Options 21

Education Pack

What does the free education pack contain?

The Options21 Free Education Pack contains this course manual and access to two recorded lectures. If you have sourced this document from the Options21 website, you will find the links to recorded lectures on the same page as the link to this manual. If you received this document from another source, you are most welcome to access the lectures on our website at:

http://www.options21.com.au/trading-resources/free-education-pack/

You will be required to give us some minimal information to access the recorded lectures.

Who is this information aimed at?

The education pack is designed to introduce the absolute beginner to exchange traded options markets. The pack describes exchange traded options and the implications of buying and selling them. In addition the manual provides important terminology which will expand the reader's understanding. The manual finishes with a worked example of a bought call option. This is not a complete education in options trading, but it is a start.

This document is not very long. We encourage you to print it and to read it on the subway, or study it over lunch.

Can I share it with my friends?

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What is an option?

An option is something whose value can grow or shrink along with the value of an underlying asset. The underlying assets could be futures, stocks, commodities or other derivative instruments. Options can be bought and sold. They can be traded to make a profit. The generic term used to describe options which are traded on an organized exchange is "**Exchange Traded Options" (ETOs**). Unlike trading in shares, trading in options allows the trader to strictly limit and control downside risk. Also, using options requires a much smaller capital outlay than required for trading in the underlying assets.

Definition of an option

An option is
a **contract** between two parties
conveying a **right**, but **not an obligation**,
to **buy or sell** an underlying security or stock
at a **specified price**
within a **specified time**
for an **agreed premium**.

Let's explore the definition of an option in more depth.

An option is a contract between two parties.

The parties to the contract are the buyer and the seller. The buyer is also known as the taker, and becomes the holder of the option. The seller may be a writer if the contract is being created anew, or the seller might be on-selling an option already held from a previous purchase. Once the contract has been formed, and within a short period of time, the "Options Clearing Corporation" (OCC), through a process called novation, becomes the counter party to both the buyer and the seller of the original contract. This means that the original counterparties are disconnected upon registration of the contract. The original parties to the contract, the buyer and the seller, are not reliant on each other to fulfill the obligations of the contract, as the obligation has now shifted to the clearing corporation, which acts as an intermediary. The OCC fulfills its obligations to the holder, and the OCC ensures the writer fulfils his or her obligations to the OCC. This adds to the market liquidity and is one of the reasons exchange traded options markets work.

Conveying a right, but not an obligation, to buy or sell the underlying stock.

When holding options you have the right to buy or sell the underlying assets, which might be shares. You are not obliged to exercise that right. You may just buy and sell the expanding or contracting value of the option premium. Throughout this course we will be mostly concerned with the latter, that is, trading

options and profiting from the expansion or contraction of the value of those options.
The options contract is asymmetric. The buyer or taker comes to have a right. The writer or seller agrees to take on an obligation. The holder's right is covered by the writer's obligation.

At a specified price.

The price specified is the strike price or exercise price. It is the fixed future price at which the holder may buy or sell the underlying stock.

- If you are a buyer of a call option, when the market gets to or above your strike price you can exercise and take delivery of shares. By exercising the option you buy at the strike price. The writer is obliged to sell to you at the strike price. If the market price is above the strike price, the option effectively allows you to buy those shares at a discount. Alternatively you could just sell the call option back to the market because it has value. It has value because it allows the next holder to buy shares at a discount.

- If you are a buyer of a put option, you can exercise your right to sell stock when the market gets to or below your strike price. The writer is obliged to buy those shares at the strike price. If the share price is below the strike price, the put option gives the holder a higher selling price than the market. Alternatively you could just sell the put option back to the market.

Within a specified time.

Options are a decaying security. The days remaining until expiration are normally clearly displayed on most quote screens. Expiration dates are usually on a set day in each month. When the contract expires, you no longer have any right under that contract. Up until the expiry day, you can exercise your right. Clearly you would only exercise your bought call, if the underlying share price is trading above the strike price. You wouldn't bother if the share price is below the strike price. Or you could exit the option for a profit, or limit your loss, by selling the option back to the market at any time up to expiry.

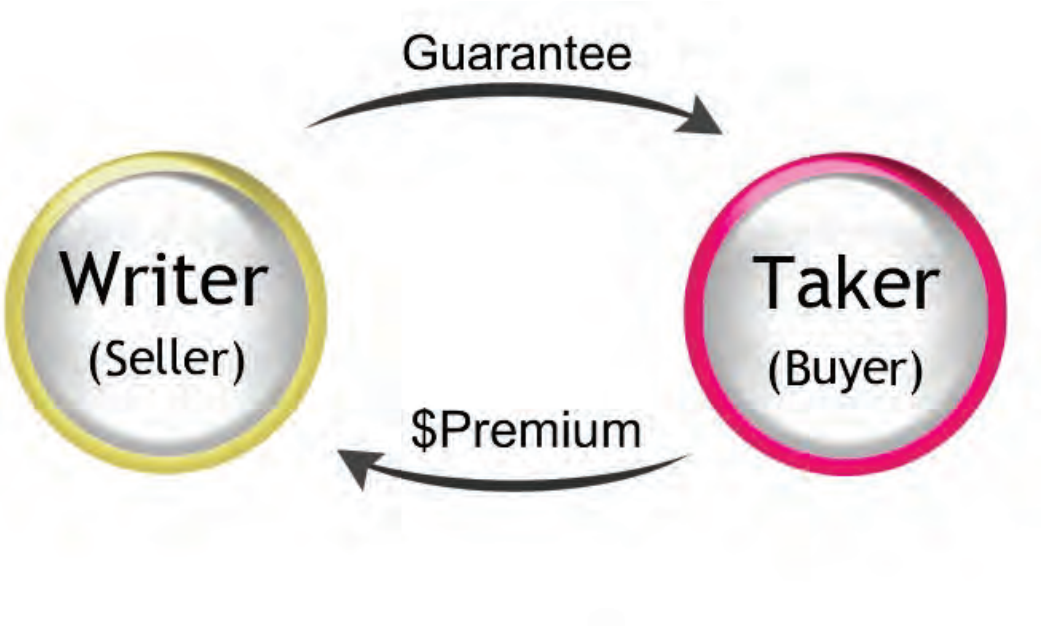
If you bought puts and the market is trading at or below the strike price chosen, you can exercise your right and sell your stock at the strike price. Once again you can exit the option for a profit or limited loss, at any time up to the date of expiry, by selling the option back to the market.

For an agreed premium.

The premium is the price of an option. The premium paid by the buyer to the seller is determined by the market. It may be calculated theoretically by an option pricing model but ultimately it is the forces of supply and demand that determine the cost of the option traded.

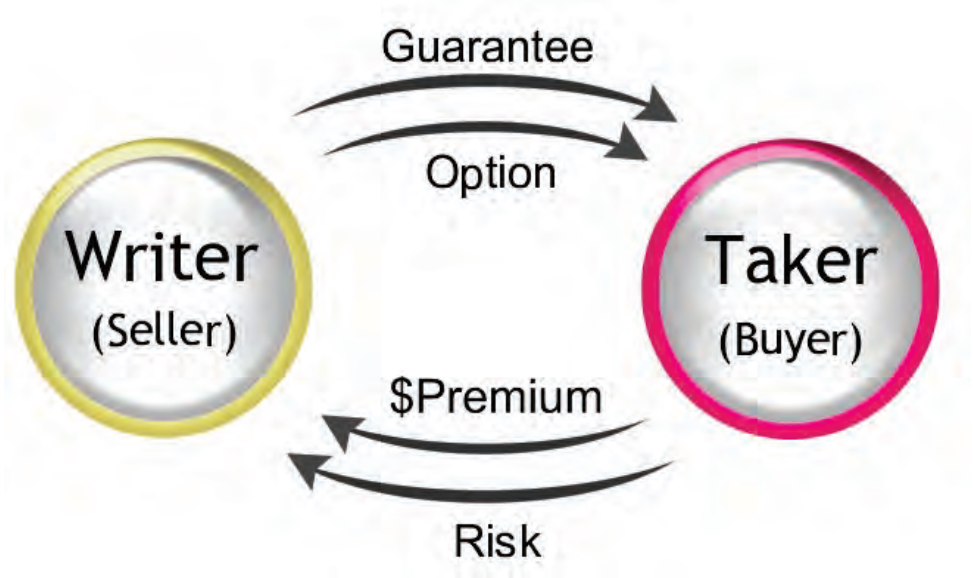
Insurance analogy

Options are more like insurance than shares. Much of the terminology and concepts are similar to that used when dealing in insurance. A taker of an option pays a premium to a writer to create an option contract. The option taker seeks protection against future risk. The writer seeks to earn premium income. The taker pays premium to offload risk. The premium compensates the writer for taking on risk. The taker and writer enter into a contract which obliges the writer to provide a guarantee to the taker which will protect the taker against future risk.



The writer keeps the premium regardless of any future event, just like an insurance company. However if the risk turns bad, the writer might be liable to make a very large pay-out, possibly much larger than the premium received.

In the case of options the guarantee provided by the writer relates to the future price of an underlying share. The future movement of the share price is unknown, so there is risk. The taker pays the writer to take on the risk that the share price will finish above or below the strike price at or before expiry. In the case of a call option, the writer guarantees to sell stock to the option holder at a fixed price. In the case of a put option the writer guarantees to buy the stock from the holder at a fixed price. In a sense the writer and the taker are betting against each other on the future price of the underlying share.



If the risk doesn't materialize, the writer is not obliged to do anything. The option expires worthless, just as does a house insurance policy if no event damaged the house. The writer keeps the premium.

What the writer gains, the taker loses. What the taker gains, the writer loses. We can speculate for profit by both buying or taking options, and by writing or selling options. We can also create more complex positions by combining both actions, by buying some options and writing different but related options.

From the view of the buyer / taker

The options contract comes into existence when the buyer and seller agree upon the price and the contract is registered with the Options Clearing Corporation. At that point a contract is formed and is called an open position.

Call options give the buyer or taker the right but not the obligation to ***buy*** the underlying stock at a set price on or before a set date in the future. As a buyer of a call option the investor has the view that the market will rise.

Put options give the buyer or taker the right but not the obligation to ***sell*** the underlying stock at a set price on or before a set date in the future. As a buyer of a put option the investor has the view that the market will fall.

As time moves forward, the contract has the potential to grow in value if the market forecast is favorable, or decline in value if the market forecast is wrong.

From the view of the seller / writer

Never be an options writer unless you fully understand the serious risk potential, and how to control it. The seller of an option also has a number of alternatives as time moves forward. As the option gets close to expiry, the underlying share price will be either above the strike price or below the strike price. That determines what the writer should do.

The **writer of a call option** wants the stock price to be below the strike price at expiry. Then the writer keeps the full premium initially paid by the buyer, when the option was written. If the stock trades above the strike price, the buyer may exercise and the writer will have to deliver the stock. The writer will be obliged to sell that stock at the strike price. If the writer does not own the stock they will be obliged to buy the stock on market, and possibly at a much higher price than the strike price. That would mean a serious loss.

The **writer of a put option** wants the stock price to be above the strike price at expiry. Then the writer keeps the full premium initially paid by the buyer. If the stock trades below the strike price, the buyer may exercise and the writer will have to accept delivery of stock. The writer will be obliged to buy that stock at the strike price, even if the market price of the stock is a long way below the strike price.

Never write naked options. You would expose yourself to potentially unlimited losses. Writing a naked option means writing an option without insurance or hedging. The description of a writer's position above is given only to illustrate the theory.

If you are not experienced: never write options!

Important terms you must know

Exchange traded options markets have a language of their own. To communicate effectively with brokers, educators and anyone involved in trading, you will need to know this language. Following is a short list of terms, which you need an understanding of. Scan this list now. You do not at this stage need to understand every term. When you have completed all the material in the education pack, we advise you to re-visit this list and see how many of the terms you are familiar with.

CALL

A call option contract conveys the right to buy a standard quantity of a specified underlying asset at a fixed price for a limited period of time. The fixed price is known as the strike price or the exercise price. The right exists until expiration of the option, after which that right ceases to exist.

PUT

A put option contract conveys the right to sell a standard quantity of a specified underlying asset at a fixed price for a limited period of time. The fixed price is the strike price or the exercise price. The right exists until expiration of the option, after which that right ceases to exist.

PREMIUM

The premium is the price of the option. The premium is the amount paid to buy or take an option, or the amount received when writing or selling an option. The premium consists of two components: time value or time premium, and intrinsic value.

TAKE, TAKER

An option is taken when bought. The buyer takes an option. The buyer is the taker. The taker takes an option from a seller or writer. Usage of the term is similar to that of taking out an insurance policy.

WRITE, WRITER

Options may be created out of thin air when two parties agree to open a contract. The taker might either take an option from a seller, who sells an option which is already in existence, or take an option from a writer, who creates a new option during the transaction. Writing an option is analogous to writing or selling an insurance policy. While the position remains open, the writer is obligated to fulfill the terms of that option contract. If the option is assigned, the writer must make a transaction in the underlying asset at the strike price. An investor who sells an option is called the writer, regardless of whether the option is covered or uncovered.

IN-THE-MONEY (ITM)

For a call option, the option is said to be “in the money” when the current market price of the underlying asset is greater than the strike price. Such a call option gives the holder of that call option the right to buy the underlying at a discount. A put option is “in the money” when the current market price of the underlying is below the strike price. The holder of such a put option has the right to sell the underlying at the strike price which is above the market price. Therefore, options which are in the money have some intrinsic value.

OUT-OF-THE-MONEY (OTM)

An option is “out of the money” when it has no intrinsic value. A call option is “out of the money” when the current market price of the underlying asset is below the strike price. The intrinsic value is zero because the holder would not exercise his or her right to buy at the strike price, because the strike price would be greater than the market price. Similarly, a put option is “out of the money” when the current market price of the underlying asset is greater than the strike price. An out of the money put option has no intrinsic value because the holder would not exercise his or her right to sell the underlying asset at the strike price, because the strike price is lower than the market price.

AT-THE-MONEY (ATM)

An option is “at the money” when the current market price of the underlying asset is at the strike price of the option. In practice, if the market price is not exactly the same as the strike price, the option which has a strike price nearest to the market price is said to be at the money.

INTRINSIC VALUE

The value of an option consists of two components: time premium and intrinsic value. The intrinsic value of an option is the amount of any favorable difference between the strike price and current market price of the underlying asset. This is the same as the amount by which the option is “in the money”. An option which is out of the money has zero intrinsic value.

TIME PREMIUM, TIME VALUE

Option premium consists of two components: time premium and intrinsic value. An option with no intrinsic value will usually have a non-zero premium. Options are not given away for no premium. Time premium, also known as time value, is that part of the premium which reflects the amount of time remaining until expiry. Time premium reflects the chance that the option might end up in the money at expiry. Generally, time premium will be greater when more time remains until expiry, because there is a greater chance that the underlying asset price might move favorably to bring the option into the money. As time passes, less time remains until expiry, so time premium falls. At expiry, with no time remaining, time premium is zero.

THEORETICAL VALUE, THEORETICAL PRICE

Using mathematics it is possible to calculate the theoretical price of an option. The theoretical price will usually not be the same as the actual market price. The theoretical price is determined by a number of factors. It is determined by the strike price and the current price of the underlying, which together determine the intrinsic value of the option. The theoretical price is also determined by the number of days remaining until expiry, which determines the time premium or time value. The theoretical option price is also determined by the volatility of the underlying asset price, which influences the chance that the option might end up in the money. Theoretical option prices are also determined by the current interest rate and forecast dividends, if any, paid to owners of the underlying asset.

EXCHANGE TRADED

There are a number of types of options. Some are traded on organized exchanges which define standard contracts so that all participants in the market can understand clearly their rights and obligations. Such options are “exchange traded” options. The exchange usually ensures that participants meet their obligations. Exchange traded options are to be contrasted with those which are not traded on an organized market, and which might not have standardized contracts. Off-market options contracts can be individually customized, and are sometimes known as ‘over the counter’ derivatives. Without an organized exchange, it is a matter between the party and counterparty to ensure that obligations are met.

EXERCISE PRICE

The exercise price of an option is the strike price. For a call option, the exercise price is the agreed fixed price at which the holder may choose to buy the underlying asset. For a put option, the exercise price is the agreed fixed price at which the holder has the right to sell the underlying asset.

STRIKE PRICE

The strike price is the exercise price. See “exercise price”.

EXERCISE

The holder of an option uses his or her rights by “exercising” the option. The holder can choose whether or not to exercise the option. To exercise an option is to demand to buy or sell the underlying asset at the strike price, or the exercise price. The option writer is obliged to meet that demand by selling or buying the underlying, respectively. When a call option is exercised, the holder demands that the writer sell the underlying asset to the holder at the strike price. In exercising a put option, the holder demands that the writer buy the underlying at the strike price. In both cases the writer is contractually obliged to make good the other side of the transaction by delivering (for a call option) or buying (for a put

option) the contracted number of units of the underlying asset. The holder of an option is not obliged to exercise that option.

EXPIRATION, EXPIRATION DATE, EXPIRATION MONTH

All options have an expiration date, beyond which they cease to exist. Options contracts cannot be exercised after the expiration date. All rights and obligations cease to exist after the expiration date. If an option is to be exercised the holder must do so by the expiration date. Option expiry dates are usually aligned on the same day each month. All stock and index option contracts expire on the Saturday following the third Friday of the month specified. Options over some underlying assets do not have expiration dates in every month.

OPTION CHAIN

An option chain is a list of all the options available for a given underlying asset. One can imagine a chain of options of all the expiration dates, of all the strike prices, and for both calls and puts.

CONTRACT SIZE

The contract size is the number of units of an underlying asset specified in the options contract. In stock options in the US the standard contract size is 100 shares of underlying stock.

THETA

As time passes towards expiry, the time value of an option decreases towards zero. Theta indicates how many dollars per day of option premium are lost due to the passage of time alone. In other words theta expresses how sensitive option value is with respect to the amount of time remaining until expiration. Theta reflects the change in the theoretically calculated value. Theta is usually expressed as dollars per day, per contract. For an option holder theta is negative because the passage of time erodes the value of the position. For a net short or written position, such as a credit spread, theta is positive because the passage of time is favorable to the position.

DELTA

Delta indicates how much the theoretical value of an option would change for a given change in the value of the underlying asset. Delta may be expressed as a value between negative one and one, or as a positive or negative dollar amount. For call options delta is positive because a rise in the underlying asset price results in an increase in the value of the call option. Delta is negative for puts, because an increase in the underlying price causes the value of the put to decrease.

BULL CALL SPREAD

A bull call spread is established by buying call options and writing or selling the same number of different call options with a higher strike price, on the same underlying, with the same expiration. A bull call spread comes into profit if the underlying price rises. It is thus a directional spread, because it relies on the underlying moving in a particular direction to create a profit. Because the written calls are further out of the money than the bought calls, the premium received is less than the premium paid. Therefore a payment or debit is required to open a bull call spread position. The bull call spread is thus a "debit spread". The debit paid is the maximum possible loss under the worst case outcome. The maximum possible profit is the difference between the strike prices less the debit paid to open the position. A bull call spread does not require margin.

BEAR PUT SPREAD

A bear put spread is established by buying put options and writing or selling the same number of different put options with a lower strike price, on the same underlying, with the same expiration. A bear put spread comes into profit if the underlying price falls. It is therefore a directional trade. Because the sold puts are further out of the money than the bought puts, the premium received is less than the premium paid. Therefore a payment or debit is required to open a bear put spread. The bear put spread is thus a "debit spread". The debit paid is the maximum possible loss. The maximum possible profit is the difference between the strike prices less the debit paid initially to open the position. A bear put spread does not require margin.

BULL PUT SPREAD

A bull put spread is established by selling puts and buying the same number of different put options with a lower strike price, on the same underlying, with the same expiration. A bull put spread comes into profit if the underlying price rises. It is thus a directional trade. Because the bought puts are further out of the money than the sold puts, the premium paid is less than the premium received. Therefore a credit is received at opening. The bull put spread is thus a "credit spread". The credit received is the maximum potential profit. The maximum possible loss is the difference between the strike prices less the credit received. A bull put spread requires margin.

BEAR CALL SPREAD

A bear call spread is established by selling calls and buying the same number of different call options with a higher strike price, on the same underlying, with the same expiration. A bear call spread comes into profit if the underlying price falls. It is thus a directional trade. Because the bought calls are further out of the money than the sold calls, the premium paid is less than the premium received. Therefore a credit is received at opening. The bear call spread is thus a "credit spread". The credit received is the maximum potential profit. The maximum

possible loss is the difference between the strike prices less the credit received. A bear call spread requires margin.

IMPLIED VOLATILITY

Implied volatility is the volatility that the underlying share price fluctuations would need to have for a theoretical options pricing model to produce a theoretical options price which matches the actual market price of the option. It is the volatility implied or suggested by the option premium.

STATISTICAL VOLATILITY

Statistical volatility is a measure of the amount by which an asset price has fluctuated during a given period of time. Assets with greater volatility exhibit wider price swings. Their options usually have a higher premium than less volatile assets because of the perceived greater difficulty in predicting future price movements.

TECHNICAL ANALYSIS

Technical analysis is a method of understanding past price movements to forecast future price movements. Forecasts are based on historic market data including the past prices themselves, trading volumes, open interest, the relation of advancing issues to declining issues and short selling volumes.

Exercise: Buying call options

Goldman Sachs Group (GS) - Example

GS Entry strategy – The situation

Today is the **3rd of September, 2004.** Goldman Sachs Group (GS) is forecast to start trending up from recent falls. (See the graph below.) The stock is currently trading at $90.20.

We have a large inheritance coming in early December 2004 ($56,000), but we do not want to wait until December to take advantage of the upside potential of GS. We want approximately $50,000 worth of exposure to GS stock.

To gain that exposure we decide to buy call options. We take a look at the "Wall Street Journal" and see that January 2005 $90 call options, which expire on the 22nd of January 2005, are worth $5.30 each.

GS Entry strategy – Let me walk you through it...

First question:
How many shares could we buy of GS at $90 per share, if we had access to our $56,000 now?

Answer:
$56,000 / $90.00 = 622 shares.

Second question:
How many option contracts should we buy, to give ourselves approximately $56,000 worth of exposure?

Answer:
To lock in today's share price (which is expected to rise in the future), we should consider a strike price of $90, which is an ATM (at-the-money) option. The strike price is near the current market price.

Each option contract is over 100 shares of underlying stock. With 100 shares per option contract, if you buy 6 contracts you will be able to buy 600 shares at $90, if they are in-the-money at expiry.

We would have arrived at the same number, had we simply taken the number of shares we worked out in Question One (which was 622) and divided that number by 100, since that is the number of shares controlled by one option contract.

Third question:
How much will it to cost us to buy each option?

Answer:
Options are usually quoted on a price per share. The January $90 strike price call options are currently quoted at $5.30. Remember there are 100 shares per option contract. That means each contract will cost $5.30 x 100 = $530.

Our Choices
Our choices are either to spend $3,180 for six option contracts (to get $54,000 worth of exposure), or to "find" some cash to buy the shares now.

Our decision is to take six ATM January $90 call options and pay $3,180. Our intention is to buy the shares in the future when we receive our inheritance.

GS Exit strategy – The situation

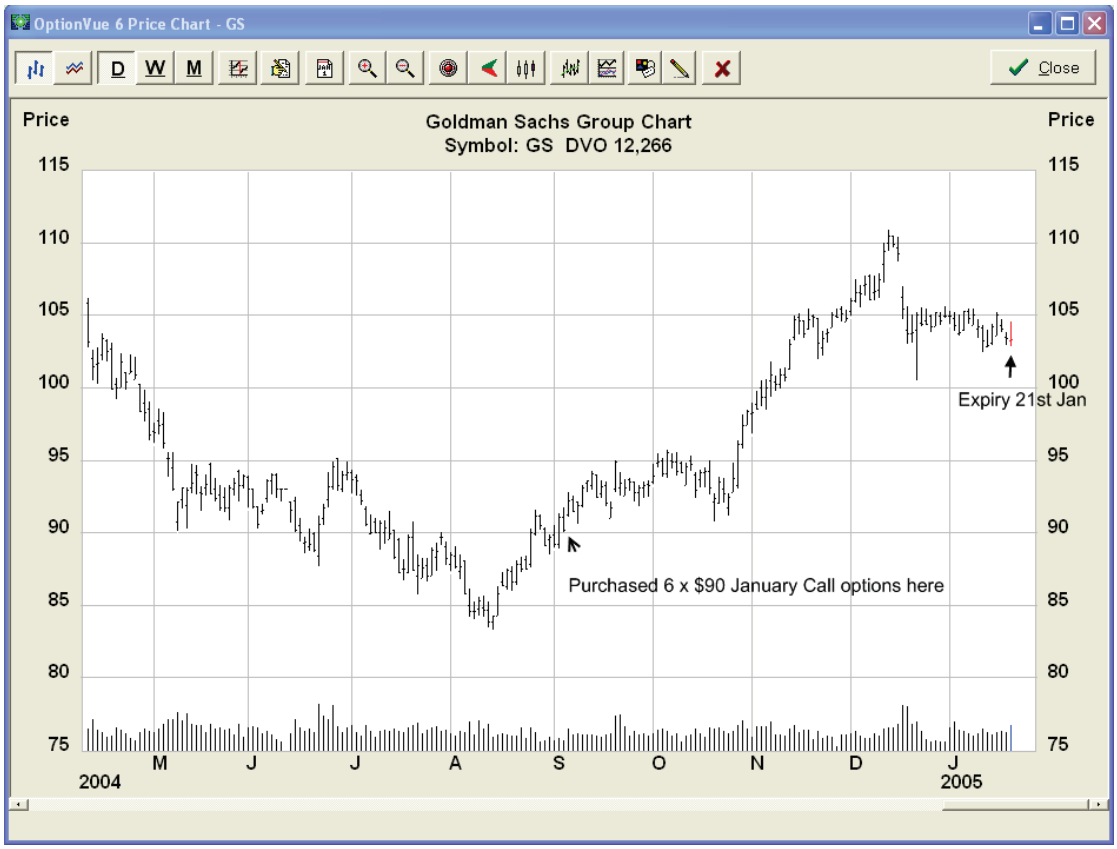
It is now the 21st of January, 2005. It is one day to expiration. We have received our inheritance and we now want to take delivery of our stock. We have 6 x $90 January call option contracts which will expire tomorrow.

What are our alternatives?

First of all we go to see how the market is performing. (See the chart below.) GS is now trading at $103.33. We can do one of two things:

1. We could sell our six option contracts to the market, or
2. We could exercise our right to buy 600 shares at the strike price of $90.

What should we do?



GS Exit strategy - Let me walk you through it...

First alternative: we sell our options

The first thing we want to know is how much our options are worth. We check out the "Wall Street Journal" and note that the $90 January 2005 call options are now quoted at $13.33.

We calculate how much our option contracts are worth. To get our net profit, we subtract what we initially paid for them from today's value:

3rd of Sept. 2004:	(for 6 contracts paid) x $5.30 per contr.	= $3,180
21st of Jan. 2005:	(for 6 contracts value now) x $13.33 per contr.	= $7,998
Net profit		= $4,818

Second alternative: we exercise our right and take the shares

Instead of selling our options, if we exercise our right and buy 600 shares, how much would they cost, and how much would we make, if we choose to sell them straight back to the market? Currently the market is trading at $103.33.

To buy the shares today by exercising our options, we would have to pay $90 x 600shares = $54,000. We could sell the shares straight into the market at $103.33 each. To calculate our possible net profit, subtract the buying price for the shares and options from the value the shares have today.

21st of Jan 2005:	600 GS shares trading at $103.33	= $61,998
3rd of Sep 2004:	600 GS at strike $90 per share	- $54,000
Gross profit		= $7,998

Gross profit	= $7,998
Minus cost of options	- $3,180
Net profit	= $4,818

Decision Time!

It's now decision time! Do we buy the shares for $54,000 and hold the position, or do we cash in the options and run with the money?

Well, it's now 4pm on the 21st of January, 2005 and a beautiful looking jet ski has recently caught our eye in the local boat shop. "Shares or jet ski?" "Shares or jet ski?" we ask ourselves. It is a difficult decision, but in the end we go for the impulsive approach and decide to cash in the options at the market price and realize a profit of approximately $4,818. We take our money and buy a new toy. We decide to keep our $59,000 cash in the bank and look for a jet ski, and another trading opportunity.

This was an example of preemptively buying shares using bought call options, with the anticipation of money arriving at a later date to pay for them, and with a bullish view of GS. As it turned out at the last moment, we decided not to take delivery of the shares and ran with the profit made from trading the options. That was totally normal human behavior.

Where do I go from here?

If you have found this manual interesting and want to expand your knowledge of exchange traded options with the goal of becoming a trader, we recommend you visit our website and check out the links under "Options Trading Courses".

Ready for the Options21 Mentoring Program?

The Options21 Mentoring Program is a comprehensive four month course designed to teach you a clear and concise trading system. It will replace any emotion-based decisions with exact rules for everything from which stocks and strategies to choose down to how to time your entry and exit. We leave nothing up to chance, and you will know what to do and when to do it. Trading with discipline is trading with confidence!

Our mentoring program is aimed at traders of all levels of experience. It is held via live online sessions using the GotoMeeting platform. You can choose a one-on-one course or be part of a small group.

If you would like to find out more about this program please call us.

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For further enquires or to arrange an online meeting please email us at info@options21.com.au.

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