



Steve Meizinger

Trading Calendar spreads using ISE FX Options



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For the sake of simplicity, the examples that follow do not take into consideration commissions and other transaction fees, tax considerations, or margin requirements, which are factors that may significantly affect the economic consequences of a given strategy. An investor should review transaction costs, margin requirements and tax considerations with a broker and tax advisor before entering into any options strategy.

Options involve risk and are not suitable for everyone. Prior to buying or selling an option, a person must receive a copy of **CHARACTERISTICS AND RISKS OF STANDARDIZED OPTIONS**. Copies have been provided for you today and may be obtained from your broker, one of the exchanges or The Options Clearing Corporation. A prospectus, which discusses the role of The Options Clearing Corporation, is also available, without charge, upon request at 1-888-OPTIONS or www.888options.com.

Any strategies discussed, including examples using actual securities price data, are strictly for illustrative and educational purposes and are not to be construed as an endorsement, recommendation or solicitation to buy or sell securities.



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Risk and Reward

- **Investment decisions are normally based on risk and reward considerations**
- **Investors must determine the amount of risk they can tolerate based on their financial goals, normally riskier investments will yield higher rates of return over the long-term**
- **The balance of risk and reward cannot be overstated. Occasionally markets may move in unexpected directions. Investors may want to consider diversification and hedging techniques to reduce periods of excess poor portfolio performance**

Risk

- Investors should consider not only taking too much risk, but also taking too little risk
- If investors take too much risk they may suffer during poor market performance
- If investors take too little risk they may suffer from inflation risk along with portfolio underperformance relative to the financial markets

Simplest approach without options

- Long spot forex
 - **An investor's results will be 100% based on the performance of the spot pair rate without any related options transaction**

Four positions for options

	Calls	Puts
Long (buyer, also called a holder)	Right to buy	Right to sell
Short (seller, also called a writer)	Obligation to sell (but not the guarantee)	Obligation to buy (but not the guarantee)

ISE FX Options

- ISE currently offers options on six currency pairs

FX Trading Pair	ISE Symbol	Price example
– USD/JPY *1	YUK	106.12
– USD/EUR *100	EUI	63.80
– USD/CAD *100	CDD	101.98
– USD/GBP *100	BPX	51.02
– USD/AUX *100	AUX	104.14
– USD/CHF *100	SFC	103.20



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ISE FX options

- If you are bullish on the USD/JPY you could simply buy YUK calls to implement your bullish USD dollar forecast relative to the Japanese yen
- If you are bearish on the USD/JPY you could simply buy YUK puts to implement your bearish USD dollar forecast relative to the Japanese yen
- ISE FX options use the USD dollar as the base currency in all of the current currency pairs including YUK



Features Of ISE FX Options

- Options on exchange rates
- U.S. dollar based
- .50 strike prices
- Premium quoted in U.S. dollars
- European Exercise
- Cash-settled
- Noon Settlement/Option Friday
- Noon Buying Rate FRB of NY
- Available in conventional equity brokerage accounts
- Continuous Two-Sided Quotes
- Trading Hours 9:30 – 4:15



Calendar Spreads Definition

- An option strategy involving the simultaneous purchase and sale of options of the same class and strike price but different expiration dates
- Different option expiries create differing thetas, theta is the amount an option decays per day
- The long calendar strategy involves trying to take advantage of the larger theta (amount of daily decay) shorter term options exhibit relative to longer term options

What are Calendar Spreads?

- A long calendar spread is the purchase of a longer dated option (call or put) and the sale of a shorter dated option (call or put) using the same underlying security
- Debit Spread - More time normally costs more money
- Different option expiries create differing thetas, theta is the amount an option decays per day
- Calendar spreads can also be implemented from the short side of the market, short calendar spreads are normally executed for credits

Option Trades are based on forecasts

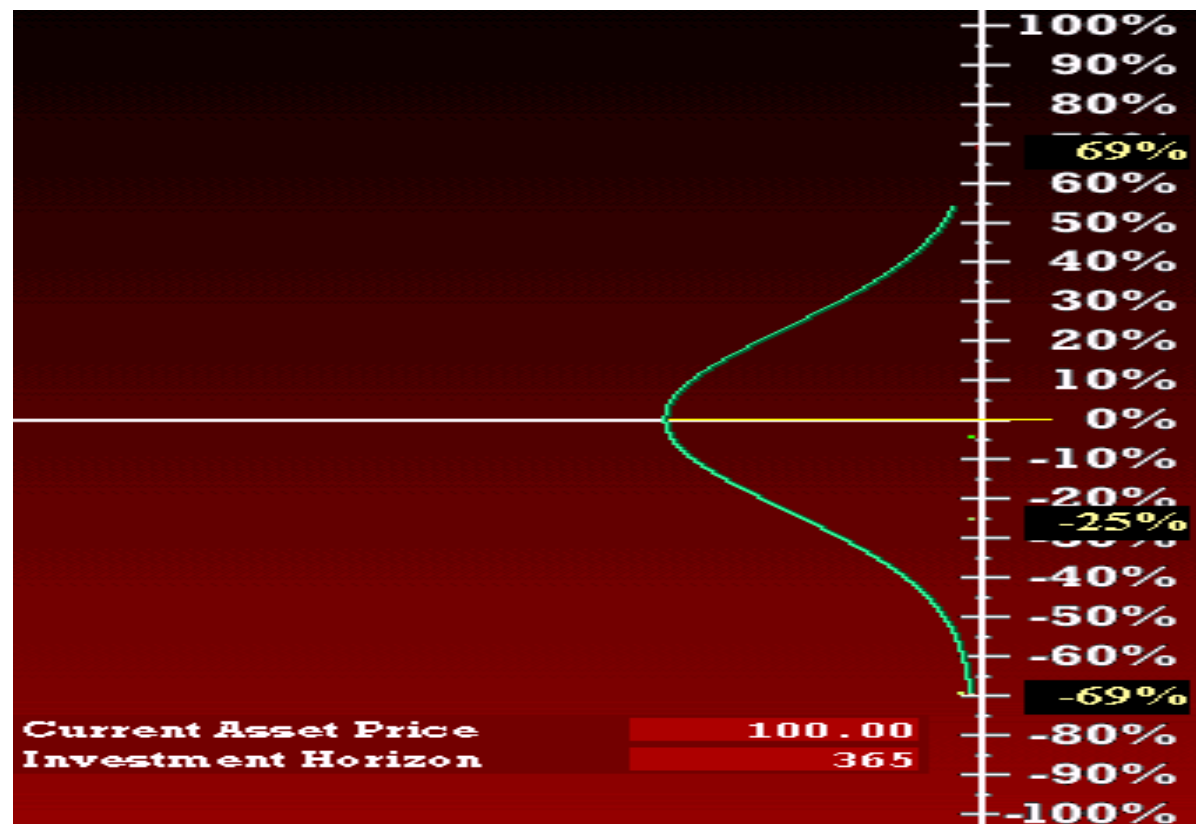
- Price - How far will the underlying move?
- Time - How long will it take for the underlying price to move?
- Volatility - What will the volatility of the option be when you close it out?

Option Pricing

- Options have value for two reasons: the cost of money and the variability of the underlying
- Most standard models assume that the volatility is uniform throughout the term (this may or may not be true)

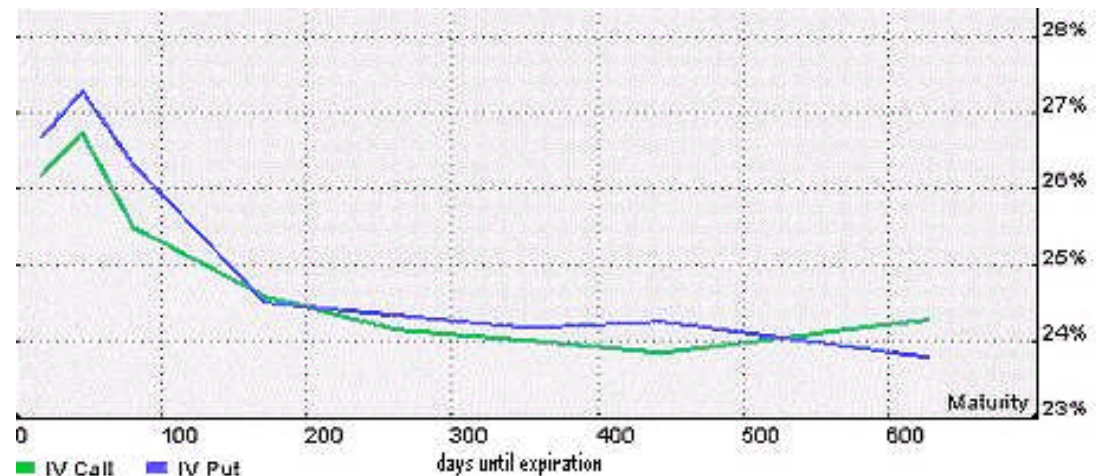
Probability of change

- The theory says the asset is just as likely to move up as down, the volatility forecasts tells us by how much

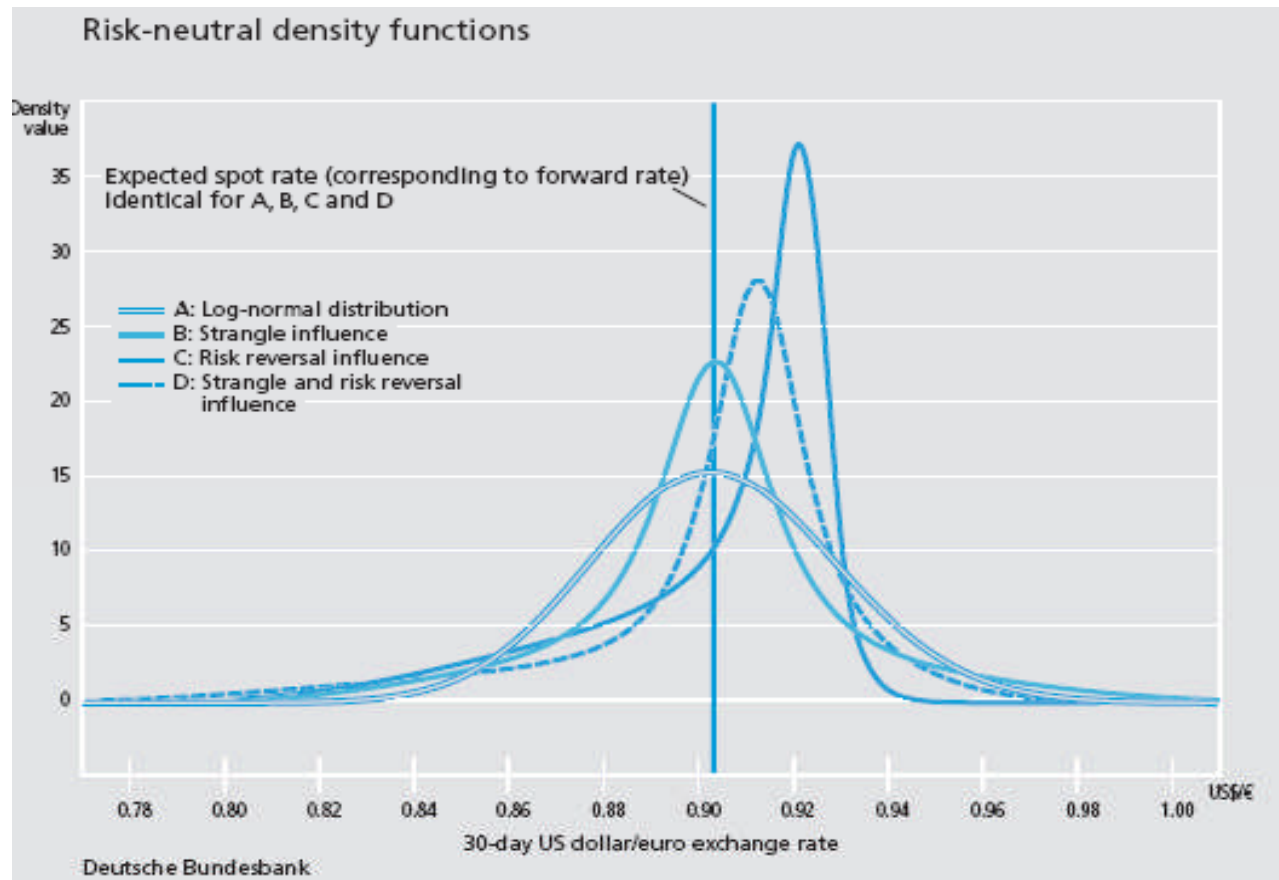


Options smile and options skew?

- The most important determinant in options pricing is volatility
- Option prices rarely have the same implied volatilities for differing strikes within the same month or differing months
- Often this is due to “fat tails skew,” the likelihood an extreme market move



Risk-neutrality



Risk reversal

- In foreign-exchange options, risk reversal is the difference in volatility (delta) between similar call and put options, which conveys market information used to make trading decisions.
- Risk reversals are a representation of the market's expectations on the exchange-rate direction. Filtered properly, risk reversals can help investors identify the market's future expectations
- Risk reversal refers to the manner in which similar out-of-the-money call and put options. The greater the demand for an options contract, the greater its volatility and its price. A positive risk reversal means the volatility of calls is greater than the volatility of similar puts, which implies that more market participants are betting on a rise in the currency than on a drop, and vice versa if the risk reversal is negative. Thus, risk reversals can be used to gauge positions in the FX market and can convey information to make trading decisions

Examples of risk reversals

- Risk reversals in themselves carry tremendous risk
- Most market veterans will normally hedge these “risk-reversals” with other options to “cap” the risk potential
- The iron condor strategy or selling call or put vertical spreads are a few strategies that could be used to earn premiums while capping the risk exposure

FX options tend to have lower volatilities (NY Federal Reserve Bank)

Implied Volatility Rates

The implied volatility rates are averages of mid-level rates for bid and ask "at-money-quotations" on selected currencies at 11:00 a.m. on the last business day of the month.

**Implied Volatility Rates for Foreign
Currency Options***
June 30, 2008

 [Printer version](#)

	1WK	1MO	2MO	3MO	6MO	1YR	2YR	3YR
EUR	9.3	9.7	9.9	10.1	10.3	10.5	10.4	10.3
JPY	12.3	12.1	11.9	11.7	11.3	10.9	10.5	10.2
CHF	12.0	12.3	12.2	12.0	11.8	11.5	11.0	10.6
GBP	7.6	8.0	8.2	8.4	8.8	9.0	9.0	9.0
CAD	8.5	9.2	9.3	9.4	9.5	9.6	9.6	9.6
AUD	9.3	10.0	10.3	10.5	10.8	11.1	10.9	10.7
GBPEUR	7.8	8.5	8.6	8.6	8.8	8.9	8.9	8.9
EURJPY	10.5	10.8	10.8	10.8	10.8	10.8	9.9	10.7

** This release provides survey ranges of implied volatility mid rates for the money options as of 11:00 a.m. The quotes are for contracts of at least \$10 million with a prime counterparty.*

This information is based on data collected by the Federal Reserve Bank of New York from a sample of market participants and is intended only for informational purposes.

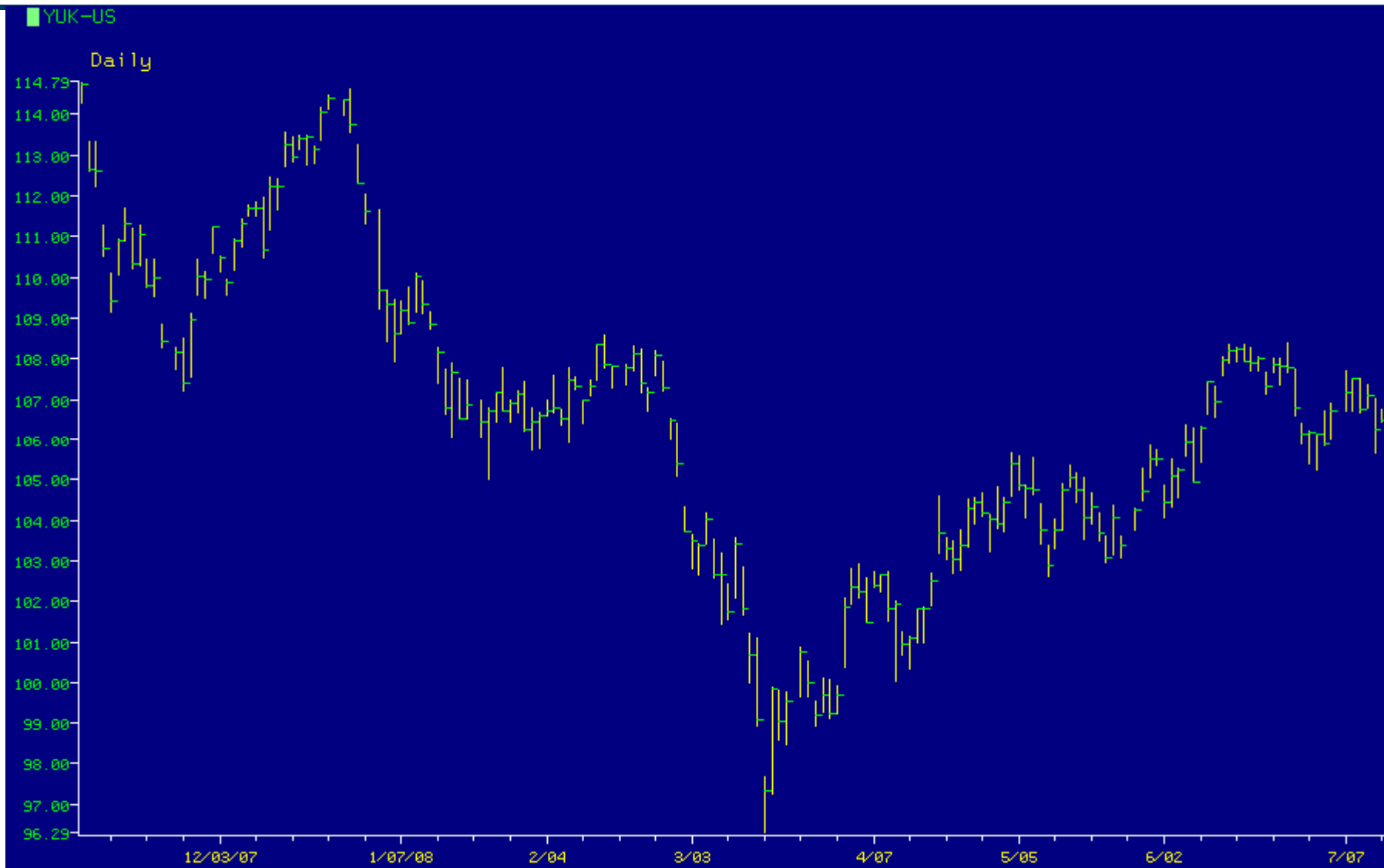
The data were obtained from sources believed to be reliable but this Bank does not guarantee their accuracy, completeness or correctness.



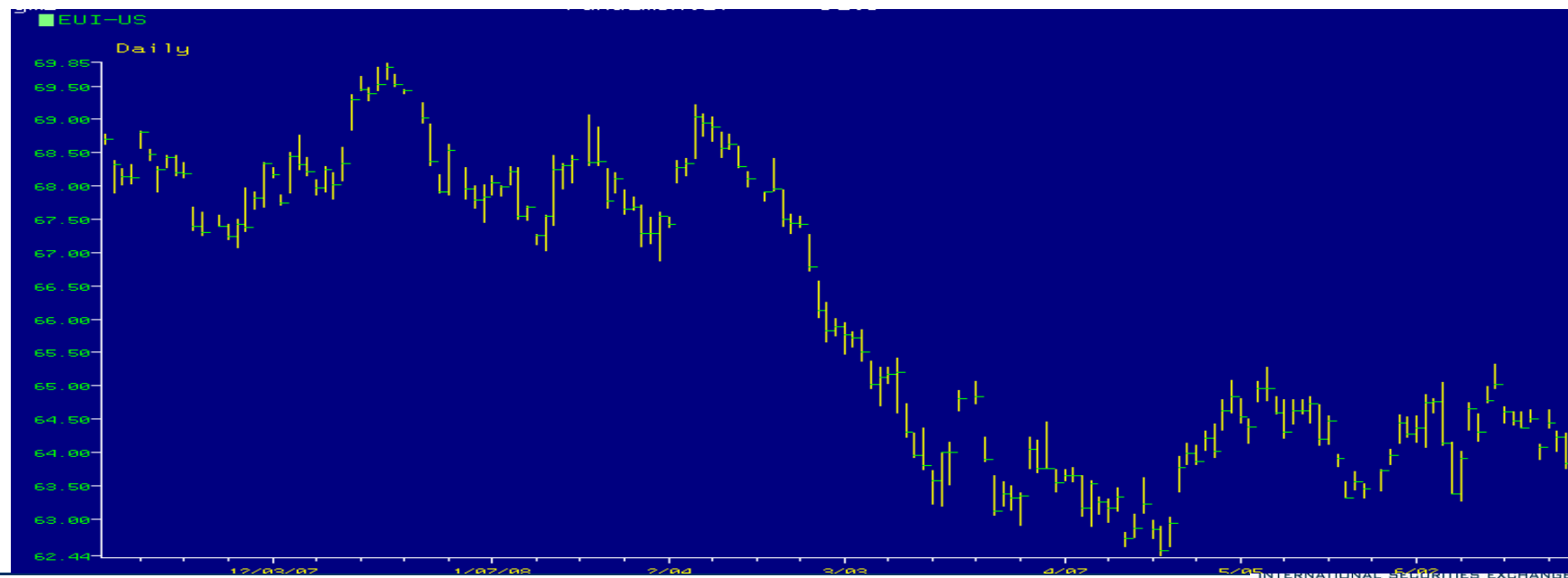
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USD/JPY

ISE symbol YUK

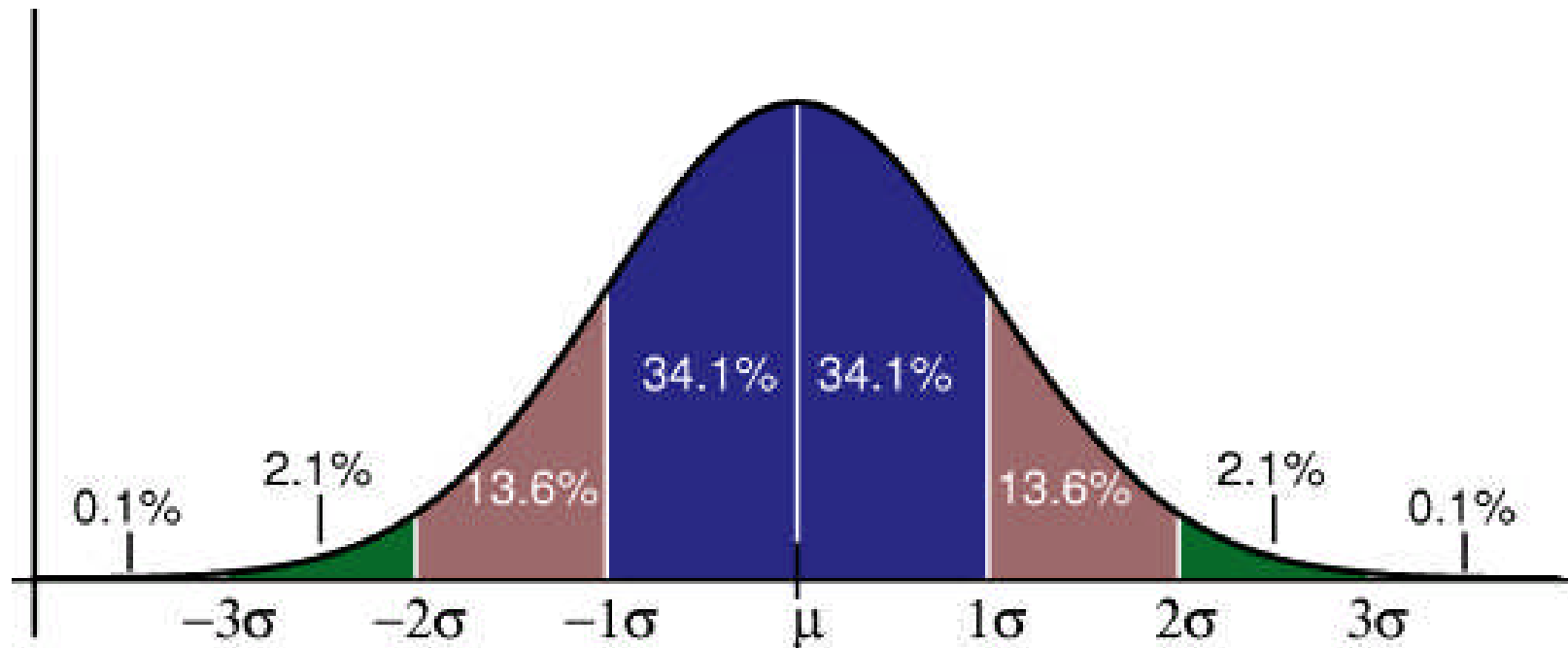


USD/CAD CDD USD/EUR EUI



Options are about probabilities

Your selected options strategies should include your forecast not only direction in the pair but timing and magnitude



YUK prices and volatilities

YUK: DAILY 1 YEAR PRICE CHART ([3 months](#) [6 months](#) [1 year](#))



[IV Index Call](#) [IV Index Put](#) [IV Index Call & Put](#) [IV Index Mean](#)



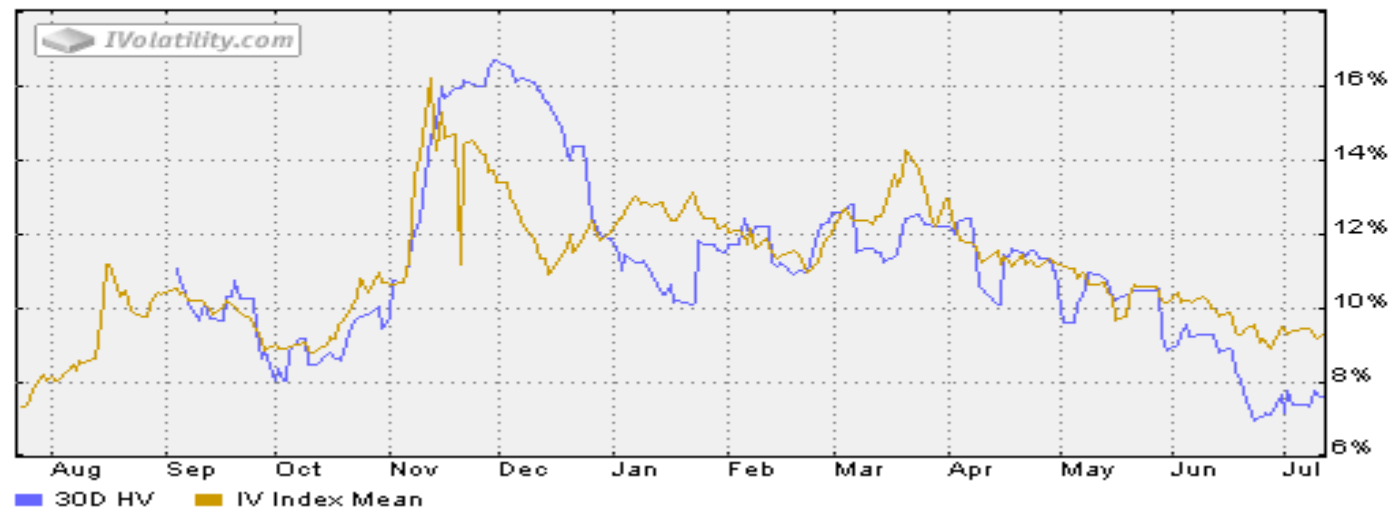
CDD prices and volatilities

CDD: DAILY 1 YEAR PRICE CHART ([3 months](#) [6 months](#) 1 year)



CDD: DAILY 1 YEAR VOLATILITY CHART ([3 months](#) [6 months](#) 1 year)

[IV Index Call](#) [IV Index Put](#) [IV Index Call & Put](#) IV Index Mean

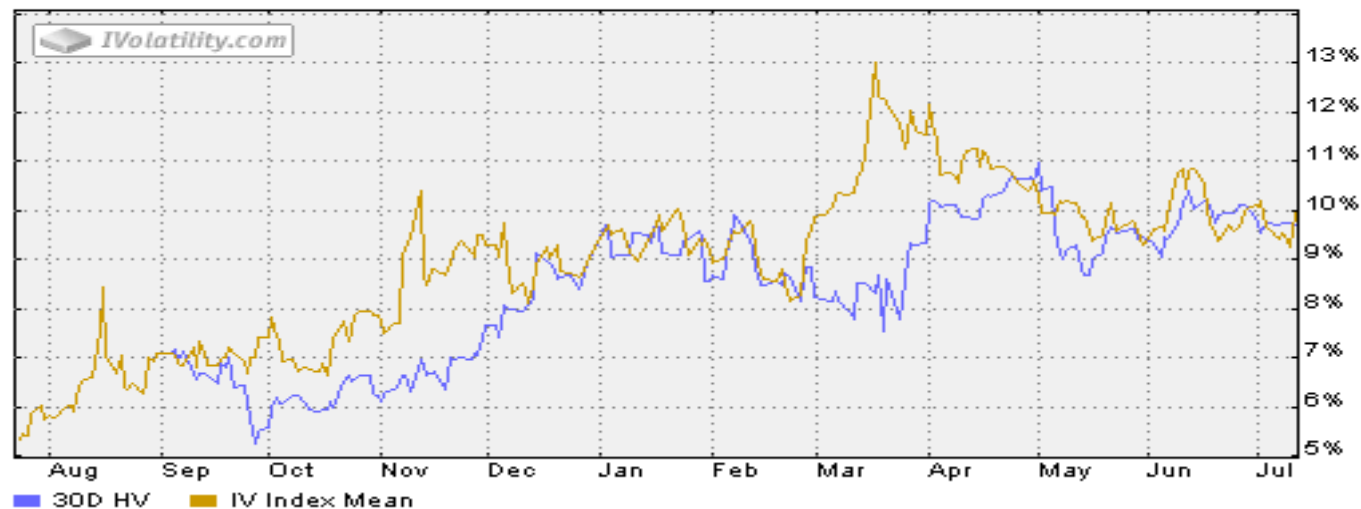


EUI prices and volatilities

EUI: DAILY 1 YEAR PRICE CHART ([3 months](#) [6 months](#) [1 year](#))



EUI: DAILY 1 YEAR VOLATILITY CHART ([3 months](#) [6 months](#) [1 year](#))
[IV Index Call](#) [IV Index Put](#) [IV Index Call & Put](#) [IV Index Mean](#)



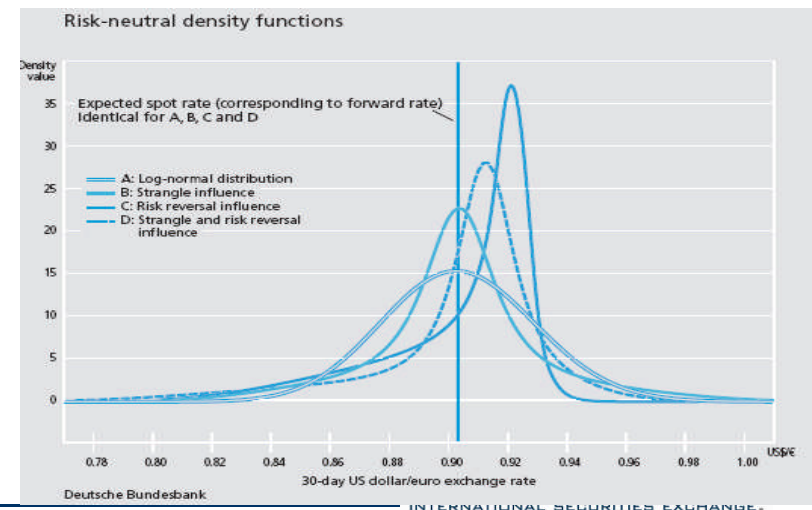
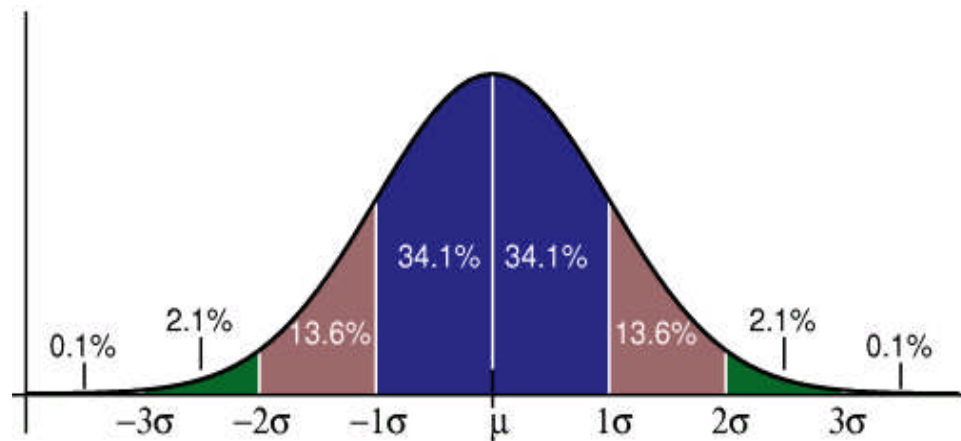
Vertical and Horizontal (time) Skew

- Vertical skew refers to the different volatilities for the various strike prices (smile)
- Horizontal skew refers to the different volatilities for the various months
- Horizontal skew normally occurs when the marketplace expects an extraordinary event to occur in a particular month. FX options do not exhibit this of behavior as often as equity options but occasionally you may see differing volatilities for different months in one or all of the ISE FX pair values



How can we take advantage of horizontal skew?

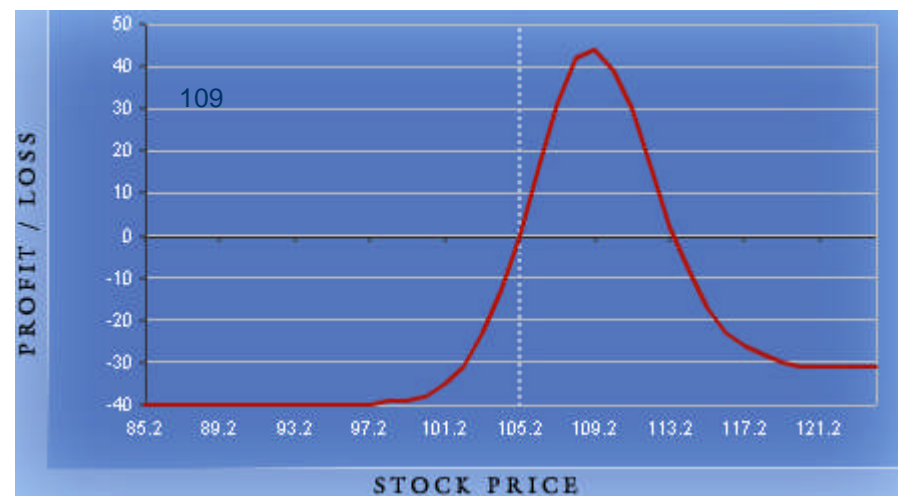
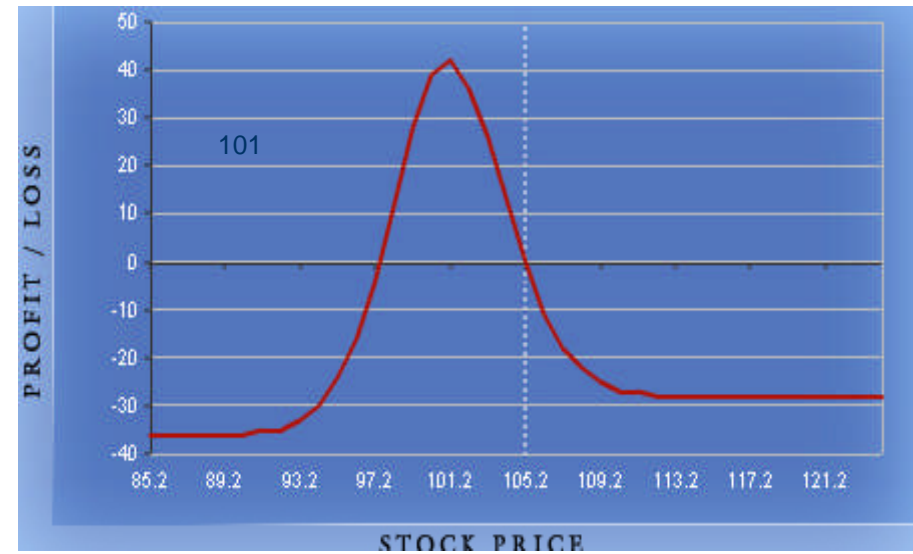
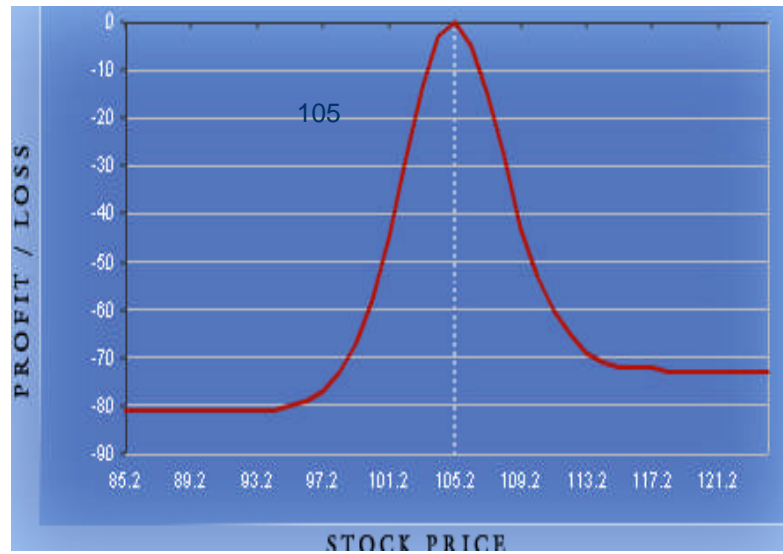
- If you have a neutral price forecast and the market “prices in” a more dramatic move you can purchase a calendar spread
- Buy longer term “cheaper” option as measured by implied volatility and sell “more expensive” shorter term option
- Or, just hope to capitalize on the higher theta on your short option (assuming you are long the calendar)
- Goal is for spread to widen, hopefully the underlying stays at the strike price and does not move far away from strike price
- Risk is that stock moves far away from strike price and spread will narrow



Low risk strategy, not risk-free

- If the underlying moves far away from strike price spread will narrow and a loss on the purchase of the spread will occur
- Can be done with calls or puts although puts have early exercise possibility if stock drops dramatically
- Calendar spreads can also be implemented with a directional bias-
 - OTM call spreads- bullish bias
 - ITM call spreads- bearish bias
 - OTM put spreads- bearish bias
 - ITM put spreads- bullish bias

Calendar payoff diagrams at different strike prices



Price Variability Key to Pricing of a Calendar

- This is lower risk alternative to selling a straddle
- As with all of options trading, risk/reward are linked
- If the stock remains relatively unchanged this strategy will take advantage of horizontal (time skew) as options will revert back to a more normal state after the announcement

YUK call prices

YUK 105.60 2 week call options	June	July	Aug	Sept
101	4.60	4.94	5.20	5.45
105	1.30	1.94	2.32	2.68
109	0.07	0.37	0.61	0.88

YUK put prices

YUK 105.60 2 week put options	June	July	Aug	Sept
101	0.24	0.43	0.82	1.16
105	0.85	1.50	1.90	2.37
109	3.53	3.95	4.20	4.57

Call and put implied volatilities June 6

YUK 105.6	June call	June put	July call	July put	Aug call	Aug put	Sept call	Sept put
101	13.9	18.7	14.4	13.1	13.9	13.1	13.4	12.4
105	12.1	12.9	12.0	11.9	11.8	11.1	11.6	10.8
109	10.5	10.6	10.5	9.9	10.3	9.5	10.2	9.3

Calendar spreads for ISE FX options

- Long calendar spreads are normally debit positions
- The desired underlying position for the long calendar at expiry is just shy of the strike price selected
- Long calendars are short “gamma” and long “vega,” investors long calendar spreads would not want a big move, but investors long calendars would prefer for implied volatility to increase
- Long calendar positions can only lose the debit paid

FX options term structure of volatilities

YUK 105.60 2 week call options vols	June	July	Aug	Sept
101	13.9	14.4	13.9	13.4
105	12.1	12.0	11.8	11.6
109	10.5	10.5	10.3	10.2

Many choices for calendar spreads

	101	105	109
June/July	0.34	0.64	0.30
June/August	0.60	0.74	0.54
June/Sept	0.85	1.38	0.81
July/August	0.26	0.38	0.24
July/Sept	0.51	0.74	0.51

Two weeks goes by assuming YUK unchanged

105.60	101	101 14 days later	105	105 14 days later	109	109 14 days later
Jun/Jly	0.34	0.15	0.64	0.98	0.30	0.21
Jun/Aug	0.60	0.44	0.74	1.44	0.54	0.49
Jun/Spt	0.85	0.72	1.38	1.85	0.81	0.79
Jul/Aug	0.26	0.29	0.38	0.46	0.24	0.28
Jul/Sep	0.51	0.47	0.74	0.87	0.51	0.58

Calendars will vary in price as YUK dramatic changes (14 days later)

YUK value	101	105.6 origin	109	101	105.6 origin	109	101	105.6 origin	109
Strike	101	101	101	105	105	105	109	109	109
Jn/Jy	0.98	0.34	-0.11	0.19	0.64	0.19	0.01	0.30	0.99
Jn/Ag	1.50	0.60	-0.07	0.52	0.74	0.52	0.10	0.54	1.51
Jn/Spt	1.91	0.85	0.01	0.74	1.38	0.74	0.15	0.81	1.92
Jy/Ag	0.52	0.26	0.04	0.33	0.38	0.34	0.09	0.24	0.52
Jy/Spt	0.96	0.51	0.13	0.55	0.74	.56	0.14	0.51	0.96

Summary

- Calendar spreads are a low risk strategy for selling expensive options
- As in all options strategies a forecast is required, in this case a neutral forecast
- Looking for options skew will help identify calendar trading opportunities
- Risk/reward must be balanced, if the stock moves dramatically the calendar will probably lose money

Summary

- Options skew normally becomes apparent when the market expects something other than the normal assumptions of the option pricing model
- Calendar spreads allow investors to trade with limited risk
- Normally ATM calendars are purchased when you are not expecting movement in the underlying
- Normally OTM calendars are purchased when you are expecting movement in the underlying
- Risk/reward tradeoffs must always be considered before entering any options transaction

Options offer many strategies

- There are multiple strategies available for the investor looking to participate in the FX market
 - Calls and puts can be bought to implement a price forecast with limited losses and unlimited potential profits
 - Vertical spreads can be traded to limit your risk, but with reduced profit potential
 - Straddles and strangles can be purchased to forecast vast uncertainty in the marketplace
 - Calendar spreads allow investors to implement their views of the underlying movement in the market with more moderate trading results

Summary

- Investors should always learn as much as they can about options prior to entering any options transaction
- A full comprehension of the concept of risk and reward is extremely important as well as gaining a better understanding of volatility and the “Option Greeks”



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