Using Options to generate monthly income

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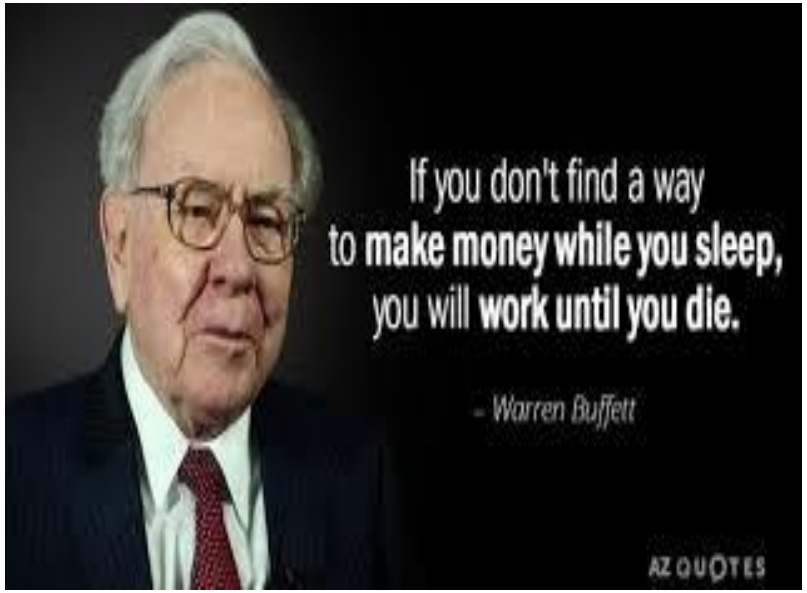
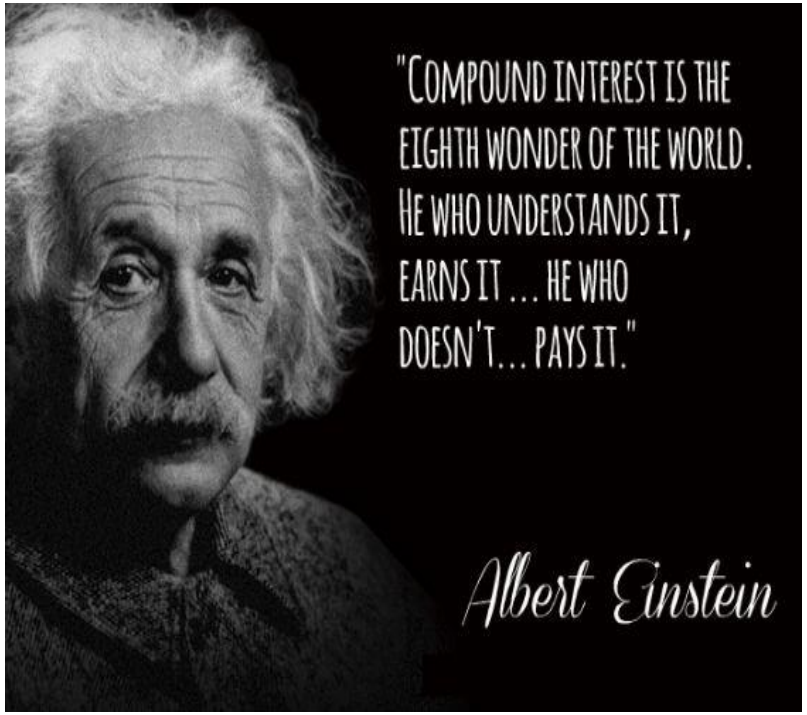




- Generating alpha has been one of the biggest challenges facing investors. Interest rates, worldwide are abysmally low and even rental yields are subdued.
- This underscores the need for additional source of passive income - diversification
- Make your money sweat harder for you

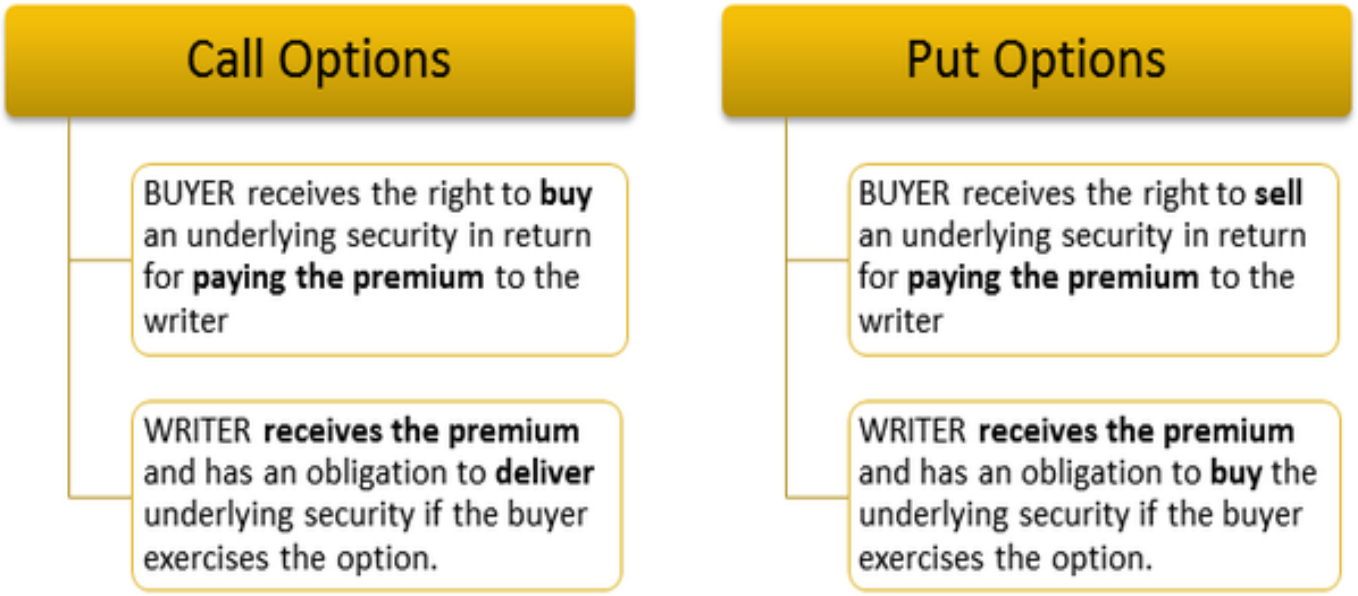
THE POWER OF COMPOUNDING

		Earnings Mr A	ROI 8%	Final Amt		Earnings Mr B	ROI 18%	Final Amt
Year 1	9	1000000	1.999	1999005		620000	4.435	2749981
Year 2	8	1000000	1.851	1850930		620000	3.759	2330493
Year 3	7	1000000	1.714	1713824		620000	3.185	1974994
Year 4	6	1000000	1.587	1586874		620000	2.700	1673724
Year 5	5	1000000	1.469	1469328		620000	2.288	1418410
Year 6	4	1000000	1.360	1360489		620000	1.939	1202042
Year 7	4	1000000	1.360	1360489		620000	1.939	1202042
Year 8	2	1000000	1.166	1166400		620000	1.392	863288
Year 9	1	1000000	1.080	1080000		620000	1.180	731600
Year 10	0	1000000	1.000	1000000		620000	1.000	620000
TOTAL		10000000		14587339		6200000		14766574

Option Basics

Types of Options—Calls and Puts
A *call* is an option to BUY.
A *put* is an option to SELL. Therefore,

- A call option is the right, not the obligation, to BUY an asset at a fixed price before a predetermined date.
- A put option is the right, not the obligation, to SELL an asset at a fixed price before a predetermined date.



- *European*-style options do *not* allow the option buyer to exercise the option before the expiration date.

Basics about option selling

- To generate income using options, we dont buy calls or puts – we sell them
- Max profit is limited to amount of premium collected initially at time of sale
- Losses could theoretically be unlimited (if not hedged)
- Option selling requires margin to paid to the broker (Hence some deep pockets reqd)
- Your mindset is that of an insurance company, you are assuming a risk by collecting premium.

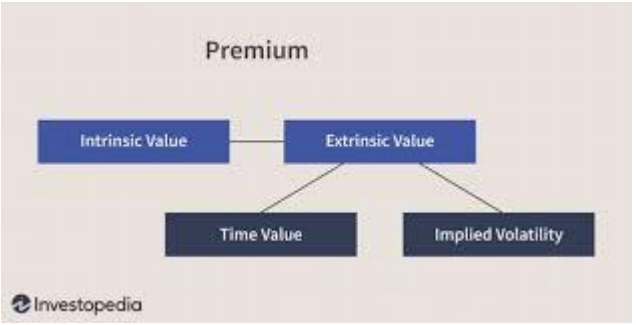
The Seven Factors That Influence an Option's Premium

Quote from definition	Comment
"buy or sell"	The type of option (call or put) affects the option premium.
"underlying asset"	The *underlying asset* and its *own price* affect the option premium.
"at a fixed price"	The strike price affects the option premium.
"before a predetermined date"	The expiration date and time value affect the option premium.
Volatility	Understanding volatility gives the options trader the ability to select specific trades most profitably.
Risk-free rate of interest	This is the short-term rate of government money.
Dividends payable	This applies to any asset that offers an income "reward" for owners of the underlying asset

- Options are totally separate entities from the underlying assets from which they are derived (hence, the term derivative). But in themselves they do have a value, which can be split into two parts: **intrinsic value** and **time value**.

  In general:
- Intrinsic value is that part of the option's value that is in-the-money (ITM).
- Time value is the remainder of the option's value. Out-of-the-money (OTM) options will have no intrinsic value, and their price will solely be based on time value. Time value is another way of saying hope value. This hope is based on the amount of time left until expiration and the price of the underlying asset.
- A call is *ITM* when the underlying asset price is greater than the strike price.
- A call is *OTM* when the underlying asset price is less than the strike price.
- A call is *at-the-money (ATM)* when the underlying asset price is the same as the strike price.

  Put options work the opposite way:
- A put is *ITM* when the underlying asset price is less than the strike price.
- A put is *OTM* when the underlying asset price is greater than the strike price.
- A put is *ATM* when the underlying asset price is the same as the strike price.



Option Chain (Equity Derivatives)

Underlying Stock: NMDC 79.50 As on Sep 25, 2020 15:30:26 IST

View Options Contracts for: Select Index OR Search for an underlying stock: GO Filter by: Expiry Date 29OCT2020 Futures contracts

CALLS												PUTS										
Chart	OI	Chng in OI	Volume	IV	LTP	Net Chng	Bid Qty	Bid Price	Ask Price	Ask Qty	Strike Price	Bid Qty	Bid Price	Ask Price	Ask Qty	Net Chng	LTP	IV	Volume	Chng in OI	OI	Chart
	-	-	-	-	-	-	154,100	22.05	29.85	20,100	52.50	6,700	0.05	0.45	6,700	-	-	-	-	-	-	
	-	-	-	-	-	-	20,100	21.95	27.00	20,100	55.00	6,700	0.05	0.45	6,700	-	-	-	-	-	-	
	-	-	-	-	-	-	20,100	19.65	24.35	20,100	57.50	-	-	0.50	6,700	-	-	-	-	-	-	
	-	-	-	-	-	-	20,100	17.45	21.65	20,100	60.00	20,100	0.05	0.45	13,400	-	-	-	-	-	-	
	-	-	-	-	-	-	20,100	15.15	19.60	20,100	62.50	33,500	0.15	0.45	13,400	-	-	-	-	-	-	
	-	-	-	-	-	-	20,100	12.95	16.80	20,100	65.00	13,400	0.30	0.40	20,100	-0.65	0.35	47.92	24	93,800	100,500	
	20,100	6,700	1	-	12.00	1.50	40,200	10.70	13.95	6,700	67.50	6,700	0.45	0.55	6,700	-0.90	0.55	46.31	11	-	40,200	
	-	-	-	-	-	-	154,100	8.15	11.85	6,700	70.00	13,400	0.75	0.85	6,700	-1.00	0.75	43.00	156	67,000	1,192,600	
	6,700	6,700	1	-	7.30	-11.50	13,400	5.80	9.80	33,500	72.50	6,700	1.15	1.25	13,400	-1.30	1.20	42.30	18	46,900	201,000	
	174,200	67,000	40	32.25	6.30	1.55	13,400	5.95	6.70	6,700	75.00	6,700	1.75	2.00	13,400	-1.65	1.85	41.81	149	147,400	864,300	
	335,000	147,400	100	35.42	4.90	1.20	6,700	4.10	5.00	13,400	77.50	6,700	1.60	2.90	20,100	-2.25	2.65	40.58	44	147,400	348,400	
	1,145,700	167,500	312	37.04	3.70	0.90	6,700	3.55	3.75	13,400	80.00	13,400	3.20	4.10	13,400	-2.35	4.00	42.65	85	147,400	1,360,100	
	274,700	33,500	49	38.88	2.80	0.75	6,700	1.85	2.75	13,400	82.50	6,700	2.15	5.70	13,400	-2.25	6.00	48.95	8	6,700	187,600	
	1,125,600	127,300	297	39.29	2.00	0.45	6,700	1.90	2.00	6,700	85.00	6,700	7.05	7.50	6,700	-1.75	7.50	48.01	15	-26,800	938,000	
	321,600	6,700	57	38.40	1.30	0.10	6,700	0.35	1.35	6,700	87.50	6,700	8.00	9.50	13,400	-	12.50	-	-	-	174,200	
	2,820,700	824,100	327	40.63	1.00	0.05	6,700	1.05	1.15	20,100	90.00	6,700	10.30	11.60	6,700	-3.40	11.00	45.43	8	26,800	804,000	
	227,800	113,900	32	44.80	0.90	0.15	20,100	0.85	1.00	6,700	92.50	40,200	11.75	15.75	154,100	-	16.30	-	-	-	33,500	
	737,000	180,900	61	46.45	0.70	0.05	6,700	0.65	0.70	6,700	95.00	154,100	9.30	16.60	40,200	-2.75	16.35	62.95	2	-	80,400	
	6,700	-	-	-	0.60	-	6,700	0.40	0.75	6,700	97.50	20,100	16.50	20.75	20,100	-	16.00	-	-	-	6,700	
	1,286,400	154,100	90	51.25	0.50	-	13,400	0.45	0.50	13,400	100.00	67,000	19.75	23.05	26,800	-	22.00	-	-	-	26,800	
	-	-	-	-	-	-	53,600	0.10	0.55	6,700	102.50	20,100	21.45	27.75	154,100	-	-	-	-	-	-	
	221,100	60,300	14	54.92	0.35	-0.05	26,800	0.30	0.35	13,400	105.00	67,000	23.70	29.20	154,100	-	-	-	-	-	-	
	-	-	-	-	-	-	33,500	0.10	0.95	20,100	107.50	20,100	25.45	34.25	154,100	-	-	-	-	-	-	
	448,900	13,400	7	58.19	0.25	-	20,100	0.20	0.30	26,800	110.00	20,100	30.00	34.00	20,100	-	-	-	-	-	-	
	-	-	-	-	-	-	13,400	0.05	0.45	13,400	112.50	154,100	29.95	39.35	154,100	-	-	-	-	-	-	
	53,600	-	-	-	0.15	-	26,800	0.15	0.25	13,400	115.00	154,100	32.10	41.95	154,100	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	0.35	13,400	117.50	154,100	34.25	44.85	154,100	-	-	-	-	-	-	
	26,800	-	1	64.93	0.15	-0.05	6,700	0.10	0.20	6,700	120.00	154,100	36.40	47.50	154,100	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	1.45	20,100	122.50	154,100	38.50	51.65	154,100	-	-	-	-	-	-	
	-	-	-	-	-	-	6,700	0.05	0.85	20,100	125.00	154,100	40.65	54.60	154,100	-	-	-	-	-	-	
Total	9,232,600		1,389																520		6,358,300	Total

Black Scholes Option Pricing Model

Factor affecting option premium	Sensitivity of option to	Corresponding Greek
Underlying asset price	Speed of the underlying asset price movement	Delta Gamma
Expiration date	Time decay	Theta
Volatility of underlying asset	Volatility	Vega
Risk-free rate of interest	Interest rates (10% taken by NSE)	Rho

I10

Underlying Price	79.5	*The current base price of the instrument, eg, the closing price of Microsft Stock*
Exercise Price	75	*The price at which the underlying instrument will be exchanged. Also called Strike Price*
Today's Date	25/09/2020	
Expiry Date	29/10/2020	*The Date which the contract expires*
Historical Volatility	41.81%	*The Historical Volatility of the asset's returns*
Risk Free Rate	10.00%	*The current risk free interest rate i.e. your return on cash held in the bank*
Dividend Yield	0.00%	*The Annualized Dividend Growth Rate of the Stock*
DTE (Years)	0.09	

	Call Option	Put Option	
Theoretical Price	7.0452	1.8498	
Delta	0.7236	-0.2764	*The amount that the theoretical price will change if the market moves up/down 1 point*
Gamma	0.0330	0.0330	*The amount that the Delta will change if the market moves up/down 1 point*
Theta	-0.0637	-0.0434	*The amount that the theoretical price will change when 1 day passes.*
Vega	0.0812	0.0812	*The amount that the theoretical price will change if the volatility of the asset moves up/down by 1 percen*
Rho	0.0470	-0.0222	*The amount that the theoretical price will change if interest rates move up/down by 1 percentage point*

Understanding Implied Volatility (IV)

- Volatility is a measurement of how much a company's stock price rises and falls over time. Stocks with high volatility see relatively large spikes and dips in their prices, and low-volatility stocks show more consistent gains and losses.
- Implied volatility is measured as a percentage and is forecast annually. It gives the statistical probability of what a stock's price might be in the future, as measured over a normal distribution graph or bell graph.
- Implied volatility shows how far the stock price could change over one "standard deviation," which usually encompasses **68 percent of outcomes**. For example, a Rs 10 stock with a 20 percent implied volatility has a 68 percent chance to be priced between Rs 8 and Rs 12 one year from now.
- **Divide the number of days until expiry by 365**, and then **find the square root of that number**. Then, **multiply the square root with the implied volatility percentage and the current stock price**. The result is the change in price.
- For example, a Rs 100 stock with a 30 percent implied volatility that expires in 30 days would have a 68 percent chance of rising or falling by approximately Rs 8.60

Why is this important?

Options are insurance contracts, and when the future of an asset becomes more uncertain, options will become more expensive as market participants become more uncertain about that stock's performance in the future. This is sometimes referred to as an "**IV expansion**." On the opposite side of IV expansion is "**IV contraction**."

Advantages of option selling

- 75-80% of options expire worthless
- Time decay favours the option seller
- Option sellers do not have to be precisely right in stock direction. There is margin for error.
- Volatility favours the option seller
- Can be used to buy your preferred stock at lower price
- Earn rental from your stocks

Fate of option buyers

Strategy #1 : Cash secured put selling

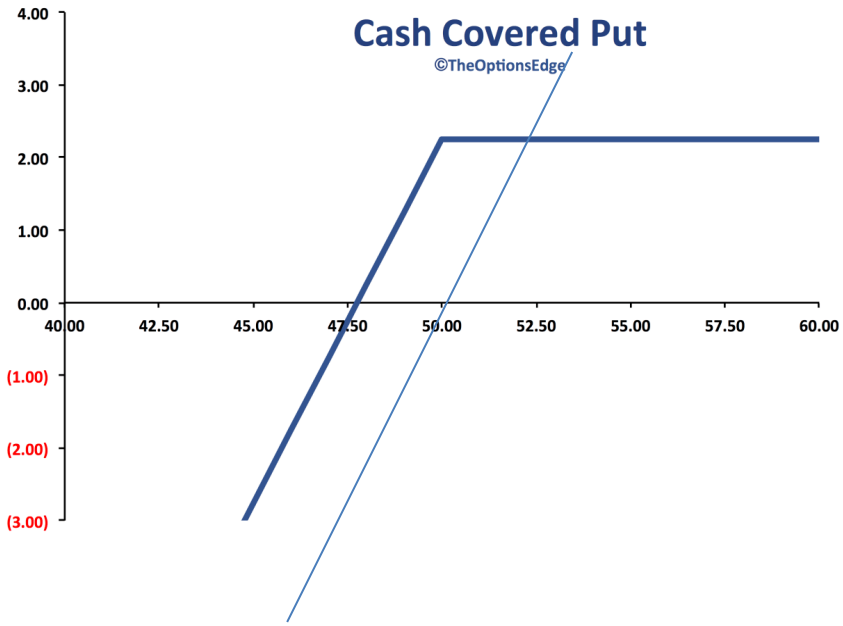
The cash-secured put involves writing an at-the-money or out-of-the-money put option and simultaneously setting aside enough cash to buy the stock.

The goal is to be assigned and acquire the stock below today's market price. Whether or not the put is assigned, all outcomes are presumably acceptable. The premium income will help the net results in any event.

The investor is bullish on the underlying stock and hopes for a temporary downturn in its price. If the stock drops below the strike, the put may be assigned. That would allow the put writer to buy the stock at the strike price. The effective purchase would be even lower: strike price less the premium received.

If the stock does not drop below the strike, the put seller gets to keep the premium earned.

Sell One OTM PE (Lot size 100) +100
Put Aside equiv money (OTM strike *100) -100 shares
CMP 55; OTM PE Sold 50; Premium 2.50



Name of Stock : NMDC Ltd
Lot Size : 6700
CMP : Rs 79.50
PE Sold – Rs 75
Premium collected = 6700 * 1.85 = Rs 12395
Cash required to be put in Liquid fund – 6700 * 75 = Rs 502500
Monthly Return on Liquid fund @ 4% p.a for Rs 502500 = Rs 1675
Total earnings = Rs 12395 + Rs 1675 = Rs 14070
(Note : Margin for put selling can be given by pledging existing shares in DP, so no cash outflow involved)

	Scenario 1 – Price closes at or above 75 on expiry	Scenario 2 – Price closes below Rs 75 on expiry
No option strategy deployed	Rs 1675 Liquid fund income (4% p.a.)	Outflow of Rs 502500 the moment price hit 75 (minus liquid fund return for the number of days invested)
75 PE Sold	Rs 14070 (33.6% p.a.)	Outflow – Rs 502500 Inflow – Rs 14070 Net outflow Rs 488430 ie Rs 72.90 per share

Summary

- Break even point = Long stock price – total premium collected on sale of PE
- Reduced breakeven point thereby increasing probability of profit.
- Limited profit potential – Premium recd
- Though theoretically limited profit, but very high chance of success if OTM strike chosen wisely
- Volatilty (Vega) – Ideally we should sell when IV s are high to benefit from fall in premium when volatility compresses (IVP* should be higher)

  * IVP -the percentage of days in the past that a stock's IV was lower than its current IV
- Time decay (Theta) – Passage of time will help this position. The closer we get to expiry, the faster a profit will materialise.
- Worst case scenario – Stock falls past our OTM put strike at expiration & we buy our stock from the option buyer at OTM strike price, which is infact what we want
- Should be undertaken in stocks we intend to purchase and at the price we intend to purchase

Strategy #2 : Covered call option writing

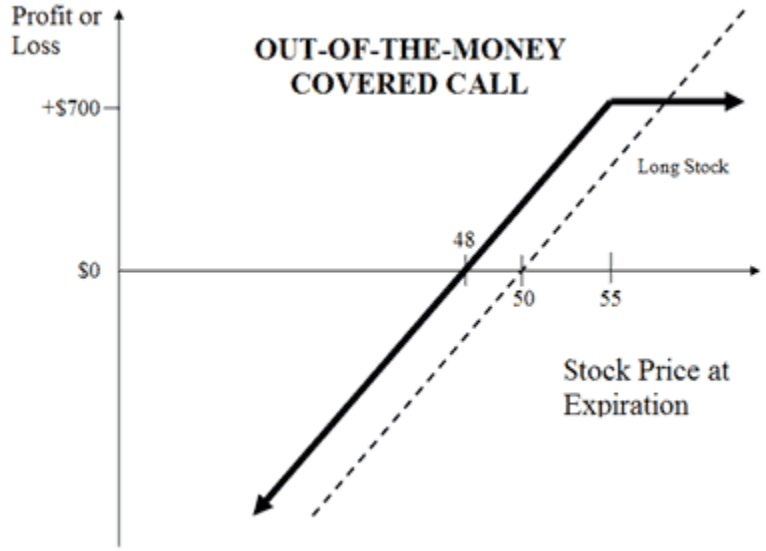
The covered call writing strategy involves writing an at-the-money or out-of-the-money call option with equivalent quantity of shares being held.

The goal is to sell the stock above today's market price. Whether or not the call is assigned, all outcomes are presumably acceptable. The premium income will help the net results in any event.

It offers a small downside 'cushion' in the event the stock slides downward and can boost returns on the upside. As long as the call is not assigned, it is akin to earning rental yield from your stocks lying idle in DP

Because covered call writers can select their own exit price (i.e., strike plus premium received), assignment can be seen as success; after all, the target price was realized.

Buy (or already hold) +100 shares
Sell 1 OTM CE (Lot size 100)-100 shares
CMP 50 OTM CE 55 Premium 2



Name of Stock : NMDC Ltd
Lot Size : 6700
CMP : Rs 79.50 Purchased 6700 shares in cash Rs 532650
CE Sold – Rs 90
Premium collected = 6700 * 1 = Rs 6700

Total earnings = Rs 6700
(Note : Margin for call selling can be given by pledging existing shares in DP, so no cash outflow involved)

	Scenario 1 – Price closes above 90 on expiry	Scenario 2 – Price closes at or below Rs 90 on expiry
No option strategy deployed	Inflow 6700*90= Rs 603000	NIL
90 CE Sold	Inflow – Rs 6700 premium Inflow – Rs 603000 sale	Inflow – Rs 6700 Rental yield of 15.09% p.a. On investment

Summary

- Break even point = Long stock price – total premium collected on sale of CE
- Reduced breakeven point thereby increasing probability of profit. Premium collected is like rental earned for holding stocks
- Limited profit potential – Premium recd + Diff between OTM strike and cost price
- Though theoretically limited profit, but very high chance of success if OTM strike chosen wisely
- Volatilty (Vega) – Ideally we should sell when IV s are high to benefit from fall in premium when volatility compresses (IVP* should be higher)

  * IVP -the percentage of days in the past that a stock's IV was lower than its current IV

- Time decay (Theta) – Passage of time will help this position. The closer we get to expiry, the faster a profit will materialise.
- Worst case scenario – Stock moves past our OTM call strike at expiration & we forfeit our stock to the option buyer at OTM strike price.

How to identify the right strike price

- **For Covered Call Writing**

1. Study Open Interest position for the stock to have an idea of call and put writing concentration. Write calls min. one strike away from highest OI call concentration
2. Use technical indicators to ascertain near term resistance and choose your strike price slightly above resistance
3. Chose a strike at which you don't mind selling the stock
4. Use Ally invest probability indicators based on SD to ascertain price range for the month

   PS. 1 SD = 68% probability

   2 SD = 95% probability

   3 SD = 99% probability

5. Use fibonacci retracements

How to identify the right strike price

- **For covered put writing**

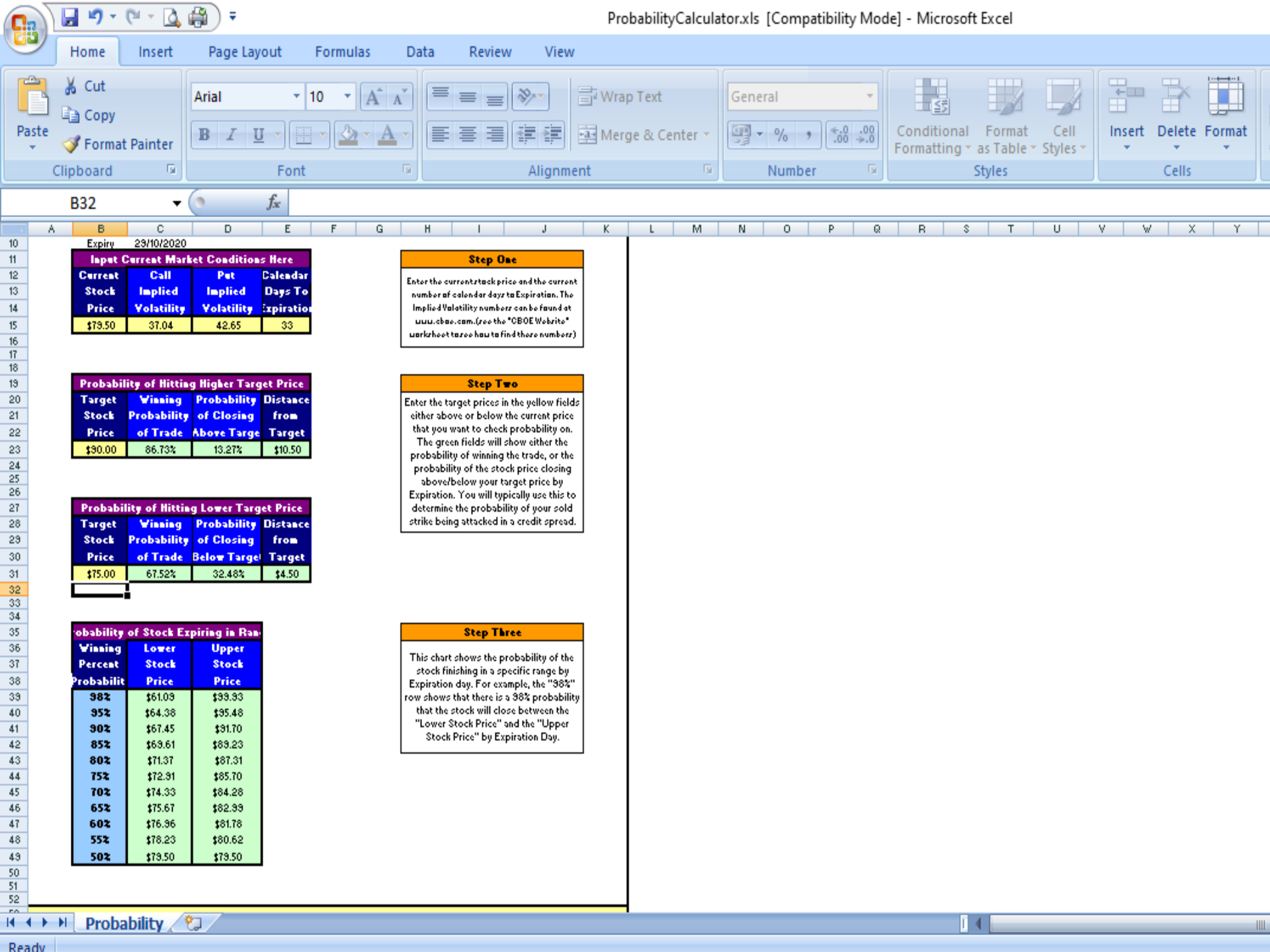
1. Study Open Interest position for the stock to have an idea of call and put writing concentration. Write puts min. one strike away from highest OI put concentration
2. Use technical indicators to ascertain near term support and choose your strike price slightly below support
3. Chose a strike at which you don't mind owning the stock
3. Use probability indicators based on IV to ascertain price range for the month

   PS. 1 SD = 68% probability

   2 SD = 95% probability

   3 SD = 99% probability

4. Use fibonacci retracements


ProbabilityCalculator.xls [Compatibility Mode] - Microsoft Excel
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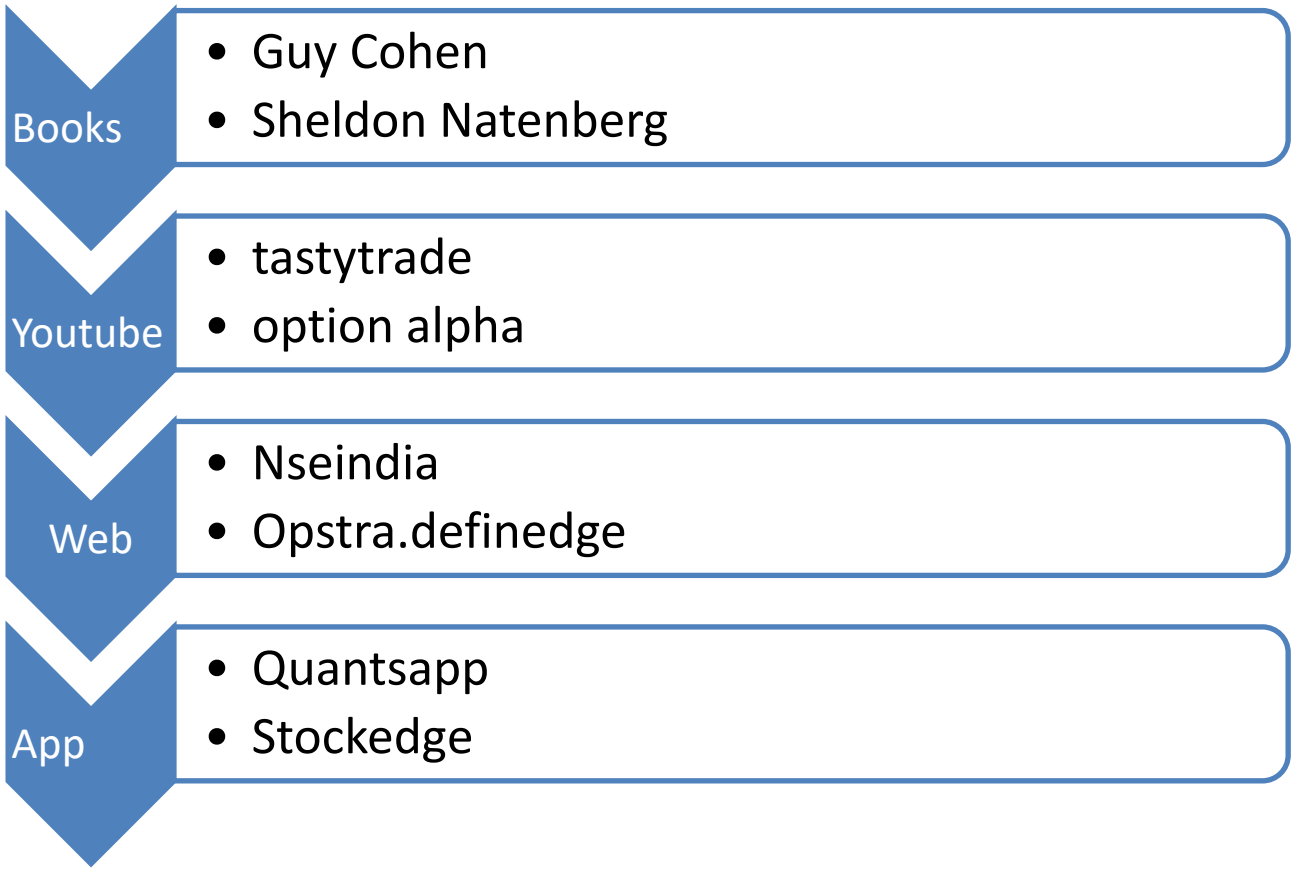
Clipboard
Arial
10
Font
Wrap Text
Merge & Center
Alignment
General
Number
Conditional Formatting
Format as Table
Cell Styles
Styles
Insert
Delete
Format
Cells
B32
Expiry 23/10/2020
Input Current Market Conditions Here
Current Stock Price
Call Implied Volatility
Put Implied Volatility
Calendar Days To Expiration
$79.50
37.04
42.65
33
Step One
Enter the current stock price and the current number of calendar days to Expiration. The Implied Volatility numbers can be found at www.cboe.com. (see the "CBOE Website" worksheet to see how to find these numbers)
Probability of Hitting Higher Target Price
Target Stock Price
Winning Probability of Trade
Probability of Closing Above Target
Distance from Target
$90.00
86.73%
13.27%
$10.50
Step Two
Enter the target prices in the yellow fields either above or below the current price that you want to check probability on. The green fields will show either the probability of winning the trade, or the probability of the stock price closing above/below your target price by Expiration. You will typically use this to determine the probability of your sold strike being attacked in a credit spread.
Probability of Hitting Lower Target Price
Target Stock Price
Winning Probability of Trade
Probability of Closing Below Target
Distance from Target
$75.00
67.52%
32.48%
$4.50
Probability of Stock Expiring in Range
Winning Percent Probability
Lower Stock Price
Upper Stock Price
98% $61.09 $99.93
95% $64.38 $95.48
90% $67.45 $91.70
85% $69.61 $89.23
80% $71.37 $87.31
75% $72.91 $85.70
70% $74.33 $84.28
65% $75.67 $82.99
60% $76.96 $81.78
55% $78.23 $80.62
50% $79.50 $79.50
Step Three
This chart shows the probability of the stock finishing in a specific range by Expiration day. For example, the "98%" row shows that there is a 98% probability that the stock will close between the "Lower Stock Price" and the "Upper Stock Price" by Expiration Day.
Probability
Ready

Some caveats before selling options

Doing Naked Options are weapons of mass destruction....Don't attempt doing so...you will go bankrupt

- Never do naked call writing, whatever be the lure of premium. My experience says One black swan move take away your many year's earnings or if your position is too large, you run the risk of bankruptcy. *Never get squished collecting nickles in front of an oncoming steamroller.*
- If at expiry, your Call written is ITM , you may roll it over to next month or square the call and sell equivalent shares in cash. Don't leave any leg open.
- If there are good no of days to expiry and your call written is OTM and premium has come down to 20% of what you had originally sold, square off the trade. Think of it as REINSURANCE. The premium now is not worth carrying the risk. Moreover it also releases your margin and you can take a new trade with better payoff.
- Never do put writing unless you have sufficient cash. Naked positions can threaten your solvency, unless backed by idle cash.
- If at expiry, your put written is ITM, you may roll it over to next month or square the put and buy equivalent shares in cash. Don't leave any leg open.
- If there are good no of days to expiry and your PE written is OTM and premium has come down to 20% of what you had originally sold, square off the trade. Think of it as REINSURANCE. The premium now is not worth carrying the risk. Moreover it also releases your margin and you can take a new trade with better payoff.

Some free resources to learn



Questions are guaranteed in life; Answers aren't.

- QUESTION & ANSWER SESSION