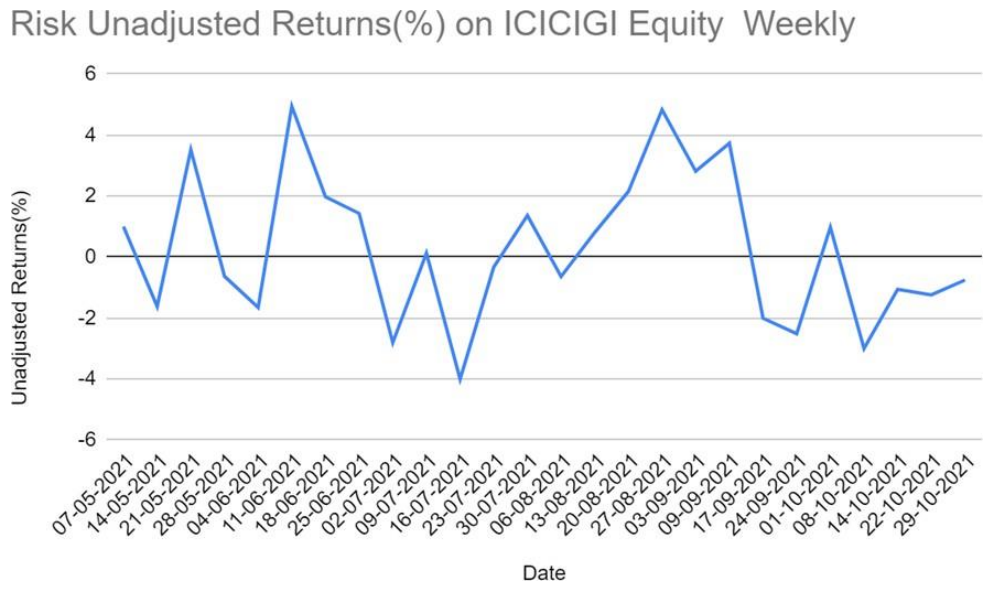
Risk-adjusted and unadjusted return plots for daily, weekly, and monthly frequencies are shown in Figures 4 to 9.

- The mean risk-adjusted returns for the past year were all positive, i.e. 0.0058 % on a daily basis, 0.248363 % on a weekly basis, and 0.7640511 % on a monthly basis, indicating that the stock has been able to deliver superior returns over and above risk-free returns while protecting shareholders' wealth.
- In both risk unadjusted and risk-adjusted returns, the percentage of mean returns grows from daily to weekly to monthly.
- Both risks unadjusted and adjusted returns are becoming more volatile on a daily, weekly, and monthly basis.
- The standard deviation is nearly identical in both Risk-Adjusted and Risk Unadjusted returns, indicating that the risk is the same in both because adjusted returns are calculated by subtracting the risk-free rate.
- There are a lot of price changes in this stock, making it incredibly aggressive and risky to trade.

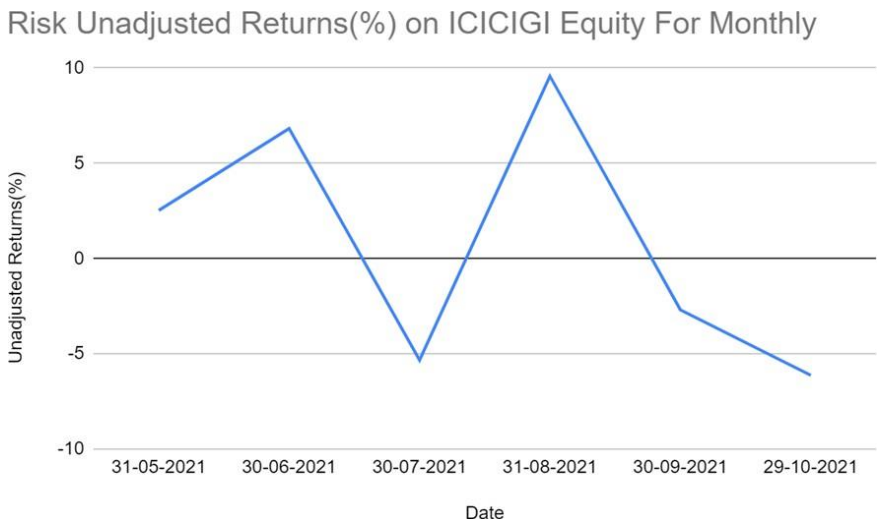
M1:4.1 Plots of Risk Unadjusted Returns :



(Fig.4: Risk Unadjusted Returns (%) on ICICIGI for Daily Frequency)

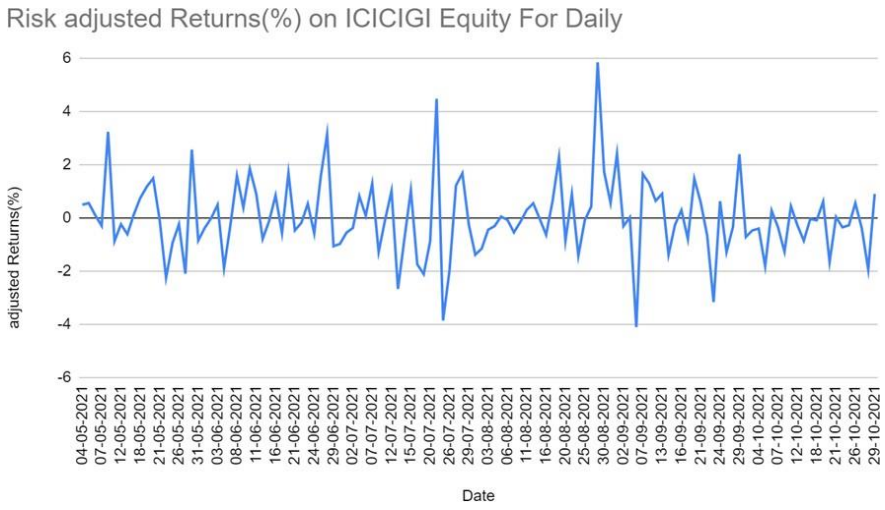


(Fig.5: Risk Unadjusted Returns (%) on ICICIGI for Weekly Frequency)

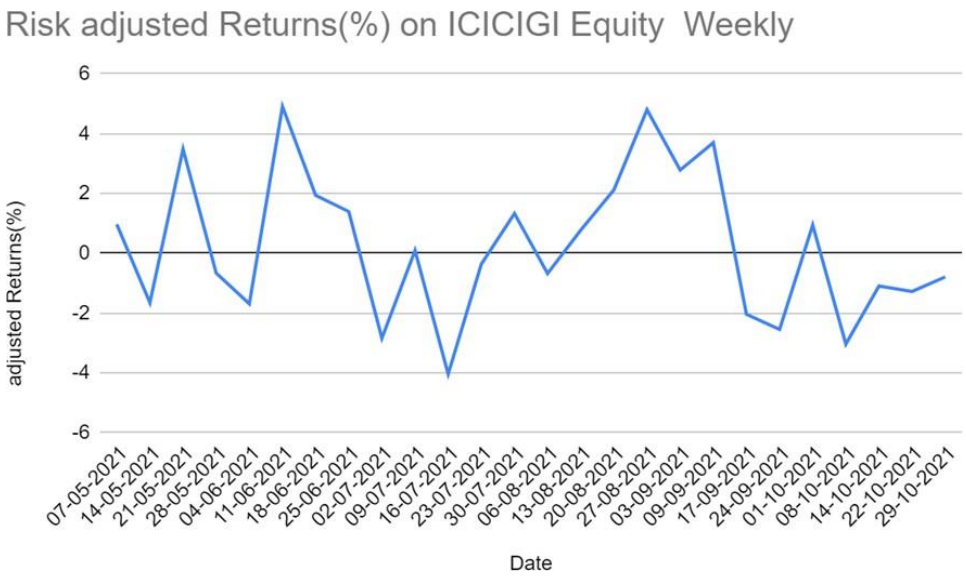


(Fig.6: Risk Unadjusted Returns (%) on ICICIGI for Monthly Frequency)

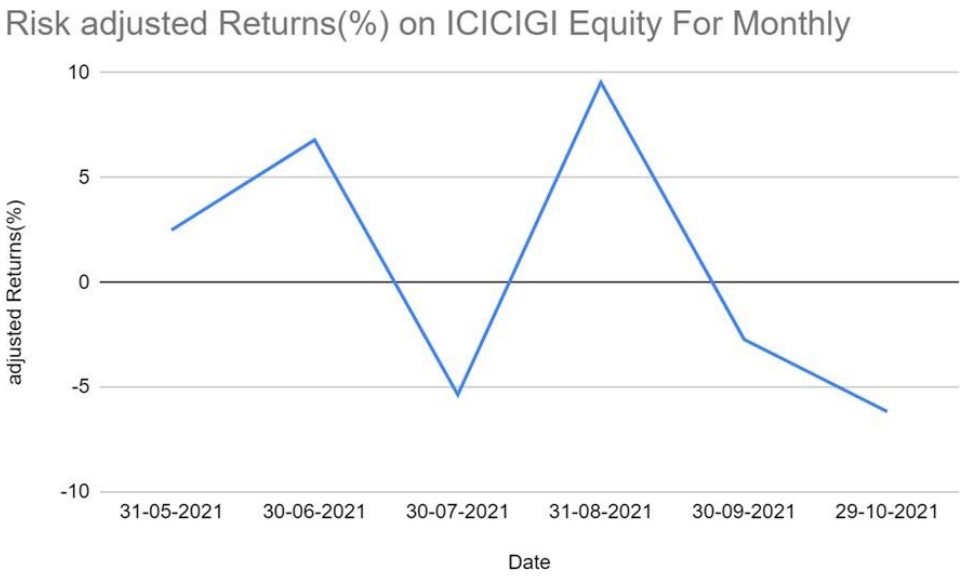
M1:4.2 Plot of Risk-adjusted Returns



(Fig.7: Risk-Adjusted Returns (%) on ICICIGI for Daily Frequency)



(Fig.8: Risk-Adjusted Returns (%) on ICICIGI for Weekly Frequency)



(Fig.9: Risk-Adjusted Returns (%) on ICICIGI for Monthly Frequency)

M1:4.3 Sharpe Ratio

S(x) = (Rx - Rf)/Std.Dev(x)

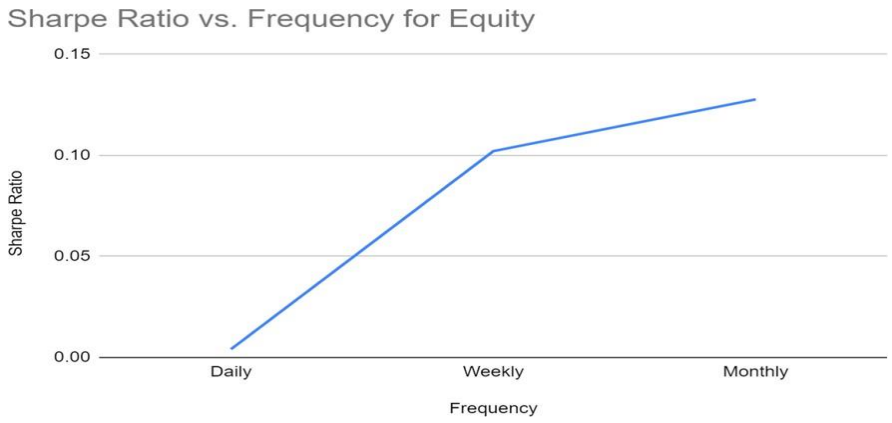
Where:

- x is investment
- Rx is the average rate of return of x
- Rf is the best available rate of return of risk-free security (T-bills)
- Std.Dev(x) is the standard deviation of Rx

Frequency	Sharpe Ratio
Daily	0.004071647
Weekly	0.102120885
Monthly	0.127744603

(Table 3 : Sharpe ratios for ICICIGI Equity)

When the Sharpe ratio values for the three frequencies are compared, it is clear that the monthly frequency has the highest value. This means that monthly trading in the underlying stock would yield a higher return for a given amount of risk.



(Fig.10: Sharpe Ratio for ICICIGI Equity for various frequency)

M1:SECTION- II - Futures

M1:5. Equity futures Instruments

M1:5.1 Commencement

On 12th June, 2000, The National Stock Exchange of India Limited (NSE) got into the business of trading in derivatives with the launch of index futures. The trading in futures contracts is dependent on the Nifty 50 Index. On November 9, 2001, Futures on individual securities were introduced.

M1:5.2 Lot Size and Contract Specifications

The lot size and contract specifications can be found below. Since these are equity derivatives, these contracts won't be physically delivered. The lot size turns out to be 425 per lot. Detailed information can be found in the table below.

Symbol	INDIGO
Instrument	FUTSTK
Lot Size	250
Expiry Date	Last Thursday of the expiry month. If last Thursday is a trading holiday, then the expiry day is the previous trading day
Trading Hours	9:15 am to 03:30 pm

Trading Cycle	Current, Next, Far (3 month)
Final Settlement Price	Closing price of underlying equity on the last trading day of the contract

M1:5.3 Overall greatness of Equity Futures Instrument

Equity Futures can be used by investors to speculate on stock prices. They are very actively traded financial instruments today, not only to secure future purchases but also for portfolio hedging and market speculation. In India, for any given underlying asset, there are three types of futures contracts trading –

- Near-month futures (1-month expiry),
- Next-month futures (2 months expiry)
- Far-month futures (3 months expiry)

The ICICIGI Futures contract has a high trading volume as well as a moderate lot size of 425 which makes it feasible for investing for not only big investment banks but also for small investors.

Beta Values of ICICI Lombard General Insurance Company Ltd.							
Period	Long Term Beta *	Daily - One Month Range	Daily - Three Month Range	Weekly - One Year Range	Weekly - Two Year Range	Weekly - Two Year Range	Monthly - Two Year Range
Beta	**0.792**	0.732	0.060	0.771	0.689	0.596	0.833
Mean	1167.66	1510.14	1550.38	1494.15	1384.66	1382.71	1381.65
Standard Deviation	7.14 %	1.11 %	1.44 %	3.39 %	3.73 %	4.72 %	8.37 %

Beta values of ICICIGI

M1:6. Risk Unadjusted Returns

The sample returns are calculated in excel. They are listed here for reference. Values are all in percentages to maintain uniformity throughout the report.

The trading in futures instruments of the stock has been profitable for the traders on an average. This is because the mean return on all the three frequencies and contract types is positive, as can be seen in the tables below.

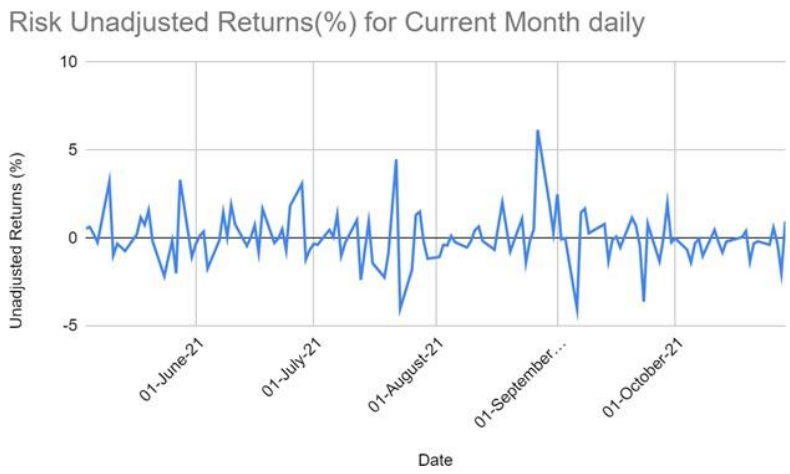
M1:6.1 Current month Risk Unadjusted Returns

Current or near-month contracts usually expire on the last Thursday of the ongoing month. The mean returns for all three frequencies, as can be seen from the table below, are positive. There appears to be an increasing trend as one goes from daily to weekly to monthly.

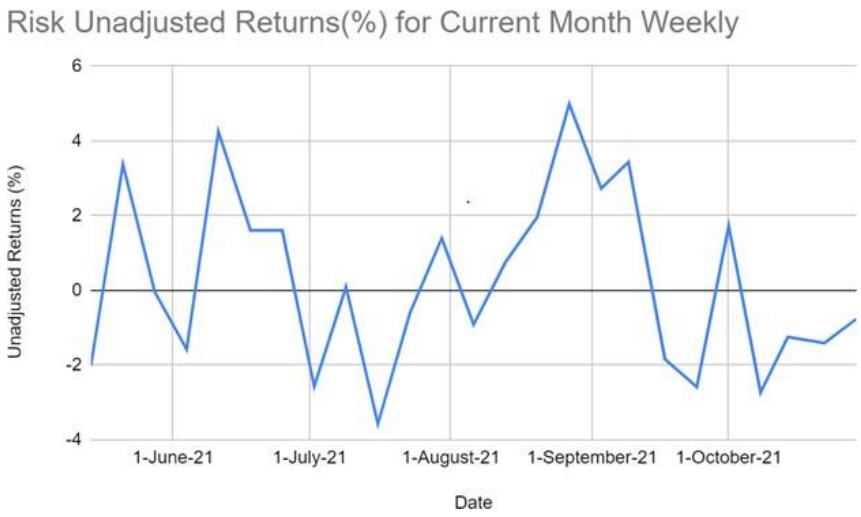
Following table and charts show unadjusted returns for ICICI GI futures for current month daily, weekly and monthly frequencies.

Returns	Daily	Weekly	Monthly
Mean(%)	0.0341	0.2792	0.561
Max(%)	6.1415	4.996	9.172
Min(%)	-4.0076	-3.5653	-6.5066
Standard Deviation	1.422048	2.334026	6.551276

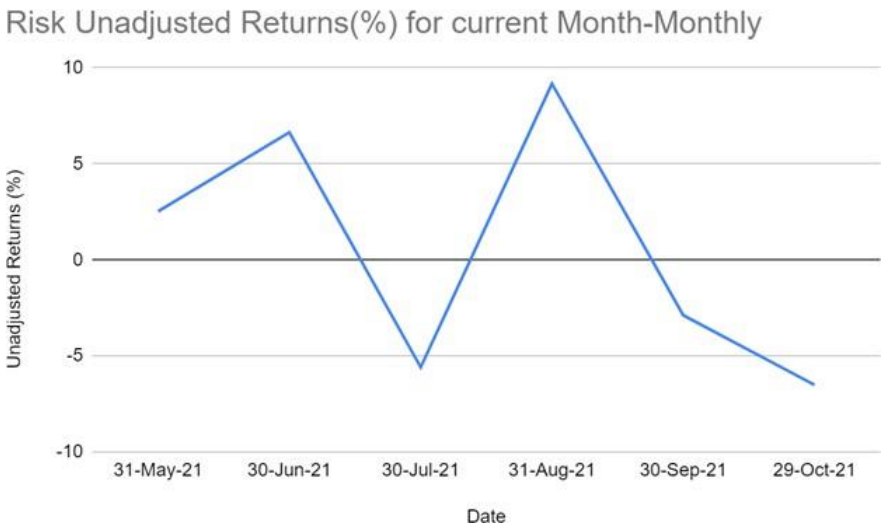
Risk Unadjusted Returns(%) on ICICIGI futures for Near Month



Current Month Daily risk Unadjusted Return (%)



Current month Weekly Risk Unadjusted Return



Current Monthly Risk Unadjusted Return

M1:6.2 Next Month Risk Unadjusted Returns

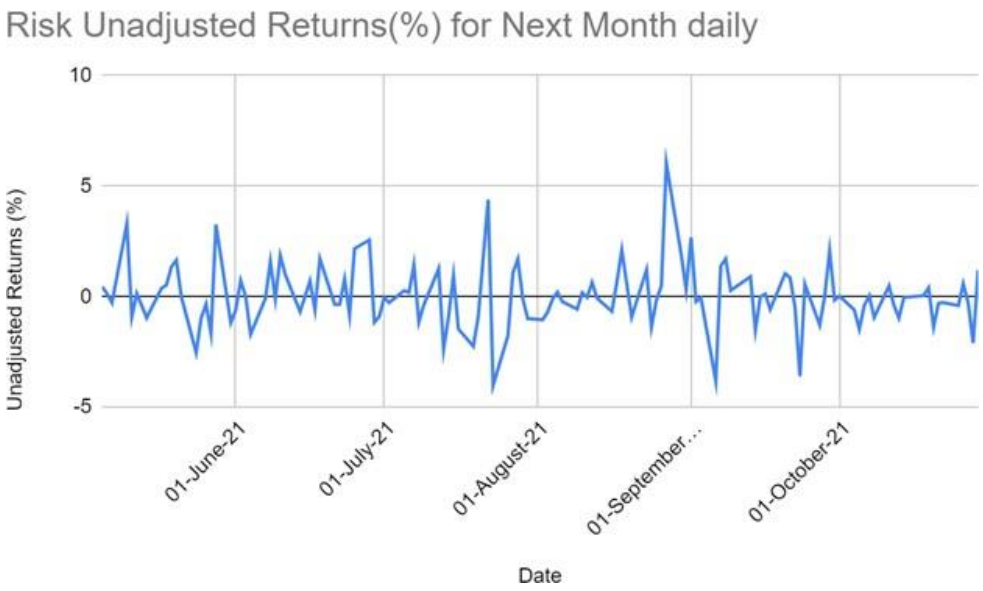
Next month's contracts usually expire on the last Thursday of the next month. Mean returns for all the three frequencies are positive. The trend increases from daily to weekly to monthly.

Following table and charts show unadjusted returns for ICICIGI futures for current month daily, weekly and monthly frequencies.

Next Month Unadjusted

Returns	Daily	Weekly	Monthly
Mean(%)	0.0357	0.3093	0.5424
Max(%)	6.0377	4.9221	9.0268
Min(%)	-4.0119	-3.7897	-6.6437
Standard Deviation	1.431974	2.372592	6.520358

(Risk unadjusted returns on ICICI GI futures for Next Month)



(Next Daily Risk unadjusted Return)

(Next Weekly Risk Unadjusted Return)

(Next Monthly Risk Unadjusted Return)

M1:6.3 Far Month Risk Unadjusted Returns

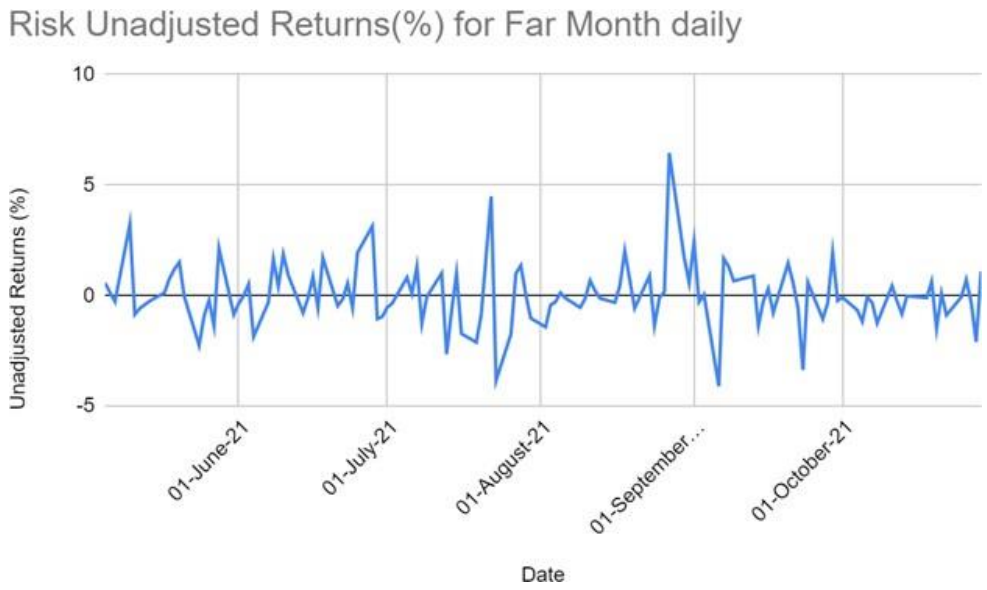
Far month contracts usually expire on the last Thursday of the next-to-next month. Mean returns for the far month are positive for all the three frequencies. The highest is for monthly, followed by weekly and daily.

Following table and charts show unadjusted returns for ICICI GI futures for far month daily, weekly and monthly frequencies.

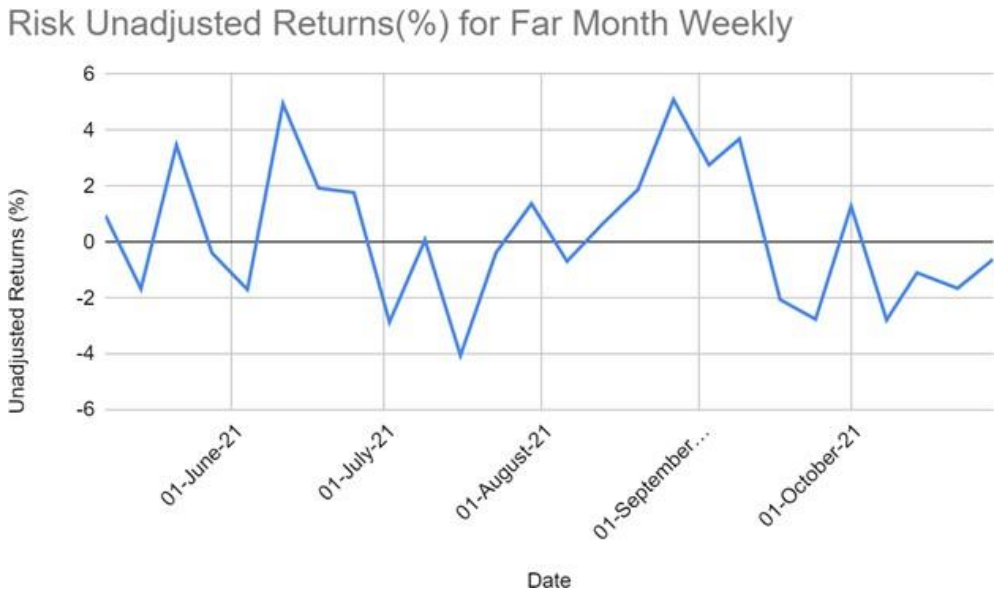
Far Month Unadjusted

Returns	Daily	Weekly	Monthly
Mean(%)	0.0357	0.2796	0.561
Max(%)	6.4552	5.0998	9.172
Min(%)	-4.103	-4.0512	-6.5066
Standard Deviation	1.414615	2.466004	6.551276

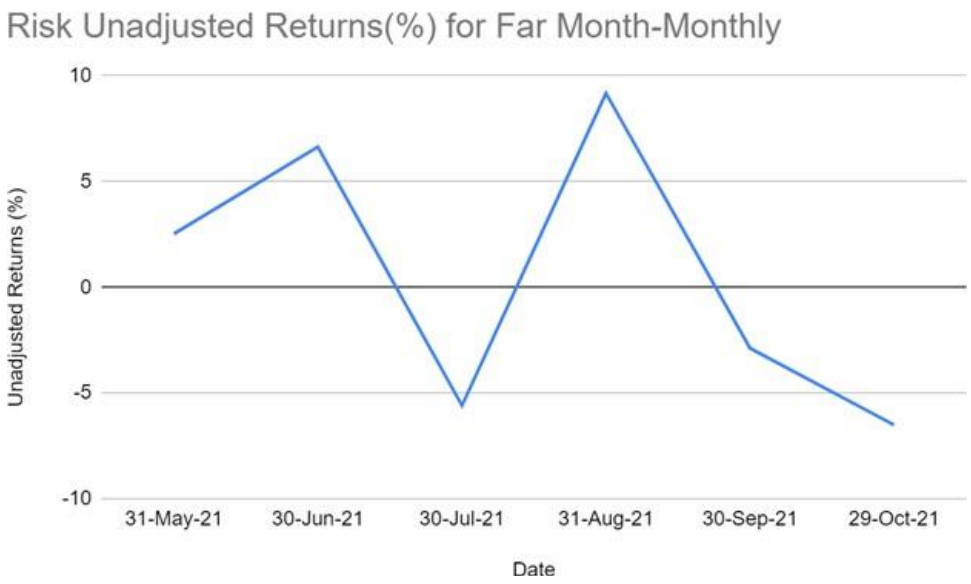
(Risk unadjusted Return on ICICI GI futures for Far month)



(Far daily risk unadjusted Return)



(Far weekly risk Unadjusted Return)



(Far monthly risk Unadjusted Return)

M1:7. Risk Adjusted Returns

Risk-adjusted returns are calculated by subtracting risk-free return from the returns of the asset. They depict whether the return generated is high enough to compensate for the risk involved by investing in risky assets. The trading in futures of the company has been profitable because the returns are positive for all the frequencies and contract types.

M1:7.1 Current Month Risk Adjusted Returns

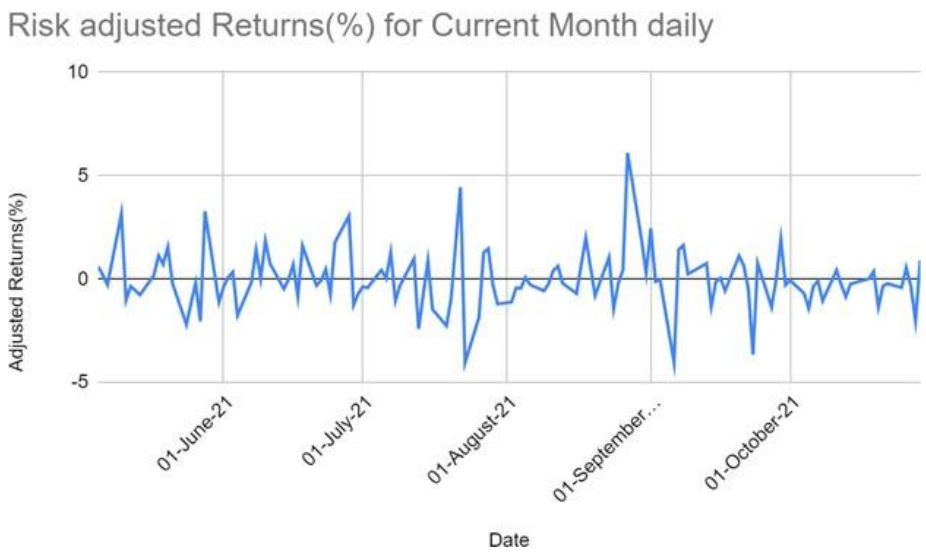
Current month futures compensate for the risk borne by the trader. This is due to the positive risk-adjusted return for all the frequencies. Returns are positive for all the frequencies and all the three contract types.

Following table and charts show adjusted returns for ICICI GI futures for current month daily, weekly and monthly frequencies.

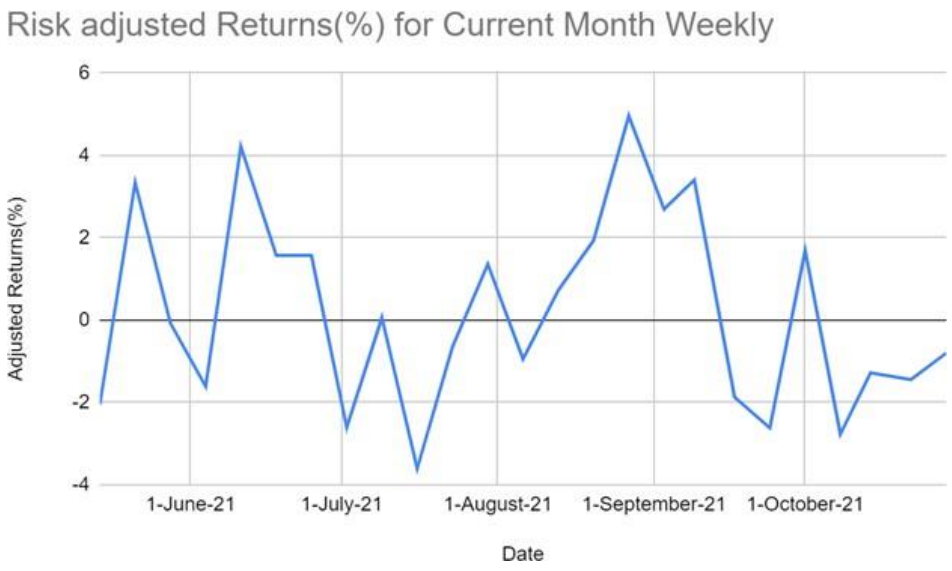
Current month adjusted

Returns	Daily	Weekly	Monthly
Mean(%)	0.000133	0.245177	0.526755
Max(%)	6.1084	4.9629	9.1389
Min(%)	-4.0418	-3.5997	-6.5425
Standard Deviation	1.422129	2.334249	5.984432

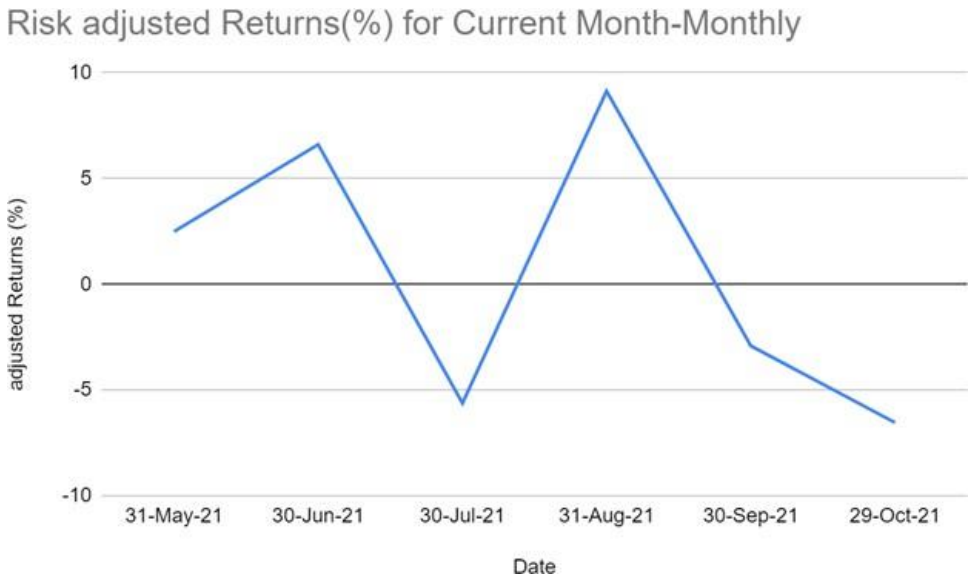
(Risk adjusted futures on ICICI GI futures for Current Month)



(Current Daily risk Adjusted Return)



(Current weekly risk adjusted return)



(Current monthly risk adjusted return)

M1:7.2 Next Month Risk Adjusted Returns

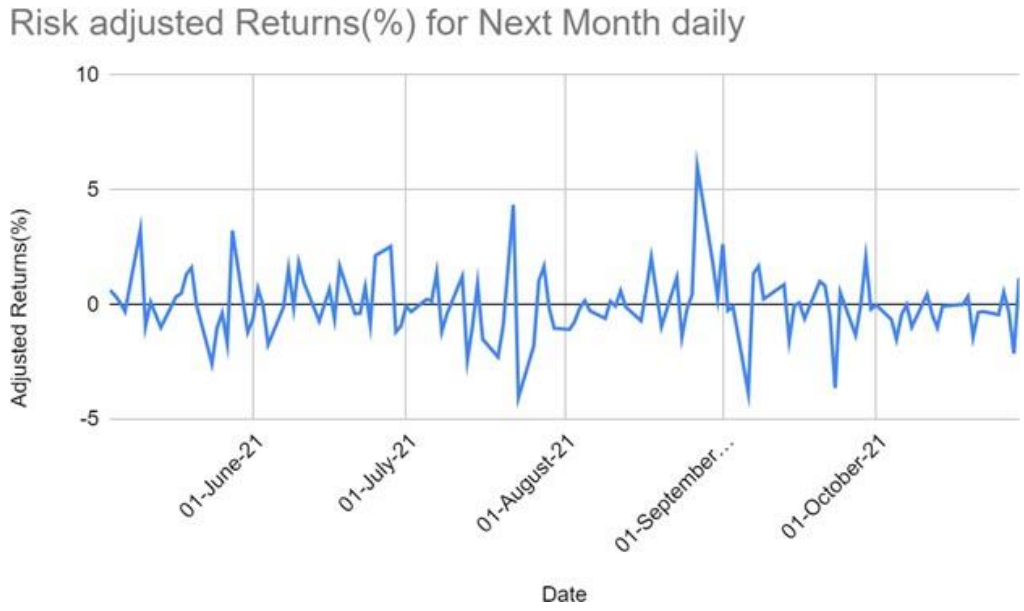
Next month futures compensate for the risk borne by the trader. This is due to the positive risk-adjusted return for all the frequencies. Returns are positive for all the frequencies and all the three contract types.

Following table and charts show adjusted returns for ICICI GI futures for next month daily, weekly and monthly frequencies.

Next month adjusted

Returns	Daily	Weekly	Monthly
Mean(%)	0.001666	0.27522	0.508119
Max(%)	6.0046	4.889	8.9937
Min(%)	-4.0461	-3.8241	-6.6796
Standard Deviation	1.432052	2.372798	6.521076

(Risk adjusted returns on ICICI GI futures for Next month)



(Next Daily Risk Adjusted Return)

(Next weekly risk adjusted return)

(Next monthly risk adjusted return)

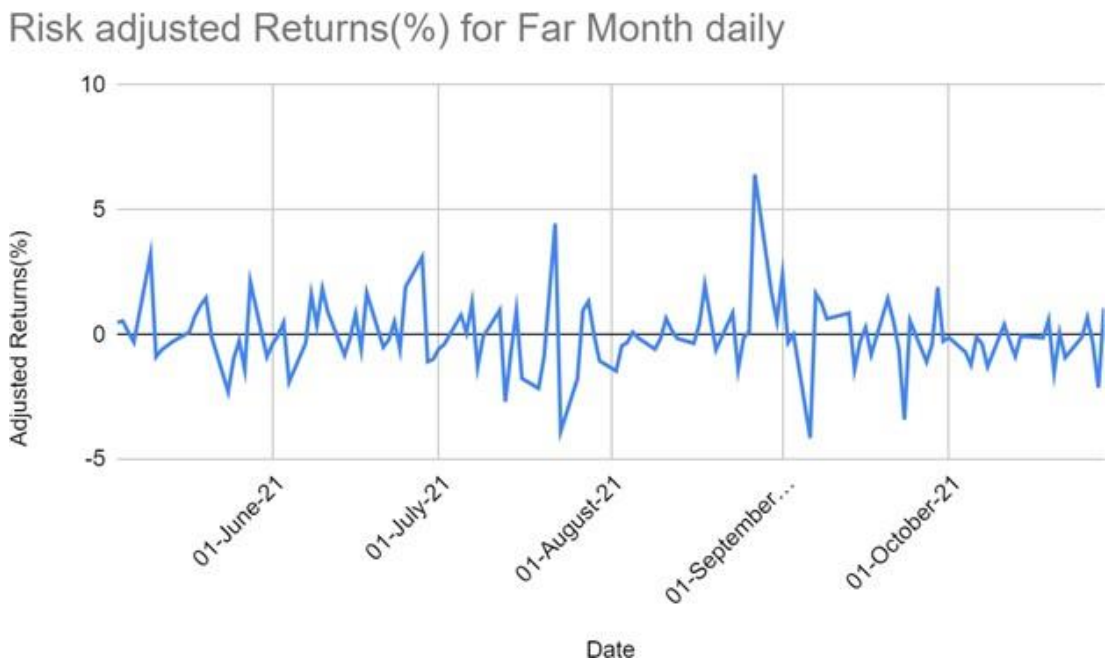
M1:7.3 Far Month Risk Adjusted Returns

Far month futures compensate for the risk borne by the trader. This is due to the positive risk-adjusted return for all the frequencies. Returns are positive for all the frequencies and all the three contract types.

Following table and charts show adjusted returns for ICICI GI futures for far month daily, weekly and monthly frequencies.

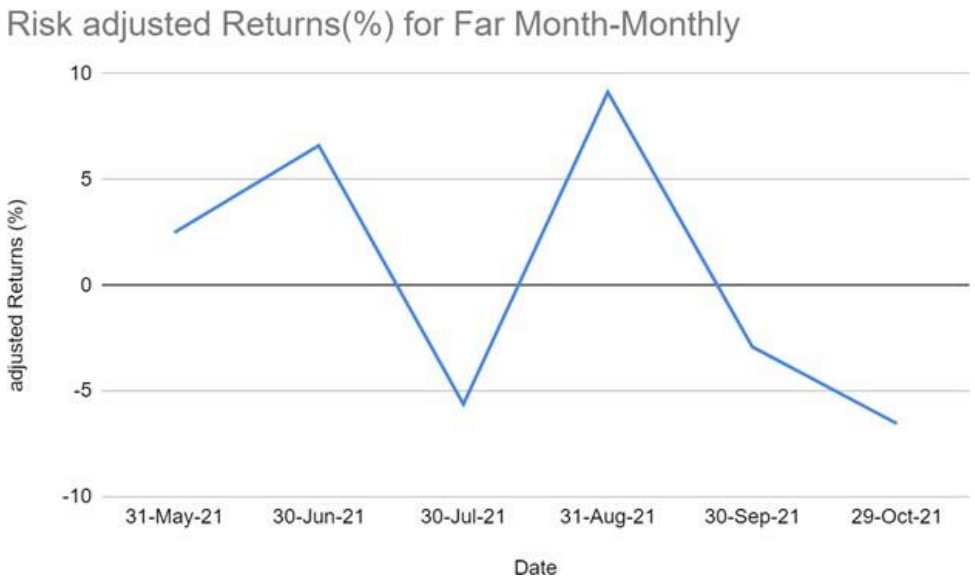
Far month adjusted

Returns	Daily	Weekly	Monthly
Mean(%)	0.001722	0.245551	0.526755
Max(%)	6.4221	5.0667	9.1389
Min(%)	-4.136	-4.0856	-6.5425
Standard Deviation	1.419792	2.466217	5.984432



(Far daily risk adjusted return)

(Far weekly risk adjusted return)



(Far monthly risk adjusted return)

M1:7.4 Sharpe ratio

S(x) = (Rx - Rf)/Std.Dev(x)

Where:

- x is investment
- Rx is the average rate of return of x
- Rf is the best available rate of return of risk-free security (T-bills)
- Std.Dev(x) is the standard deviation of Rx

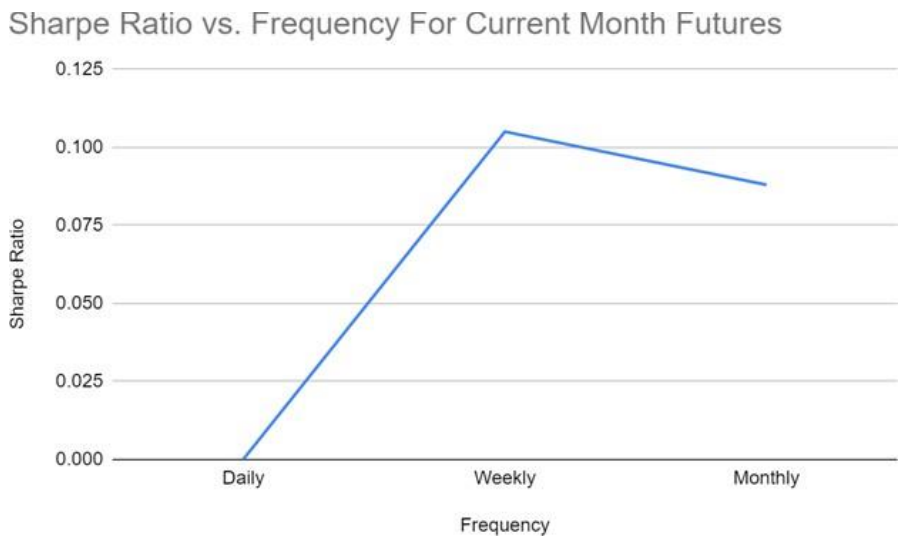
7.4.1 Current Month

Sharpe ratio values for all the three frequencies are positive, implying that reward to risk is favourable.

Sharpe Ratio For Current Month

Frequency	Sharpe Ratio
Daily	0.00009322
Weekly	0.105034747
Monthly	0.088020929

(Comparison of current month daily, weekly and monthly sharpe ratios)



(Sharpe ratios for ICICI GI futures current month)

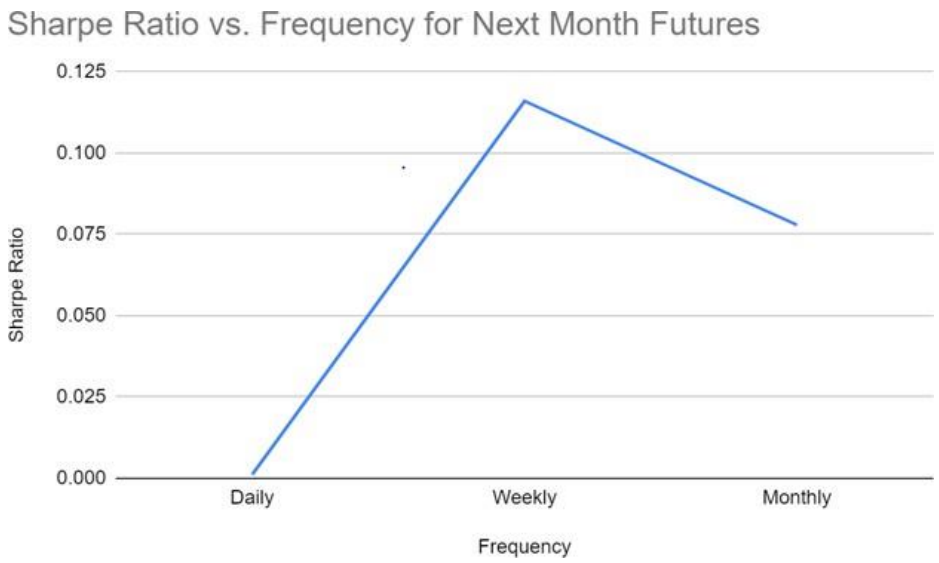
M1:7.4.2 Next Month

Sharpe ratio values for all the three frequencies are positive, implying that reward to risk is favourable. One can see that next month's weekly contract has the highest sharpe ratio. The sharpe ratios of next month are slightly higher than current month.

Sharpe Ratio For Next Month

Frequency	Sharpe Ratio
Daily	0.0011634
Weekly	0.1159895
Monthly	0.0779195

(Comparison of Next month daily, weekly and monthly sharpe ratios)



(Sharpe ratio for ICICI GI futures Next month)

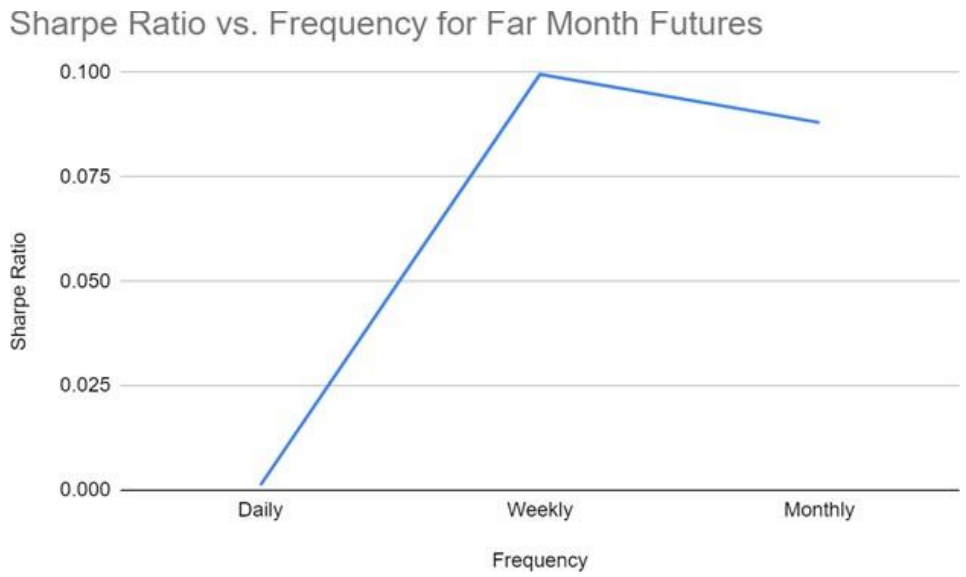
M1:7.4.3 Far Month

Sharpe ratio values for all the three frequencies are positive, implying that reward to risk is favourable. It can be seen that far month contracts are slightly higher than current month. However the values are nearly the same as that of near month contracts. This implies that both near and far month contracts are best options for traders.

Sharpe Ratio For Far Month

Frequency	Sharpe Ratio
Daily	0.001212914
Weekly	0.099565748
Monthly	0.088020929

(Comparison of far month daily, weekly and monthly sharpe ratios)



(Sharpe ratios for ICICI GI futures far month)

M1:8. Economic Interpretation of difference between risk-adjusted and risk-unadjusted returns :

- Standard deviation is almost the same in both risk-adjusted and risk-unadjusted returns.
- Since percentage returns for all frequencies are positive, it can be said that the company has performed well in the equity futures market in a given period.
- Sharpe ratios are positive, indicating that returns are more when compared to risk-free rate.

M1:Section III- Comparisons

M1:10. Comparison of underlying assets and Futures Instruments

M1:10.1 Comparison of risk-unadjusted underlying assets and Futures Instruments

M1:10.1.1 Daily frequency

As it can be seen the underlying asset performs better than other future contracts on a daily frequency.

Risk Unadjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	0.0398	0.0341	0.0357	0.0357
Max(%)	5.8831	6.1415	6.0377	6.4552
Min(%)	-4.0742	-4.0076	-4.0119	-4.103
Standard Deviation	1.423898504	1.422048	1.431973738	1.414615

(Current, next and far daily risk-unadjusted returns with underlying asset unadjusted return)

M1:10.2.1 Weekly frequency

As it can be seen the next month contract performs better than other future contracts and underlying assets on a weekly frequency. Next month contracts compensate well for the risk borne by the investor.

Risk Unadjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	0.2824	0.2792	0.3093	0.2796
Max(%)	4.9434	4.996	4.9221	5.0998
Min(%)	-4.009	-3.5653	-3.7897	-4.0512
Standard Deviation	2.431817393	2.334026	2.372592256	2.466004

(Current, next and far weekly risk-unadjusted returns with underlying asset unadjusted return)

M1:10.3.1 Monthly frequency

As it can be seen the underlying asset performs better than other future contracts on a monthly frequency.

Risk Unadjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	0.7983	0.561	0.5424	0.561
Max(%)	9.5756	9.172	9.0268	9.172
Min(%)	-6.1269	-6.5066	-6.6437	-6.5066
Standard Deviation	6.5435	6.551276	6.520358207	6.551276

(Current, next and far monthly risk-unadjusted returns with underlying asset unadjusted return)

M1:Interpretation

- The mean returns had a similar trend in both risk-adjusted and risk-unadjusted returns. However underlying asset returns are higher in magnitude than for futures in all frequencies.
- It is advisable to invest in underlying equity rather than futures
- For risk averse investors, it is advisable to invest as Sharpe ratio is positive in all cases.

M1:10.2 Comparison of risk-adjusted underlying assets and Futures Instruments

M1:10.2.1 Daily frequency

As it can be seen the underlying asset performs better than other future contracts on a daily frequency.

Risk adjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	0.0058	0.000133	0.0016661	0.001722
Max(%)	5.85	6.1084	6.0046	6.4221
Min(%)	-4.1072	-4.0418	-4.0461	-4.136
Standard Deviation	1.423978491	1.422129	1.432052267	1.419792

(Current, next and far daily risk-adjusted returns with underlying asset adjusted return)

M1:10.2.2 Weekly frequency

As it can be seen the next month contract performs better than other future contracts and underlying assets on a weekly frequency. Next month contracts compensate well for the risk borne by the investor.

Risk adjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	0.2483627	0.245177	0.2752197	0.245551
Max(%)	4.9093078	4.9629	4.889	5.0667
Min(%)	-4.0438676	-3.5997	-3.8241	-4.0856
Standard Deviation	2.43204595	2.334249	2.372797962	2.466217

(Current, next and far weekly risk-adjusted returns with underlying asset adjusted return)

M1:10.2.3 Monthly frequency

As it can be seen the underlying asset performs better than other future contracts on a monthly frequency.

Risk adjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	0.7640511	0.526755	0.5081192	0.526755
Max(%)	9.5425677	9.1389	8.9937	9.1389
Min(%)	-6.1628855	-6.5425	-6.6796	-6.5425
Standard Deviation	5.981082956	5.984432	6.52107633	5.984432

(Current, next and far monthly risk-adjusted returns with underlying asset adjusted return)

M1:Interpretation

- The mean returns had a similar trend in both risk-adjusted and risk-unadjusted returns. However underlying asset returns are higher in magnitude than for futures in all frequencies.
- It is advisable to invest in underlying equity rather than futures
- For risk averse investors, it is advisable to invest as Sharpe ratio is positive in all cases.

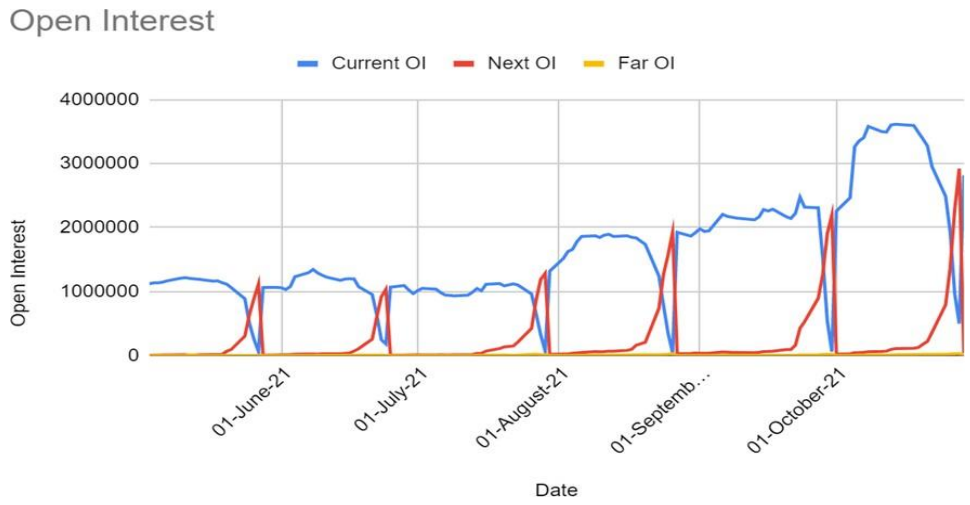
M1:10.3 Liquidity

Now,We compare the liquidity position of the underlying asset and the futures to identify the liquid options available in trading.

	Current Month	Next Month	Far Month
Avg no of contracts	1650	451	5
Avg OI	1562082	279582	5862

Table Open Interest and Liquidity Position of ICICIGI Futures

The public interest in the ICICIGI futures contracts for the current, next, and months is shown in the table above. From current/near, next to far month contracts, both the average number of contracts and the average open interest are dropping. This means that when the quantity of contracts falls, the liquidity diminishes. It becomes more difficult to liquidate after that, hence most investors favour current/near-month futures. The open interest in current/near-month futures contracts is much larger than that of equities shares.Futures are more liquid, therefore it is a good idea to invest in them. During the period, the Open Interest provides liquidity. The current month contracts have the most liquidity, as shown in the graph below, as compared to the next and far month contracts.



M1:Section IV-Contango Or Backwardation

Contango occurs when the price of a future surpasses the price of its underlying equity in a market (i.e spot price)
Backwardation occurs when the price of the underlying equities (i.e. spot price) exceeds the price of futures in a market.

Contango occurred on 93 days, 94 days, and 95 days out of 125 trading days in the current, next, and previous months, respectively.

This means that in the current, next, and far months, 74.4 percent, 75.2 percent, and 76 percent of the days were in contango, respectively.

The table below displays the percentages of contango and backwardation for various futures.

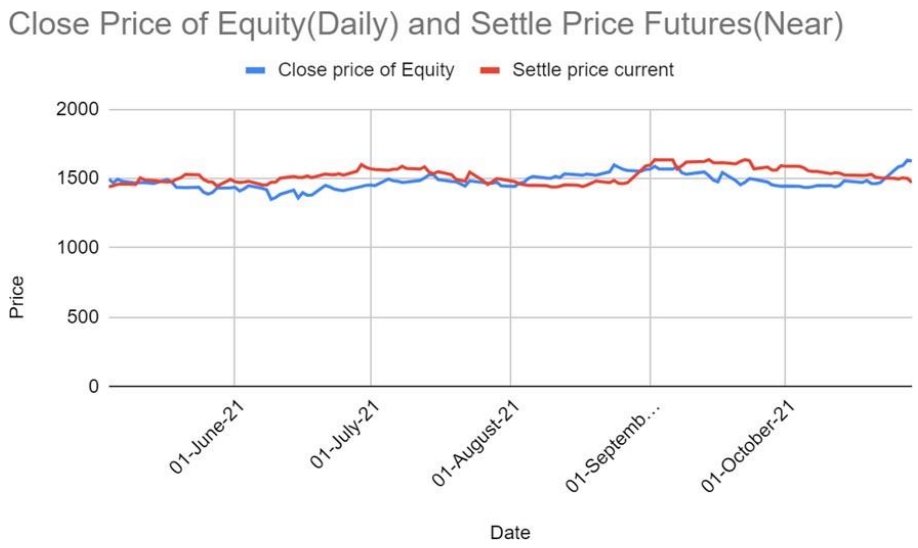
Type	**No of Days in Contango**	**No of Days in Backwardation**
Current Month	93	32
Next Month	94	31
Far Month	95	30

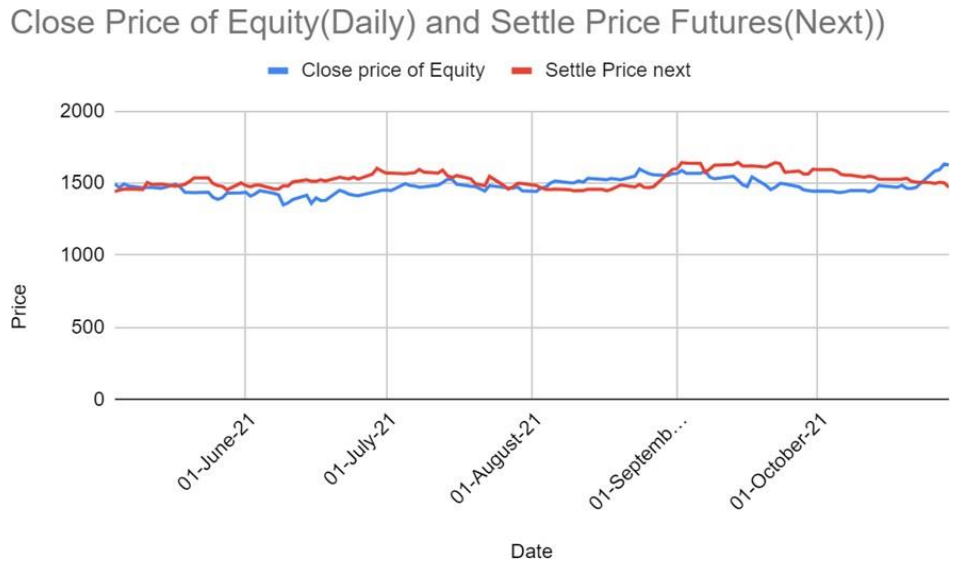
Table Number of Contango and Backwardation

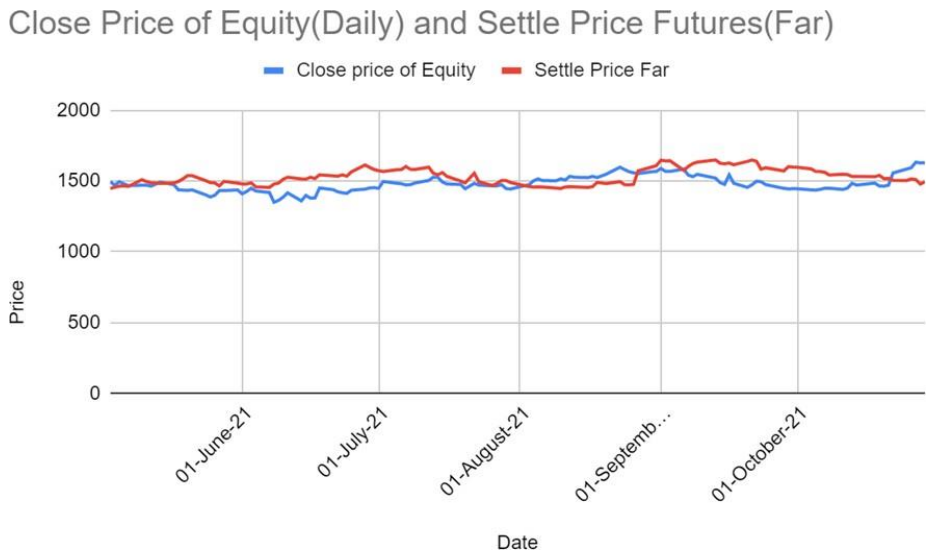
Using arbitrage strategies, we can profit from contango. Due to arbitrage, the spot and futures prices converge as expiration approaches, and contango decreases. Another approach to profit from contango is to use it to your advantage. Futures prices that are higher than spot prices can imply greater future spot prices, particularly when inflation is high. Speculators may purchase more of the commodity in contango in order to profit from higher predicted future prices. They might be able to gain even more money by

purchasing futures contracts. However, this strategy only works if spot prices in futures are higher than futures prices.

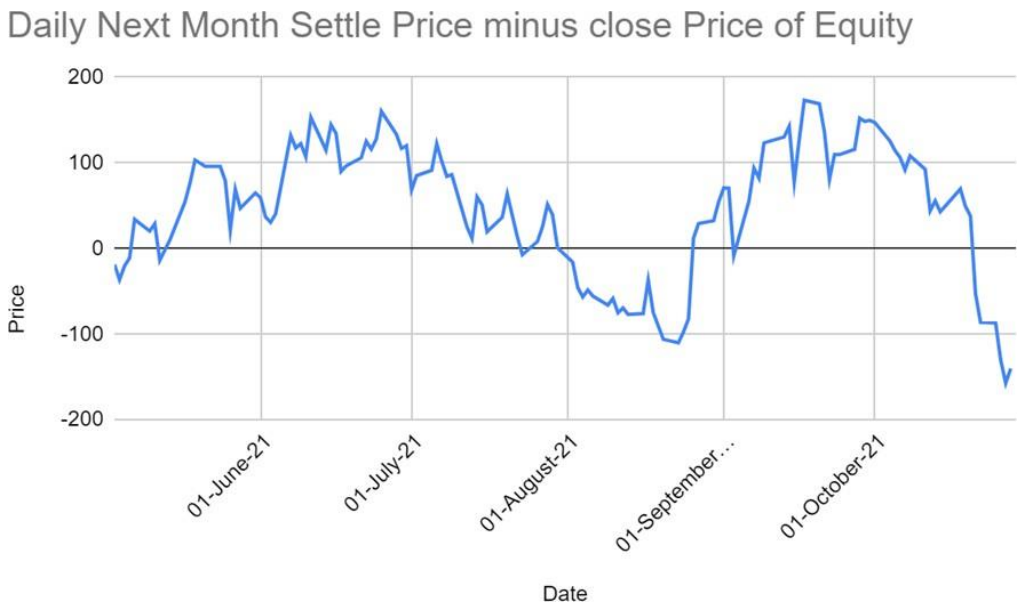
Here are the plots to determine the contango and backwardation of the futures are determined by plotting the daily prices of the futures and the underlying asset together.

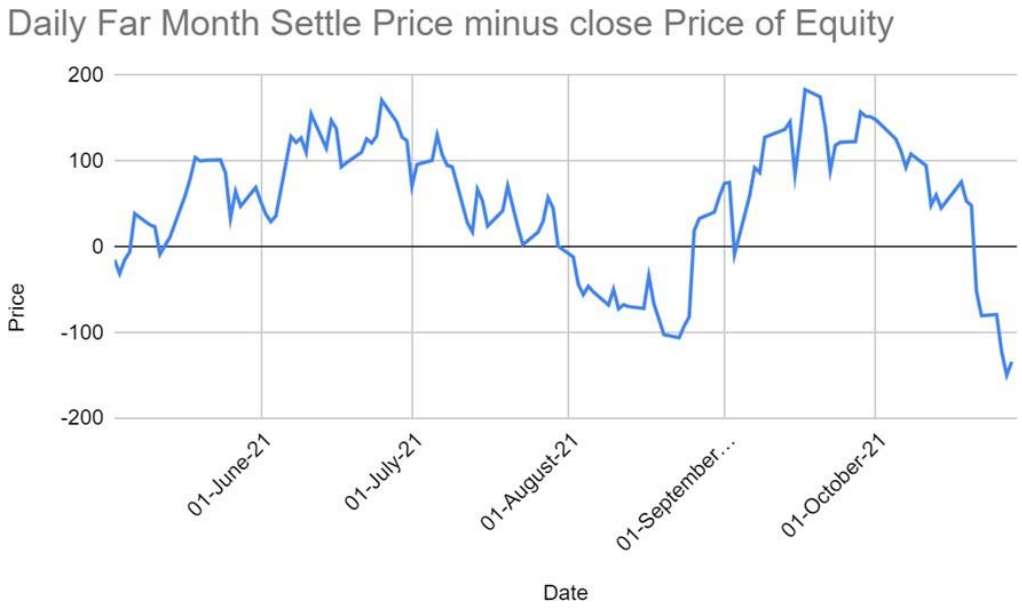





Close Price of Equity(Daily) and Settle Price Futures(Far)
Close price of Equity
Settle Price Far
2000
1500
1000
500
0
Price
01-June-21
01-July-21
01-August-21
01-Septemb...
01-October-21
Date


Daily Near Month Settle Price minus close Price of Equity
200
100
0
-100
-200
Price
01-June-21
01-July-21
01-August-21
01-September...
01-October-21
Date


Daily Next Month Settle Price minus close Price of Equity
200
100
0
-100
-200
Price
01-June-21
01-July-21
01-August-21
01-September…
01-October-21
Date


Daily Far Month Settle Price minus close Price of Equity
200
100
0
-100
-200
Price
01-June-21
01-July-21
01-August-21
01-September…
01-October-21
Date

MODULE-2 Indigo Airlines

M2:Section I - Underlying Assets - Equity

M2:1. INTRODUCTION

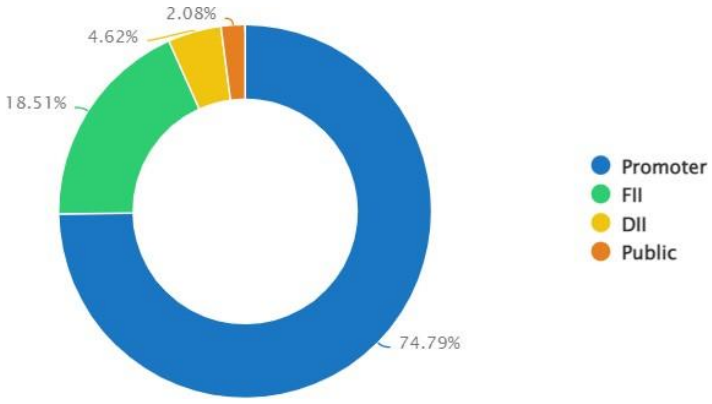
M2:1.1 Nature of Business

IndiGo is a low-cost Indian airline based in Gurgaon, Haryana, India. It is India's largest aircraft in terms of passengers carried and armada size, with a 57 percent homegrown share as of August 2021. It is also the largest individual Asian low-cost transporter in terms of stream fleet size and passengers transported, and the sixth largest transporter in Asia, with over 6.4 crore (64 million) passengers transported in fiscal year 2018–19. As of 2019, the aircraft made 1,500 daily trips to 95 objections, 71 domestic and 24 foreign. It is headquartered in the IGI Airport in Delhi.

M2:1.2 Ownership of Business

In 2006, InterGlobe Enterprises' Rahul Bhatia and Rakesh Gangwal founded the carrier as a privately held company. InterGlobe owned 51.12 percent of IndiGo, while Gangwal's Virginia-based firm, Caelum Investments, owned 47.88 percent.

IndiGo Airlines began operations on August 4, 2006, with a flight from New Delhi to Imphal via Guwahati. IndiGo surpassed state-run carrier Air India as India's third-largest carrier in December 2010, trailing only Kingfisher Airlines and Jet Airways with a 17.3 percent passenger share of the overall industry. In 2012, the aircraft became the largest Indian transporter in the traveller segment of the total business.



M2:1.3 Business Commencement Circumstance

As of February 2018, InterGlobe Aviation is the administrator of India's largest traveller carrier, with a share of the total business of 39.9%. The IndiGo brand is used to market the organization's trips. IndiGo operates primarily as a low-cost carrier in India's domestic air travel industry. It has a fleet of 160 planes, including 32 new-generation A320 NEOs and five ATRs. IndiGo now operates 50 flights, 42 of which are domestic and eight of which are international. On January 13, 2004, InterGlobe Aviation was incorporated as InterGlobe Aviation Private Limited, a private restricted organisation under the Companies Act 1956, with the Registrar of Companies of Uttar Pradesh.Prior to the end of 2010, IndiGo owned 17.3% of the overall aviation industry. IndiGo surpassed Jet Airways in terms of market share (by a whopping 27 percent) and became India's largest airline in August 2012. IndiGo was named 'Best Low-Cost Airline in Central Asia and India' for the ninth year in a row until 2018. IndiGo is dedicated to three principles: on-time arrivals, reasonable fares, and a high-quality service.

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M2:1.4 Industry of the Business

In the last three years, India's civil aviation industry has grown at a rapid pace, becoming one of the country's fastest-growing industries. India has overtaken the United Kingdom as the world's third largest domestic aviation market, with the United Kingdom expected to overtake India as the world's third largest air passenger market by 2024.

India will overtake China and the United States as the world's third-largest air passenger market in the next ten years, according to the International Air Transport Association. (IATA).

M2:1.5 Overall Greatness of the Company

For the previous two years, IndiGo has been nominated to the Brand Finance Airlines 50 list as one of the most valuable and strongest airline brands in the world. IndiGo has been identified with punctuality. IndiGo has a total of 95 destinations, with 71 domestic and 24 international.While past market leaders Kingfisher and Jet Airways bought rivals, flew many plane models, and tried to mix full-service and low-fare options, IndiGo stuck to its policy of providing one level of no-frills service on a single type of jet. Indigo has decided to stick with the Airbus A320, the most popular single-aisle aircraft in the world. Second, it keeps its fleet young by selling and leasing back its jets. IndiGo understands margins since it reduces the need for overall maintenance and major repairs. Low rates, consistent on-time performance, and few flight cancellations are the foundations of IndiGo's business model.

M2:2. Risk-Unadjusted Returns

The unadjusted returns for INDIGO are shown in the table and graphs below for Daily, Weekly, and Monthly frequencies. The appropriate frequency sample results are calculated in excel and presented here for your convenience. (All percentages are used to maintain consistency across the report.)

As seen in the table below, mean returns for all three frequencies are positive, implying that the company has been able to protect shareholder wealth and offer good returns on any short term of investment on an average that is advantageous to investors.

Returns	**Daily**	**Weekly**	**Monthly**
Mean(%)	0.2344	0.8758	4.7554
Max(%)	10.920	15.72166	14.4905
Min(%)	-5.2070	-5.3410	-5.4659
Standard Deviation	1.9928	4.7333	7.34573

(Table. 1: Risk Unadjusted Returns (%) on INDIGO for Various Frequencies)

M2:3. Risk-Adjusted Returns

The adjusted returns for INDIGO are shown in the table and graphs below for Daily, Weekly, and Monthly frequencies. The appropriate frequency sample results are calculated in excel and presented here for your convenience. (All percentages are used to maintain consistency across the report.)

Risk-adjusted returns for the past year were all positive, with daily returns of 0.2004%, weekly returns of 0.8417%, and monthly returns of 4.7212%, indicating that the stock has outperformed risk-free returns and safeguarded owners' wealth.

Returns	Daily	Weekly	Monthly
Mean(%)	0.2004	0.8417	4.7212
Max(%)	10.8870	15.6886	14.4574
Min(%)	-5.2413	-5.375	-5.5
Standard Deviation	1.9928	4.7335	7.34571

(Table. 2: Risk-Adjusted Returns (%) on INDIGO for Various Frequencies)

M2:4. Economic Interpretation

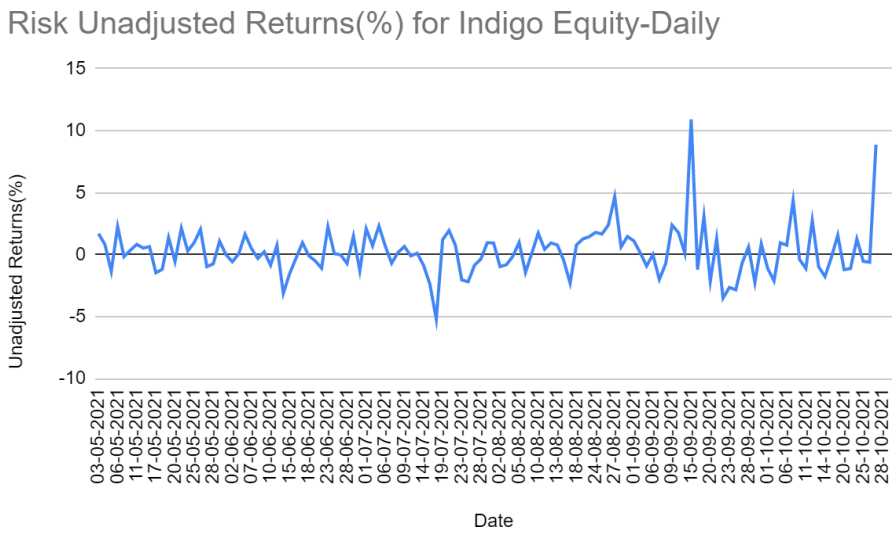
Returns calculated without taking into account the risk-free rate do not provide us with a complete picture (Risk Unadjusted returns). When the risk is factored in, the return reveals if it is worthwhile to take the risk in exchange for a higher rate of return than the risk-free rate. The Sharpe Ratio is a popular metric for calculating risk-adjusted returns. A risk-adjusted return is a return on an investment that is higher than a risk-free return. As a result, an investor should always invest after evaluating risk-adjusted returns in order to get the best reward-to-risk ratio. This ratio is critical for determining how much return an investor can expect for a certain level of risk or vice versa. Because it is a more economically reasonable/practical indication, a risk-adjusted return will always be lower than a risk-unadjusted return. This means that if the Sharpe ratio is negative, the investor may be better off avoiding this investment. The Sharpe ratio indicates the return on investment. The higher the Sharpe ratio, the better the return on investment.

Risk-adjusted and unadjusted return plots for daily, weekly, and monthly frequencies are shown in Figures 4 to 9.

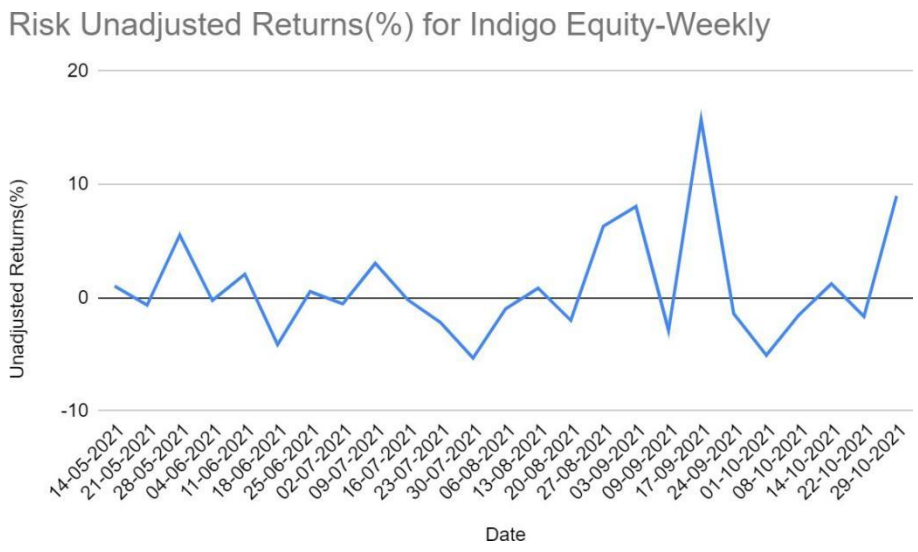
- The mean risk-adjusted returns for the past year were all positive, i.e. 0.2004 % on a daily basis, 0.8417 % on a weekly basis, and 4.7212 % on a monthly basis, indicating that the stock has been able to deliver superior returns over and above risk-free returns while protecting shareholders' wealth.

- In both risk unadjusted and risk-adjusted returns, the percentage of mean returns grows from daily to weekly to monthly.
- Both risks unadjusted and adjusted returns are becoming more volatile on a daily, weekly, and monthly basis.
- The standard deviation is nearly identical in both Risk-Adjusted and Risk Unadjusted returns, indicating that the risk is the same in both because adjusted returns are calculated by subtracting the risk-free rate.
- There are a lot of price changes in this stock, making it incredibly aggressive and risky to trade.

M2: 4.1 Plots of Risk Unadjusted Returns



(Fig.4: Risk Unadjusted Returns (%) on INDIGO for Daily Frequency)



(Fig.5: Risk Unadjusted Returns (%) on INDIGO for Weekly Frequency)

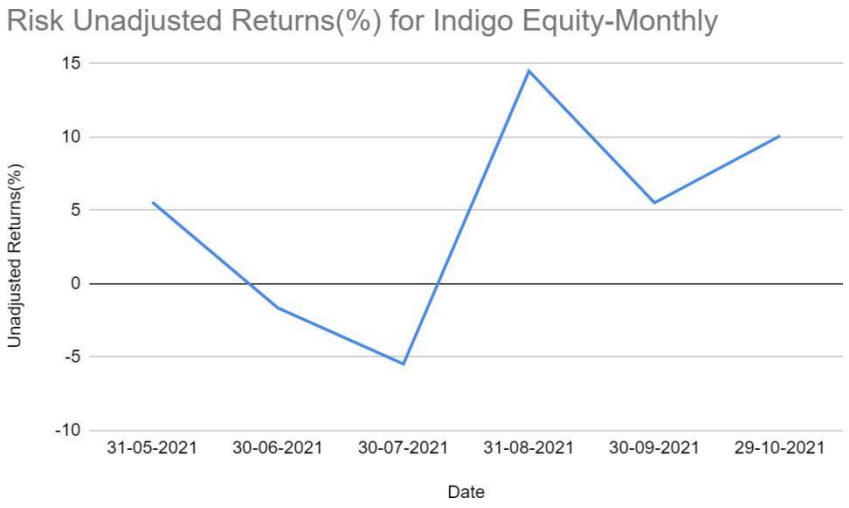
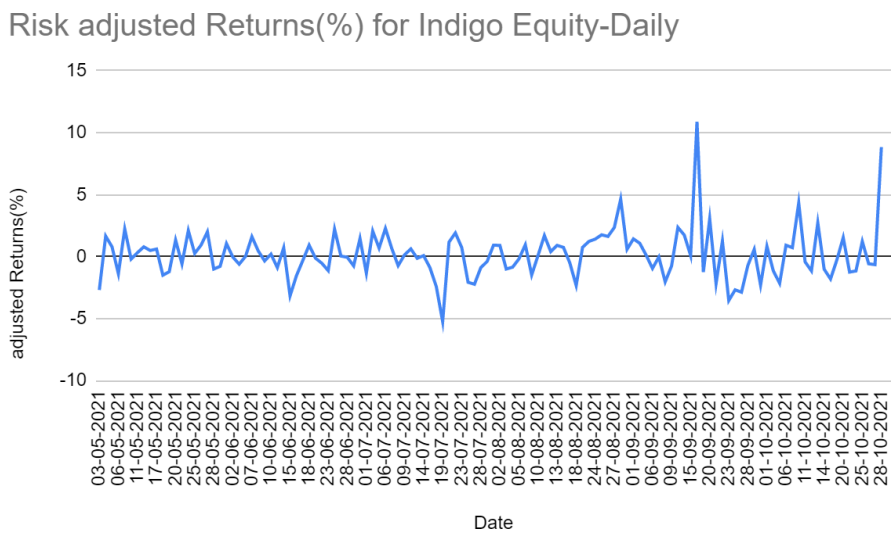
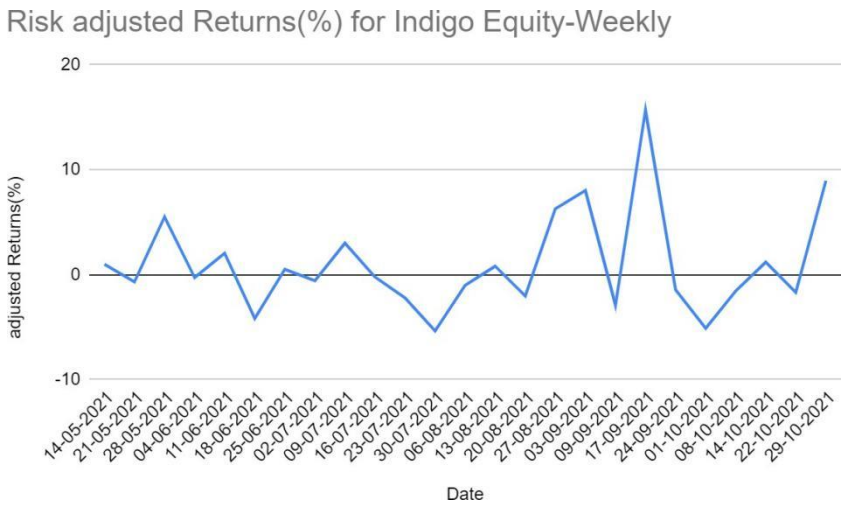


Fig.6: Risk Unadjusted Returns (%) on INDIGO for Monthly Frequency)

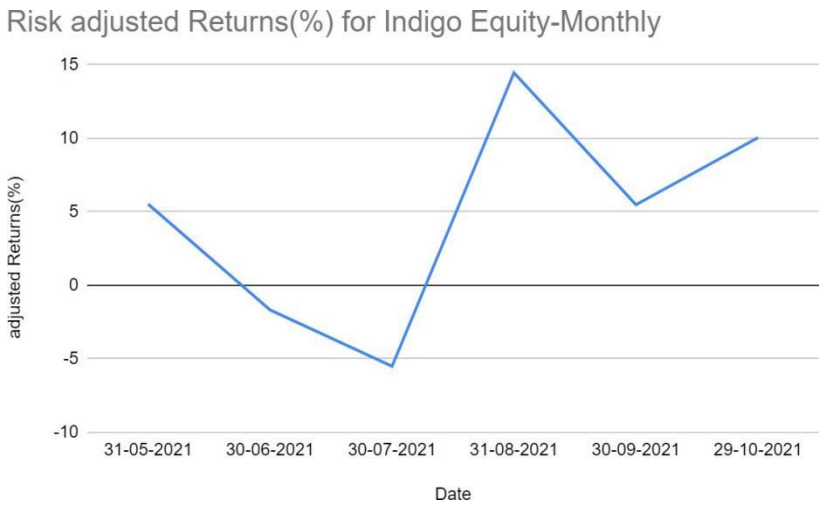
M2:4.2 Plots of Risk-Adjusted Returns



(Fig.7: Risk-Adjusted Returns (%) on INDIGO for Daily Frequency)



(Fig.8: Risk-Adjusted Returns (%) on INDIGO for Weekly Frequency)



(Fig.9: Risk-Adjusted Returns (%) on INDIGO for Monthly Frequency)

M2:4.3 Sharpe Ratio

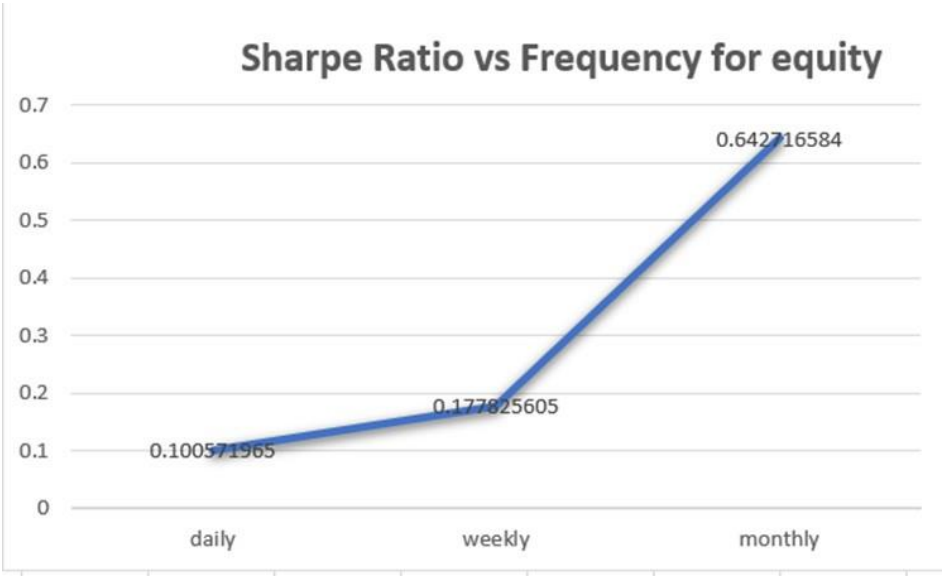
S(x) = (Rx - Rf)/Std.Dev(x)

Where:

- x is investment
- Rx is the average rate of return of x
- Rf is the best available rate of return of risk-free security (T-bills)
- Std.Dev(x) is the standard deviation of Rx

Frequency	Sharpe Ratio
Daily	0.100571965
Weekly	0.177825605
Monthly	0.642716584

When the Sharpe ratio values for the three frequencies are compared, it is clear that the monthly frequency has the highest value. This means that monthly trading in the underlying stock would yield a higher return for a given amount of risk.



(Fig.10: Sharpe Ratio Vs Frequency of Equity)

M2:Section- II - Futures

M2:5. Equity futures Instruments

M2:5.1 When It Started

On 12th June, 2000, The National Stock Exchange of India Limited (NSE) got into the business of trading in derivatives with the launch of index futures. The trading in futures contracts is dependent on the Nifty 50 Index. On November 9, 2001, Futures on individual securities were introduced.

M2:5.2 Lot Size and Contract Specifications

The contract specifications of Divislab do not include a physical delivery location as it is an equity derivative.

Symbol	INDIGO
Instrument	FUTSTK
Lot Size	250
Expiry Date	Last Thursday of the expiry month. If last Thursday is a trading holiday, then the expiry day is the previous trading day
Trading Hours	9:15 am to 03:30 pm
Trading Cycle	Current, Next, Far (3 month)
Final Settlement Price	Closing price of underlying equity on the last trading day of the contract

M2:5.3 Overall greatness of Equity Futures Instrument

Equity Futures can be used by investors to speculate on stock prices. They are very actively traded financial instruments today, not only to secure future purchases but also

for portfolio hedging and market speculation. In India, for any given underlying asset, there are three types of futures contracts trading –

- Near-month futures (1-month expiry),
- Next-month futures (2 months expiry)
- Far-month futures (3 months expiry)

The ICICIGI Futures contract has a high trading volume as well as a moderate lot size of 250 which makes it feasible for investing for not only big investment banks but also for small investors.

Beta Values of Interglobe Aviation

Period	Long Term Beta *	Daily - One Month Range	Daily - Three Month Range	Weekly - One Year Range	Weekly - Two Year Range	Weekly - Two Year Range	Monthly - Two Year Range
Beta	**0.965**	0.974	1.04	1.18	0.941	0.956	0.918
Mean	1393.86	2181.17	2052.34	1774.63	1486.38	1493.95	1496.73
Standard Deviation	13.35 %	2.96 %	2.65 %	5.39 %	6.60 %	7.92 %	14.38 %

M2:6. Risk Unadjusted Returns

The sample returns are calculated in excel. They are listed here for reference. Values are all in percentages to maintain uniformity throughout the report.

The trading in futures instruments of the stock has been profitable for the traders on an average. This is because the mean return on all the three frequencies and contract types is positive, as can be seen in the tables below.

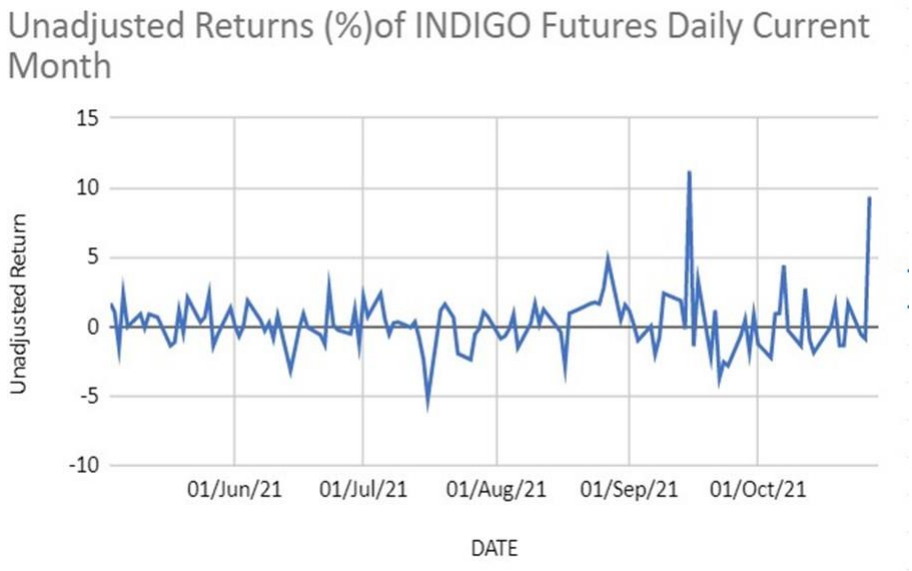
M2:6.1 Current month Risk Unadjusted Returns

Current or near-month contracts usually expire on the last Thursday of the ongoing month. The mean returns for all three frequencies, as can be seen from the table below, are positive. There appears to be an increasing trend as one goes from daily to weekly to monthly.

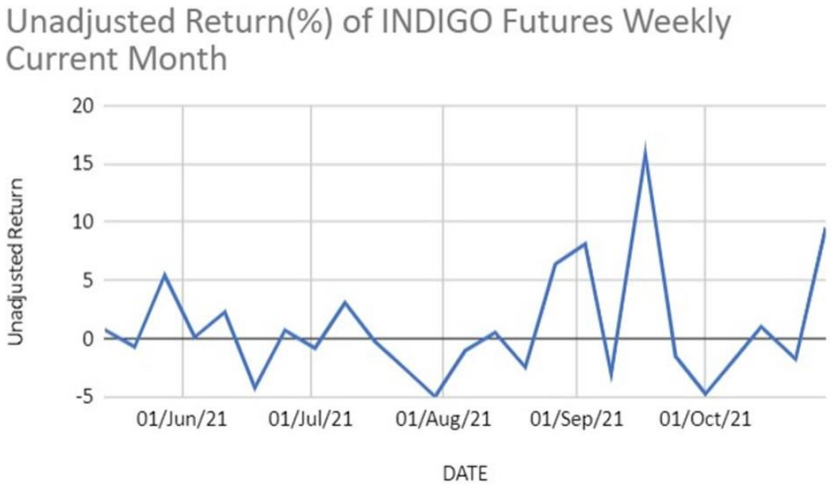
Following table and charts show unadjusted returns for INDIGO futures for current month daily, weekly and monthly frequencies.

Returns	Daily	Weekly	Monthly
Mean(%)	0.2419	0.89021	4.8348
Max(%)	11.1938	15.75	14.6385
Min(%)	-5.2245	-4.95	-5.4009
Standard Deviation	2.0495	4.77	7.2885

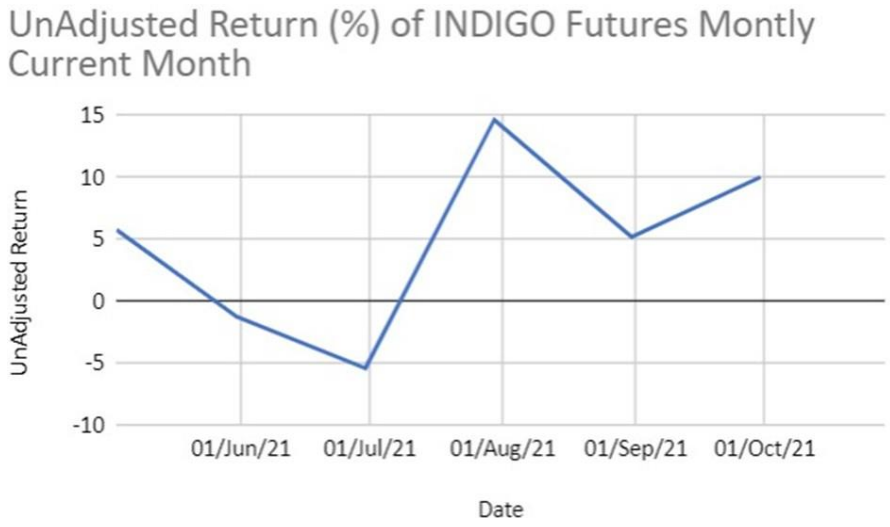
Risk Unadjusted Returns(%) on INDIGO futures for Near Month



Current Daily risk Unadjusted Return (%)



Current Weekly Risk Unadjusted Return



Current Monthly Risk Unadjusted Return

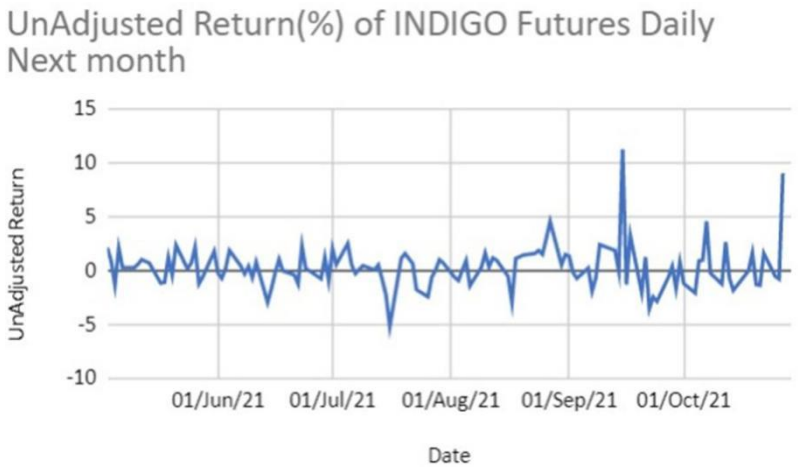
M2:6.2 Next Month Risk Unadjusted Returns

Next month's contracts usually expire on the last Thursday of the next month. Mean returns for all the three frequencies are positive. The trend increases from daily to weekly to monthly.

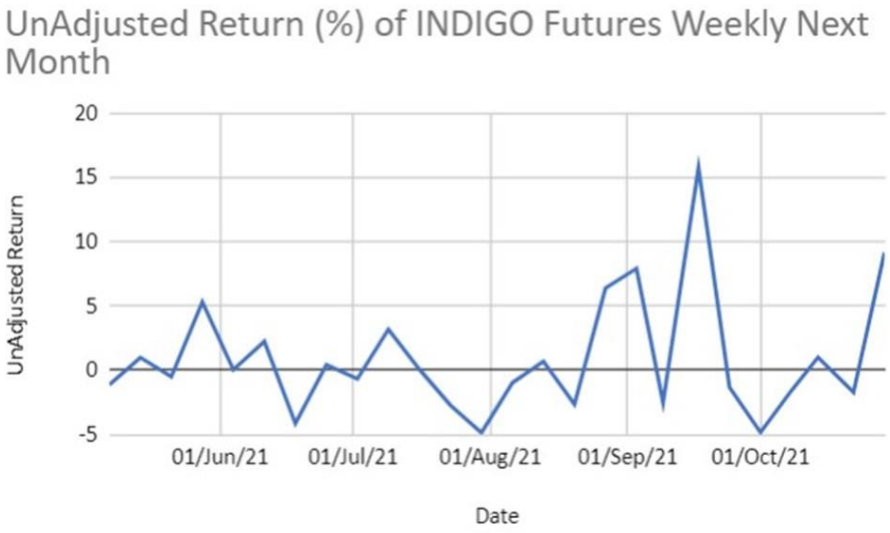
Following table and charts show unadjusted returns for INDIGO futures for current month daily, weekly and monthly frequencies.

Returns	Daily	Weekly	Monthly
Mean(%)	0.2423	0.9688	4.866
Max(%)	11.178	15.7445	14.4389
Min(%)	-5.22745	-4.884	-5.1384
Standard Deviation	2.01811	4.710	7.1484

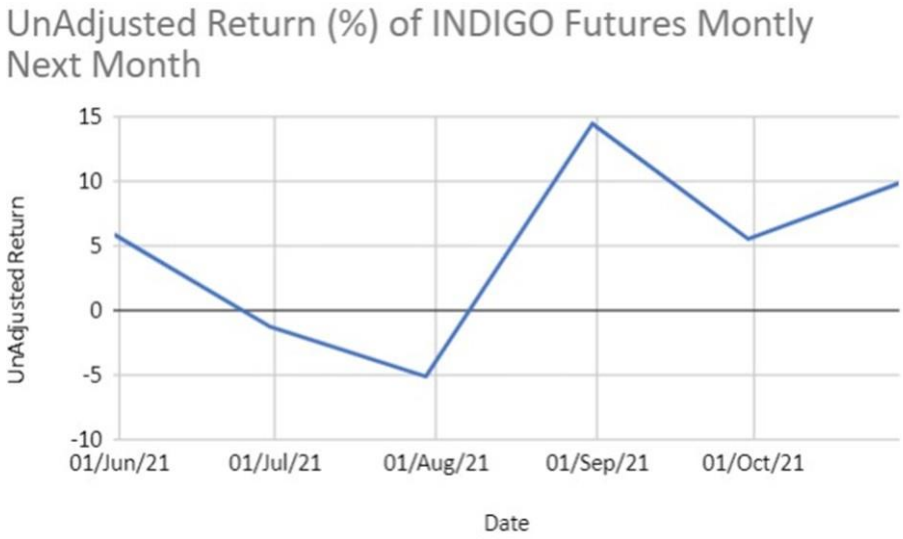
(Risk unadjusted returns on INDIGO futures for Next Month)



(Next Daily Risk unadjusted Return)



(Next Weekly Risk Unadjusted Return)



(Next Monthly Risk Unadjusted Return)

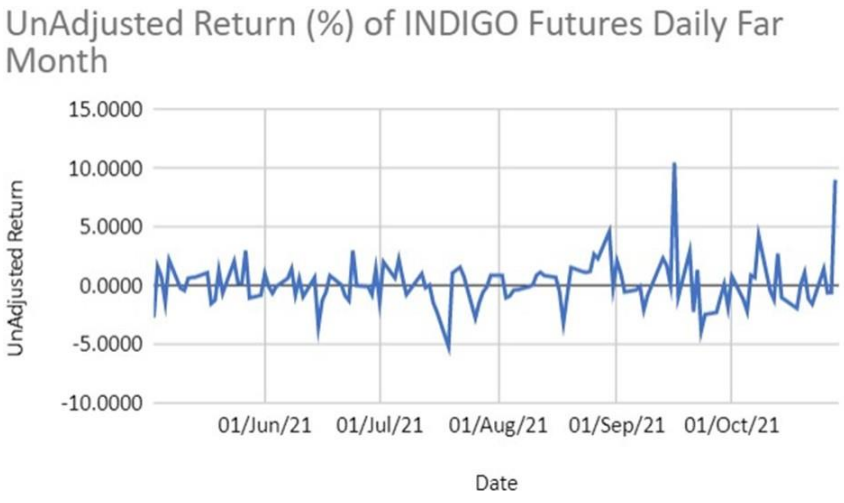
M2:6.3 Far Month Risk Unadjusted Returns

Far month contracts usually expire on the last Thursday of the next-to-next month. Mean returns for the far month are positive for all the three frequencies. The highest is for monthly, followed by weekly and daily.

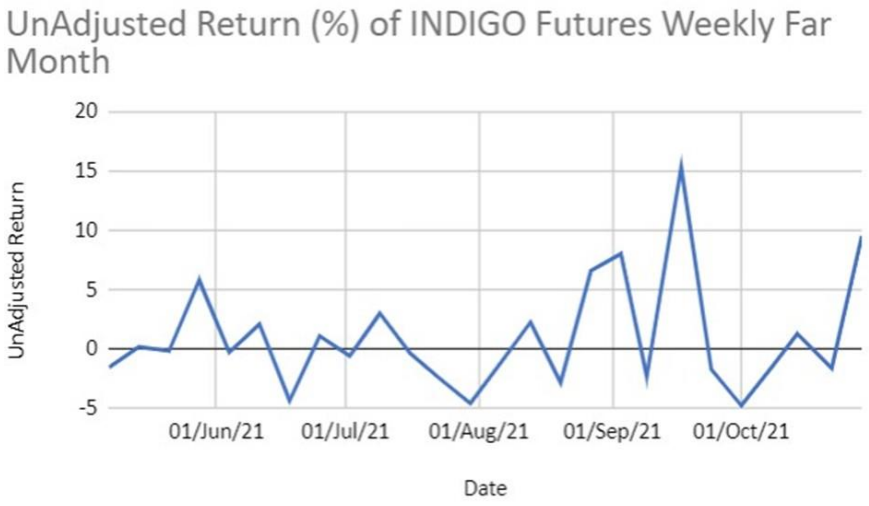
Following table and charts show unadjusted returns for INDIGO futures for far month daily, weekly and monthly frequencies.

Returns	Daily	Weekly	Monthly
Mean(%)	0.23524	0.9321	4.8132
Max(%)	10.537	15.2856	14.4848
Min(%)	-5.143	-4.7828	-5.4796
Standard Deviation	2.0089	4.7267	7.3418

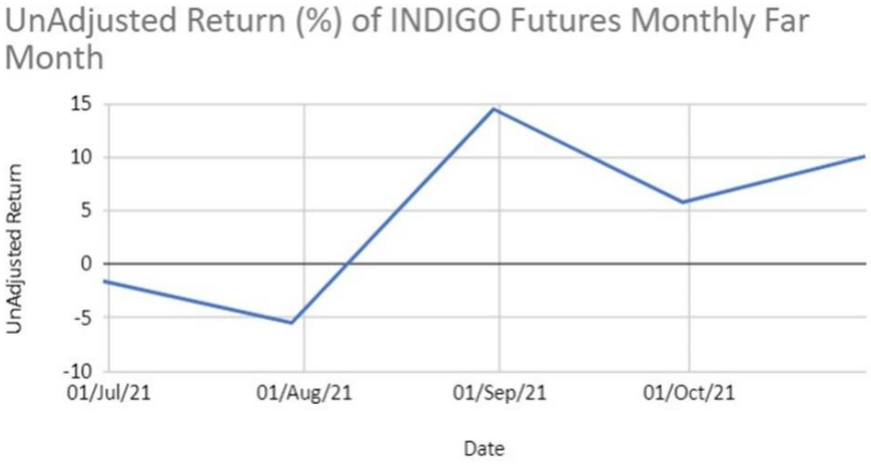
(Risk unadjusted Return on INDIGO futures for Far month)



(Far daily risk unadjusted Return)



(Far weekly risk Unadjusted Return)



(Far monthly risk Unadjusted Return)

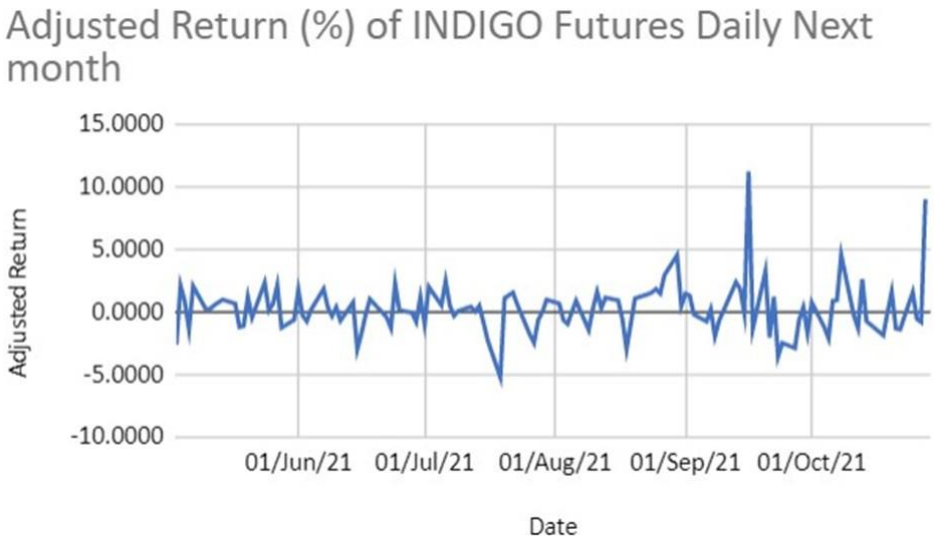
M2:7.2 Next Month Risk Adjusted Returns

Next month futures compensate for the risk borne by the trader. This is due to the positive risk-adjusted return for all the frequencies. Returns are positive for all the frequencies and all the three contract types.

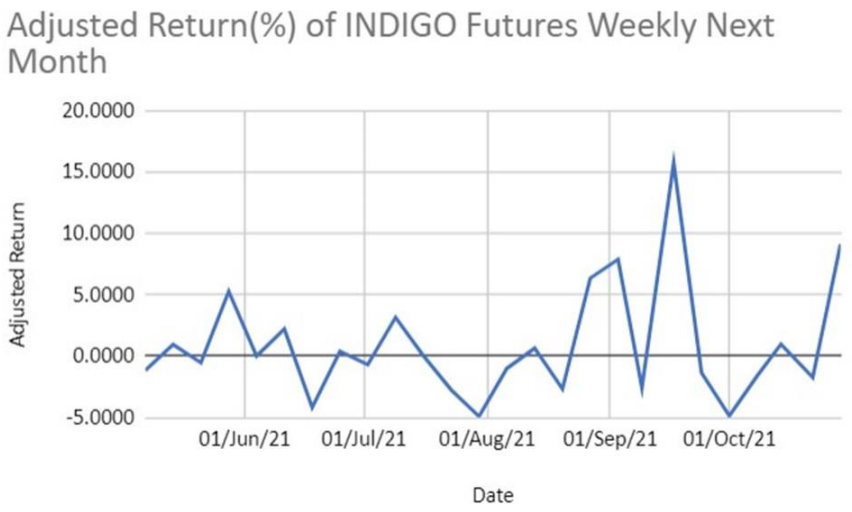
Following table and charts show adjusted returns for INDIGO futures for next month daily, weekly and monthly frequencies.

Returns	Daily	Weekly	Monthly
Mean(%)	0.2083	0.8534	4.8321
Max(%)	11.1456	15.711	14.4058
Min(%)	-5.2617	-4.9187	-5.1725
Standard Deviation	2.018	4.7109	7.148416

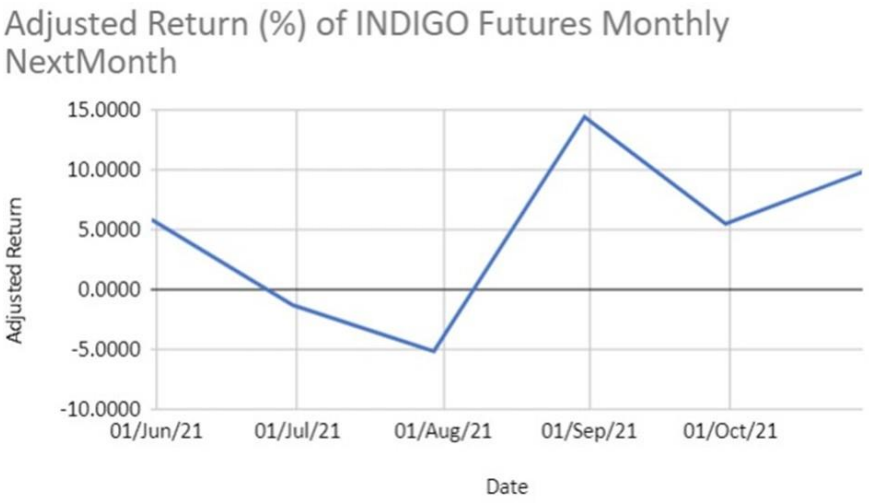
(Risk adjusted returns on INDIGO futures for Next month)



(Next Daily Risk Adjusted Return)



(Next weekly risk adjusted return)



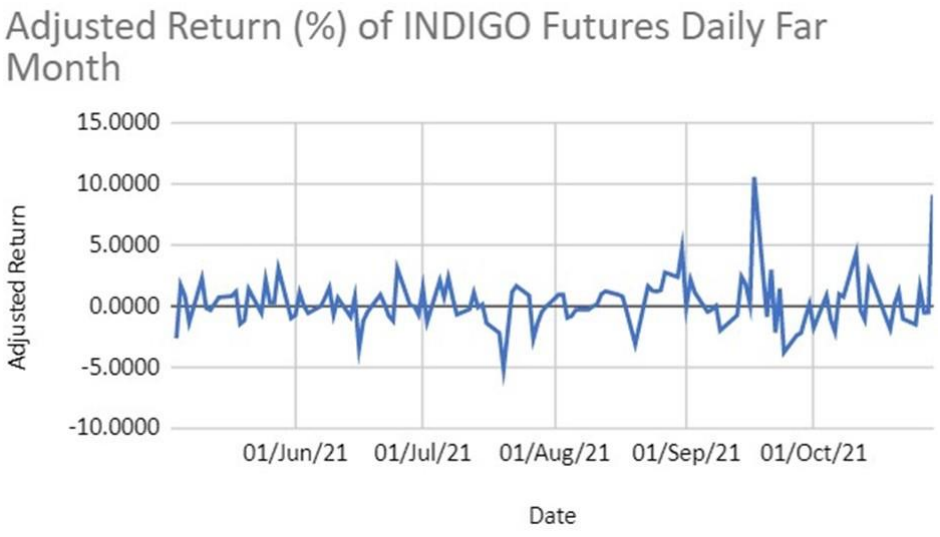
(Next monthly risk adjusted return)

M2:7.3 Far Month Risk Adjusted Returns

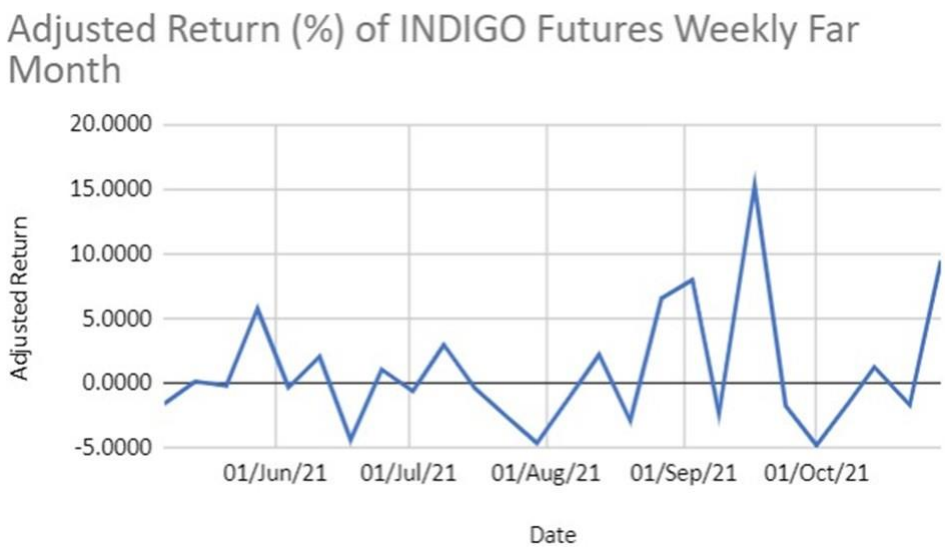
Far month futures compensate for the risk borne by the trader. This is due to the positive risk-adjusted return for all the frequencies. Returns are positive for all the frequencies and all the three contract types.

Following table and charts show adjusted returns for INDIGO futures for far month daily, weekly and monthly frequencies.

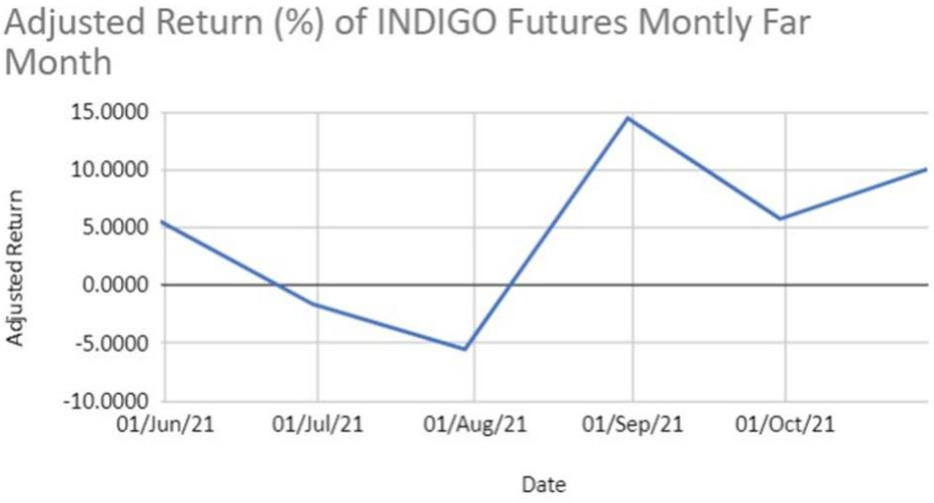
Returns	Daily	Weekly	Monthly
Mean(%)	0.201245	0.8980	4.7789
Max(%)	10.5040	15.2526	14.4518
Min(%)	-5.177	-4.8175	-5.5137
Standard Deviation	2.0089	4.7264	7.3417



(Far daily risk adjusted return)



(Far weekly risk adjusted return)



(Far monthly risk adjusted return)

M2:7.4 Sharpe ratio

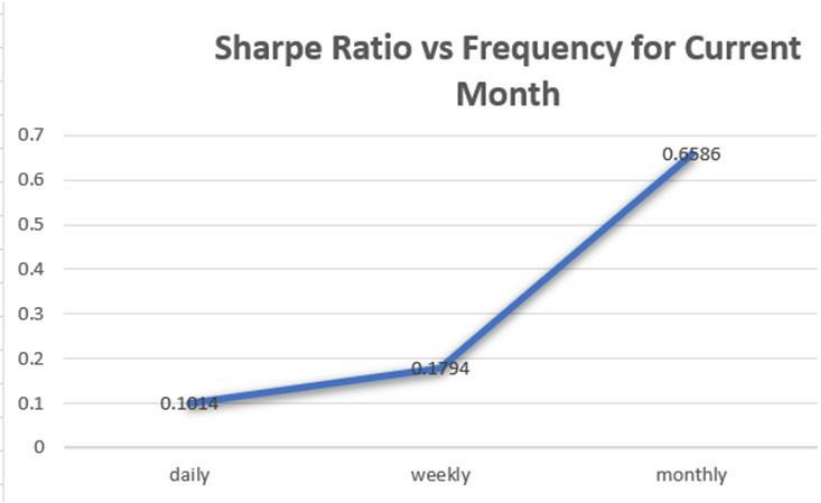
The Sharpe ratio seeks to characterize how well the return of an asset compensates the investor for the risk taken. When comparing two assets, the one with a higher Sharpe ratio provides better return for the same risk.

M2:7.4.1 Current Month

Sharpe ratio values for all the three frequencies are positive, implying that reward to risk is favourable.

Frequency	Sharpe Ratio
Daily	0.1014
Weekly	0.1794
Monthly	0.6586

(Comparison of current month daily, weekly and monthly sharpe ratios)



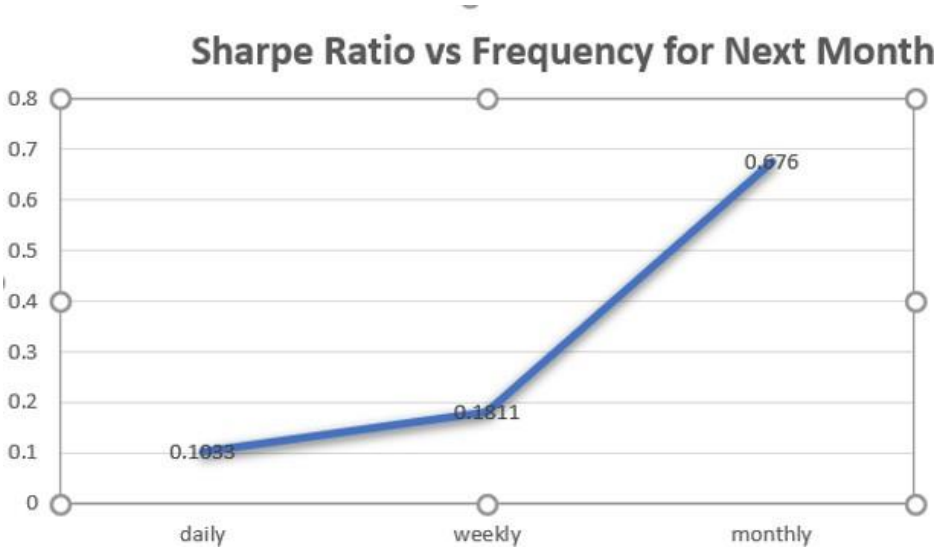
(Sharpe ratios for INDIGO futures current month)

M2:7.4.2 Next Month

Sharpe ratio values for all the three frequencies are positive, implying that reward to risk is favourable. One can see that next month's weekly contract has the highest sharpe ratio. The sharpe ratios of next month are slightly higher than current month.

Frequency	Sharpe Ratio
Daily	0.1033
Weekly	0.1811
Monthly	0.6760

(Comparison of Next month daily, weekly and monthly sharpe ratios)



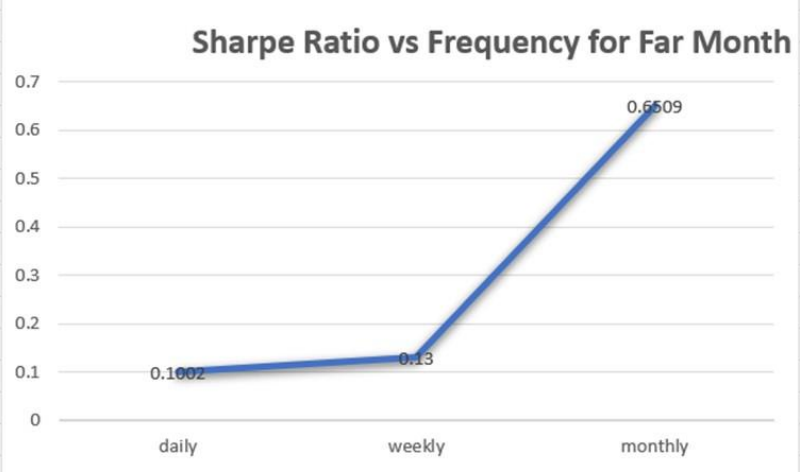
(Sharpe ratio for INDIGO futures Next month)

M2:7.4.3 Far Month

Sharpe ratio values for all the three frequencies are positive, implying that reward to risk is favourable. It can be seen that far month contracts are slightly higher than current month. However the values are nearly the same as that of near month contracts. This implies that both near and far month contracts are best options for traders.

Frequency	Sharpe Ratio
Daily	0.1002
Weekly	0.1300
Monthly	0.6509

(Comparison of far month daily, weekly and monthly sharpe ratios)



(Sharpe ratios for INDIGO futures far month)

M2:8. Economic Interpretation of difference between risk-adjusted and risk-unadjusted returns :

- Standard deviation is almost the same in both risk-adjusted and risk-unadjusted returns.
- Since percentage returns for all frequencies are positive, it can be said that the company has performed well in the equity futures market in a given period.

Sharpe ratios are positive, indicating that returns are more when compared to risk-free rate.

M2:9. Comparison

M2:9.1 Comparison of Current, Near and Far Month Risk-unadjusted returns with underlying risk-unadjusted returns

- As it can be seen daily risk unadjusted returns are positive for all the three trading futures months, i.e., current, next and far.
- The returns of the underlying asset are highest among all the returns of futures and underlying equity. Hence investment in underlying assets is more profitable than futures.

Table (Current, next and far monthly risk-unadjusted returns with the underlying asset)

Risk Unadjusted Return	Next Month	Far Month	Current Month	Underlying asset
Mean(%)	0.2423	0.2352	0.2419	0.2344
Max(%)	11.1786	10.5370	11.1938	10.920
Min(%)	-5.2274	-5.1430	-5.2245	-5.2070
Standard Deviation	2.0181	2.0089	2.0495	1.9928

M2:9.2 Comparison of Current, Near and Far Month Risk-unadjusted returns with underlying risk-adjusted returns

- As it can be seen daily risk unadjusted returns are positive for all the three trading futures months, i.e., current, next and far.
- The returns of the underlying asset are highest among all the returns of futures and underlying equity. Hence investment in underlying assets is more profitable than futures

Risk adjusted Return	Next Month	Far Month	Current Month	Underlying asset
Mean(%)	0.2083863	0.2012456	0.2079106	0.2004
Max(%)	11.1456516	10.5040036	11.1608415	10.8870
Min(%)	-5.2617519	-5.1773988	-5.2588336	-5.2413
Standard Deviation	2.018165529	2.008966913	2.049554674	1.9928

(Current, next and far monthly risk-adjusted returns with the underlying asset)

M2: Section- III- Comparisons

M2:10. Comparison of underlying assets and Futures Instruments

M2:10.1 Comparison of risk-unadjusted underlying assets and Futures Instruments

M2:10.1.1 Daily frequency

As it can be seen the underlying asset performs better than other future contracts on a daily frequency.

Risk Unadjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	0.2344	0.2419	0.2424	0.2352
Max(%)	10.920	11.1938	11.1787	10.5370
Min(%)	-5.2070	-5.2245	-5.2275	-5.1431
Standard Deviation	1.9928	2.0495	2.0181	2.0089

(Current, next and far daily risk-unadjusted returns with underlying asset unadjusted return)

M2:10.2.1 Weekly frequency

As it can be seen the next month contract performs better than other future contracts and underlying assets on a weekly frequency. Next month contracts compensate well for the risk borne by the investor.

Risk Unadjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	0.8758	0.8902	0.8875	0.9321
Max(%)	15.72166	15.7514	15.7446	15.2857
Min(%)	-5.3410	-4.9544	-4.8846	-4.7828
Standard Deviation	4.7333	4.7722	4.7109	4.7263

(Current, next and far weekly risk-unadjusted returns with underlying asset unadjusted return)

M2:10.3.1 Monthly frequency

As it can be seen the underlying asset performs better than other future contracts on a monthly frequency.

Risk Unadjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	4.7554	4.8348	4.8664	4.8132
Max(%)	14.4905	14.6385	14.4389	14.4849
Min(%)	-5.4659	-5.4010	-5.1384	-5.4796
Standard Deviation	7.34573	7.2885	7.1484	7.3418

(Current, next and far monthly risk-unadjusted returns with underlying asset unadjusted return)

M2:Interpretation

- The mean returns had a similar trend in both risk-adjusted and risk-unadjusted returns. However underlying asset returns are higher in magnitude than for futures in all frequencies.
- It is advisable to invest in underlying equity rather than futures
- For risk averse investors, it is advisable to invest as Sharpe ratio is positive in all cases.

M2:10.4 Comparison of risk-adjusted underlying assets and Futures Instruments

M2:10.4.1 Daily frequency

As it can be seen the underlying asset performs better than other future contracts on a daily frequency.

Risk adjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	0.2004	0.2079	0.2084	0.2012
Max(%)	10.8870	11.1608	11.1457	10.5040
Min(%)	-5.2413	-5.2588	-5.2618	-5.1774
Standard Deviation	1.9928	2.0496	2.0182	2.0090

(Current, next and far daily risk-adjusted returns with underlying asset adjusted return)

M2:10.4.2 Weekly frequency

As it can be seen the next month contract performs better than other future contracts and underlying assets on a weekly frequency. Next month contracts compensate well for the risk borne by the investor.

Risk adjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	0.8417	0.8562	0.8534	0.8980
Max(%)	15.6886	15.7184	15.7116	15.2527
Min(%)	-5.375	-4.9885	-4.9187	-4.8175
Standard Deviation	4.7335	4.7723	4.7110	4.7264

(Current, next and far weekly risk-adjusted returns with underlying asset adjusted return)

M2:10.4.3 Monthly frequency

As it can be seen the underlying asset performs better than other future contracts on a monthly frequency.

Risk adjusted Return	Underlying asset	Current Month	Next Month	Far Month
Mean(%)	4.7212	4.8006	4.8321	4.7789
Max(%)	14.4574	14.6054	14.4058	14.4518
Min(%)	-5.5	-5.4351	-5.1725	-5.5137
Standard Deviation	7.34571	7.2885	7.1484	7.3418

(Current, next and far monthly risk-adjusted returns with underlying asset adjusted return)

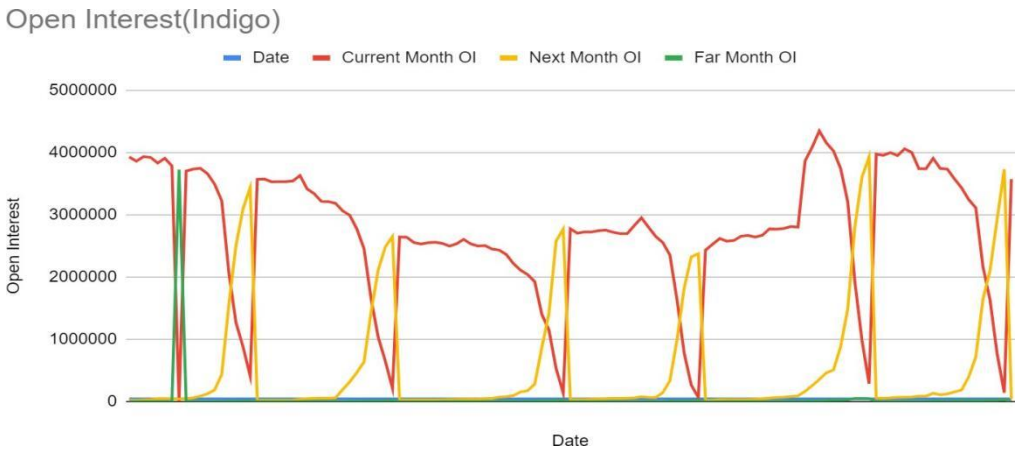
M2:10.4.4 Interpretation

- The mean returns had a similar trend in both risk-adjusted and risk-unadjusted returns. However underlying asset returns are higher in magnitude than for futures in all frequencies.
- It is advisable to invest in underlying equity rather than futures
- For risk averse investors, it is advisable to invest as Sharpe ratio is positive in all cases.

M2:10.5 Liquidity

Now,We compare the liquidity position of the underlying asset and the futures to identify the liquid options available in trading.

	Current Month	Next Month	Far Month
Avg no of contracts	2860	780	21
Avg OI	2696872	544916	37868



The public interest in the INDIGO futures contracts for the current, next, and months is shown in the table above. From current/near, next to far month contracts, both the average number of contracts and the average open interest are dropping. This means that when the quantity of contracts falls, the liquidity diminishes. It becomes more difficult to liquidate after that, hence most investors favour current/near-month futures. The open interest in current/near-month futures contracts is much larger than that of equities shares.Futures are more liquid, therefore it is a good idea to invest in them. During the period, the Open Interest provides liquidity. The current month contracts

have the most liquidity, as shown in the graph below, as compared to the next and far month contracts.

M2: Section IV-Contango Or Backwardation

Contango occurs when the price of a future surpasses the price of its underlying equity in a market (i.e spot price)

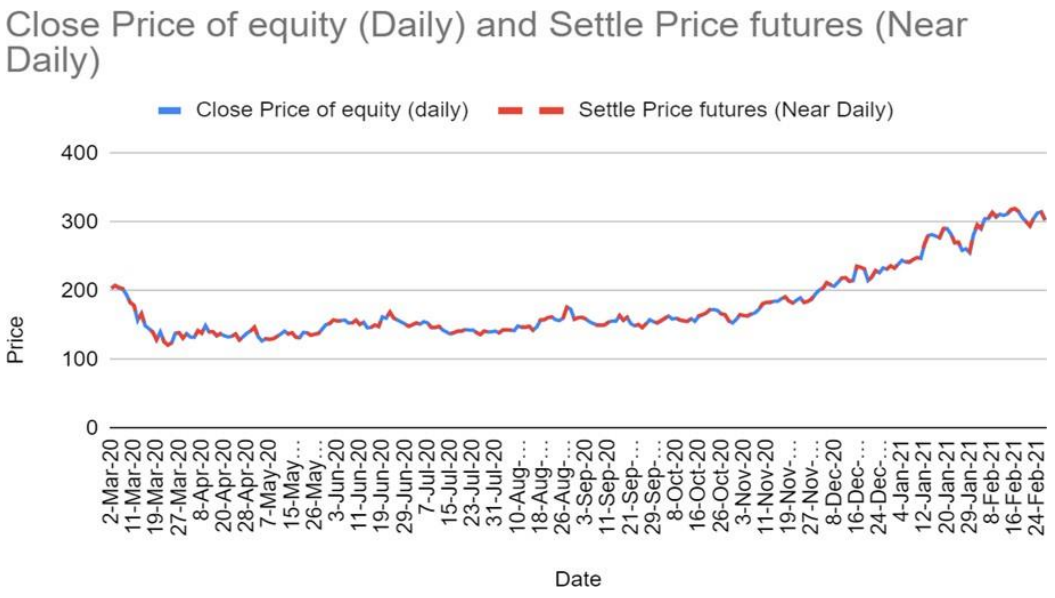
Backwardation occurs when the price of the underlying equities (i.e. spot price) exceeds the price of futures in a market.
Contango occurred on 103 days, 107 days, and 118 days out of 125 trading days in the current, next, and previous months, respectively.
This means that in the current, next, and far months, 82.4 percent, 85.6 percent, and 94.4 percent of the days were in contango, respectively.

The table below displays the percentages of contango and backwardation for various futures.

Type	No of Days in Contango	No of Days in Backwardation
Current Month	103	22
Next Month	107	18
Far Month	118	7

Using arbitrage strategies, we can profit from contango. Due to arbitrage, the spot and futures prices converge as expiration approaches, and contango decreases. Another approach to profit from contango is to use it to your advantage. Futures prices that are higher than spot prices can imply greater future spot prices, particularly when inflation is high. Speculators may purchase more of the commodity in contango in order to profit from higher predicted future prices. They might be able to gain even more money by purchasing futures contracts. However, this strategy only works if spot prices in futures are higher than futures prices.

Here are the plots to determine the contango and backwardation of the futures are determined by plotting the daily prices of the futures and the underlying asset together.


Close Price of equity (Daily) and Settle Price futures (Near Daily)
Close Price of equity (daily)
Settle Price futures (Near Daily)
400
300
200
100
0
Price
2-Mar-20
11-Mar-20
19-Mar-20
27-Mar-20
8-Apr-20
20-Apr-20
28-Apr-20
7-May-20
15-May-...
26-May-...
3-Jun-20
11-Jun-20
19-Jun-20
29-Jun-20
7-Jul-20
15-Jul-20
23-Jul-20
31-Jul-20
10-Aug-...
18-Aug-...
26-Aug-...
3-Sep-20
11-Sep-...
21-Sep-...
29-Sep-...
8-Oct-20
16-Oct-20
26-Oct-20
3-Nov-20
11-Nov-20
19-Nov-...
27-Nov-...
8-Dec-20
16-Dec-...
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16-Feb-21
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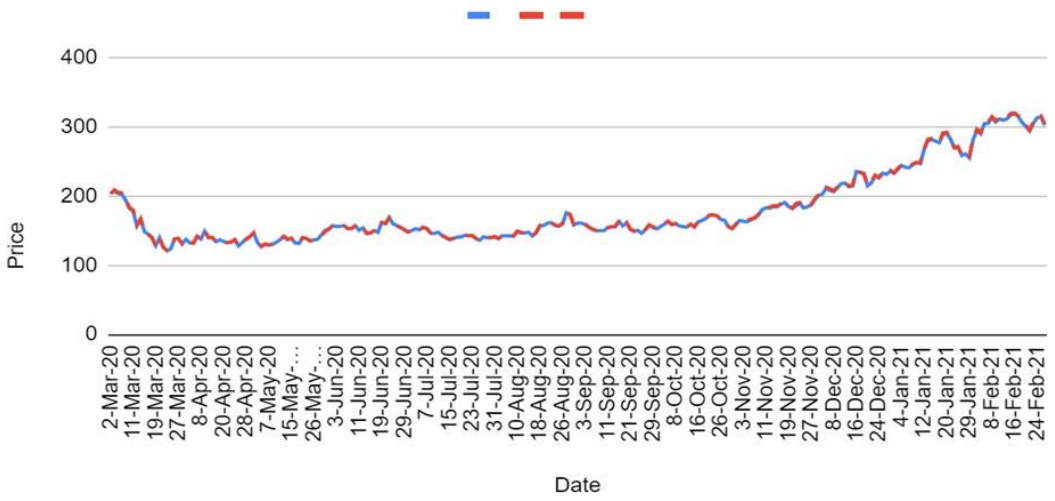
Date


Close Price of equity (Daily) and Settle Price futures (Next Daily)
400
300
200
100
0
Price
2-Mar-20
11-Mar-20
19-Mar-20
27-Mar-20
8-Apr-20
20-Apr-20
28-Apr-20
7-May-20
15-May-...
26-May-...
3-Jun-20
11-Jun-20
19-Jun-20
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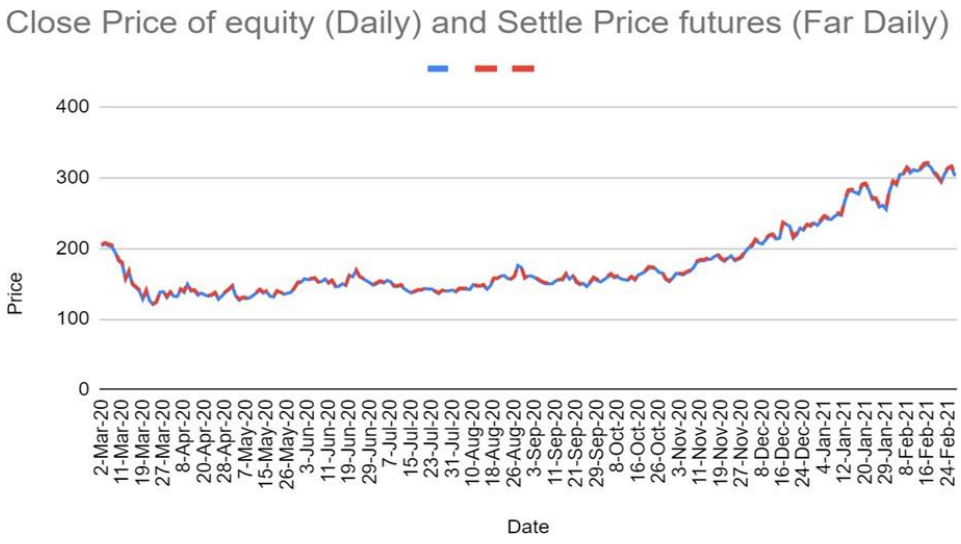
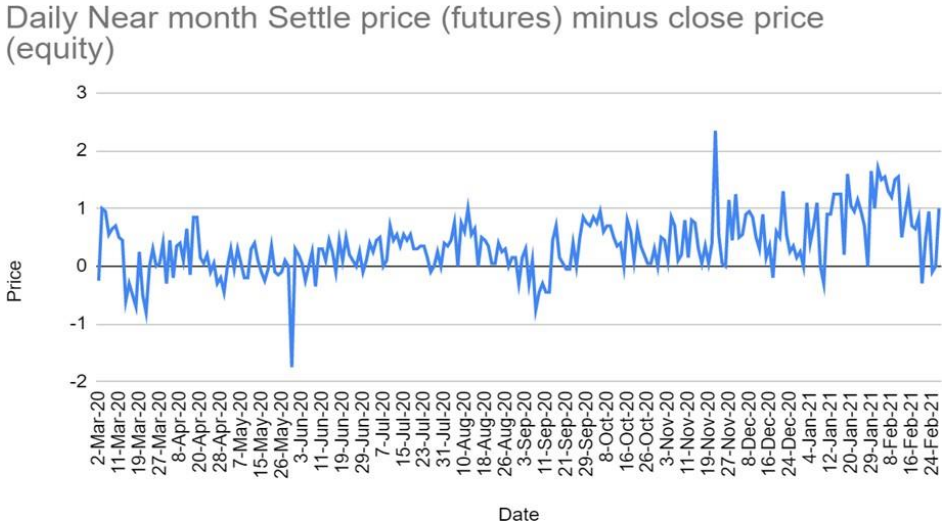
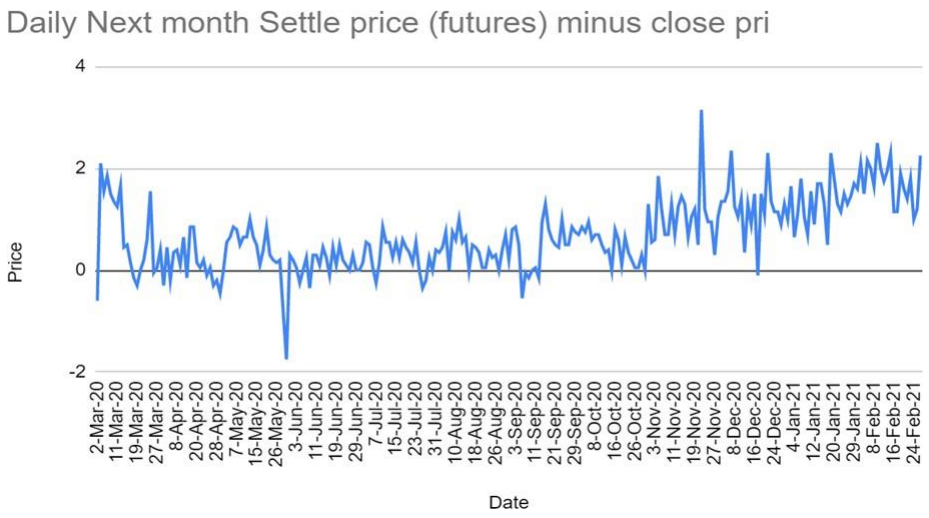
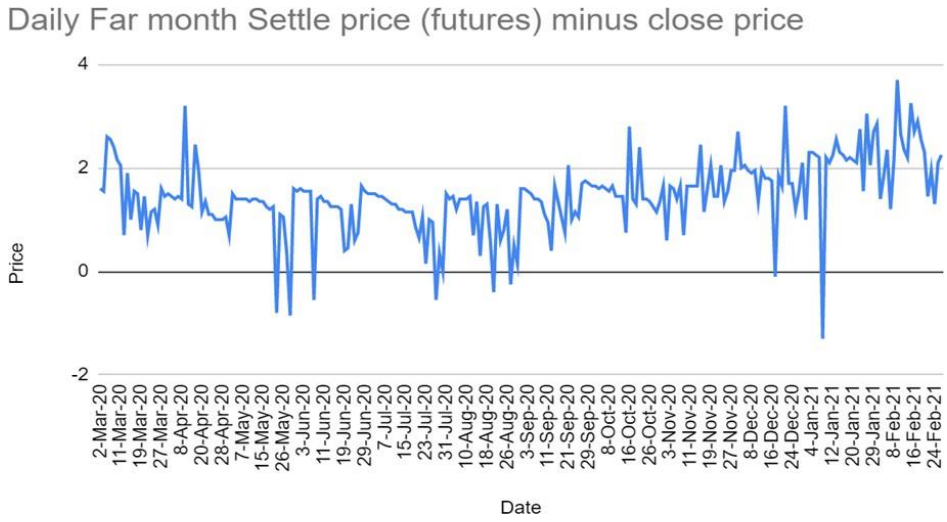
16-Dec-20
24-Dec-20
4-Jan-21
12-Jan-21
20-Jan-21
29-Jan-21
8-Feb-21
16-Feb-21
24-Feb-21
Date


Close Price of equity (Daily) and Settle Price futures (Far Daily)
Price
Date
400
300
200
100
0
2-Mar-20
11-Mar-20
19-Mar-20
27-Mar-20
8-Apr-20
20-Apr-20
28-Apr-20
7-May-20
15-May-20
26-May-20
3-Jun-20
11-Jun-20
19-Jun-20
29-Jun-20
7-Jul-20
15-Jul-20
23-Jul-20
31-Jul-20
10-Aug-20
18-Aug-20
26-Aug-20
3-Sep-20
11-Sep-20
21-Sep-20
29-Sep-20
8-Oct-20
16-Oct-20
26-Oct-20
3-Nov-20
11-Nov-20
19-Nov-20
27-Nov-20
8-Dec-20
16-Dec-20
24-Dec-20
4-Jan-21
12-Jan-21
20-Jan-21
29-Jan-21
8-Feb-21
16-Feb-21
24-Feb-21


Daily Near month Settle price (futures) minus close price (equity)
Price
Date
3
2
1
0
-1
-2
2-Mar-20
11-Mar-20
19-Mar-20
27-Mar-20
8-Apr-20
20-Apr-20
28-Apr-20
7-May-20
15-May-20
26-May-20
3-Jun-20
11-Jun-20
19-Jun-20
29-Jun-20
7-Jul-20
15-Jul-20
23-Jul-20
31-Jul-20
10-Aug-20
18-Aug-20
26-Aug-20
3-Sep-20
11-Sep-20
21-Sep-20
29-Sep-20
8-Oct-20
16-Oct-20
26-Oct-20
3-Nov-20
11-Nov-20
19-Nov-20
27-Nov-20
8-Dec-20
16-Dec-20
24-Dec-20
4-Jan-21
12-Jan-21
20-Jan-21
29-Jan-21
8-Feb-21
16-Feb-21
24-Feb-21


Daily Next month Settle price (futures) minus close pri
Price
4
2
0
-2
2-Mar-20
11-Mar-20
19-Mar-20
27-Mar-20
8-Apr-20
20-Apr-20
28-Apr-20
7-May-20
15-May-20
26-May-20
3-Jun-20
11-Jun-20
19-Jun-20
29-Jun-20
7-Jul-20
15-Jul-20
23-Jul-20
31-Jul-20
10-Aug-20
18-Aug-20
26-Aug-20
3-Sep-20
11-Sep-20
21-Sep-20
29-Sep-20
8-Oct-20
16-Oct-20
26-Oct-20
3-Nov-20
11-Nov-20
19-Nov-20
27-Nov-20
8-Dec-20
16-Dec-20
24-Dec-20
4-Jan-21
12-Jan-21
20-Jan-21
29-Jan-21
8-Feb-21
16-Feb-21
24-Feb-21
Date


Daily Far month Settle price (futures) minus close price
Price
4
2
0
-2
2-Mar-20
11-Mar-20
19-Mar-20
27-Mar-20
8-Apr-20
20-Apr-20
28-Apr-20
7-May-20
15-May-20
26-May-20
3-Jun-20
11-Jun-20
19-Jun-20
29-Jun-20
7-Jul-20
15-Jul-20
23-Jul-20
31-Jul-20
10-Aug-20
18-Aug-20
26-Aug-20
3-Sep-20
11-Sep-20
21-Sep-20
29-Sep-20
8-Oct-20
16-Oct-20
26-Oct-20
3-Nov-20
11-Nov-20
19-Nov-20
27-Nov-20
8-Dec-20
16-Dec-20
24-Dec-20
4-Jan-21
12-Jan-21
20-Jan-21
29-Jan-21
8-Feb-21
16-Feb-21
24-Feb-21
Date

Frequency

From the perspective of an investor, trading frequency is important since it aids in the study of returns, the selection of an investment strategy, and the comparison of returns. Trading at various frequencies can assist the investor in achieving a larger return. Based on our findings thus far, we may infer that while frequency affects the rewards we receive, it has little impact on our investment decisions. Stock prices are meant to be random, according to the Random Walk Theory and the efficient market hypothesis, hence the frequency shouldn't matter. However, frequency becomes crucial in the analysis from the investor's perspective. It has an impact on the standard deviation. Sharpe Ratio is significant to investors since it is based on standard deviation, which is based on frequency of duration. Sharpe Ratio gives us a real-world understanding about the stock's performance.But for an investor profit is prime motive,which only will let him to stay in market.Thus,they opt for different ways of trading which broadly can be seen as different frequency at which they trade.Many find high frequency trading comfortable, trading large volumes of securities, allows traders to profit from even very small price fluctuations. It allows institutions to gain significant returns on bid-ask spreads.As against to high frequency trading, low frequency trades mean that very few trades taken over a monthly cycle, usually because these trades are constructed on long term charts (such as the daily charts), and take more to evolve but end up delivering better returns on investment.For a hedger, hedging with a new contract is a wise option as they show the most Sharpe ratios. This optimizing of frequency is referred to as Frequency Alteration for optimum returns. By observing the data, we see that daily trading of futures contracts and monthly trading of equity shares provide Sharpe ratio in comparison to other frequencies.

Conclusion

We find that the Equity as well as the Equity Derivative Instrument(futures) of ICICIGI and INDIGO during the study period 3rd May 2021 to 29th october 2021.Both generate positive returns as well as positive Sharpe ratio which is good sign for an investor looking forward to investing in a new portfolio.Overall, the equity share price has been well maintained. Since all the returns were actually positive for equities as well as futures it can be concluded that the company has been performing well. However, the volatility of the returns was moderately high, therefore, the investor should be careful. On the basis of risk adjusted returns, investing in daily trading frequency in equity shares of Indigo is recommended over ICICIGI whereas on the basis reward-risk combination trading in Next month futures contract on a monthly basis is recommended as it has the highest Sharpe ratio. All the future contracts of INDIGO showed a mostly contango trend with some amounts of backwardation in between. The liquidity condition is also worth noting and is higher for current/near-month futures when compared to next-month and far-month contracts.It is clear from the report that one can invest in INDIGO as it would provide him good returns than investing in risk free assets such as T-Bills which justifies the functioning of the company.

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