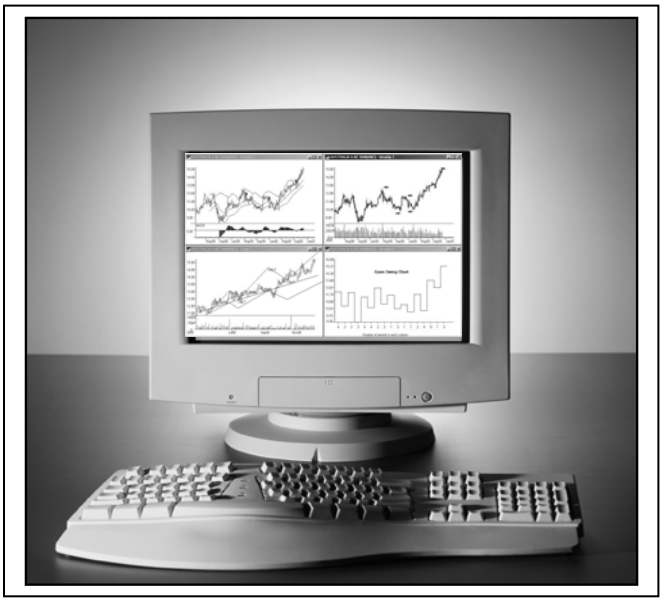
Section 3



Derivative Contracts

Warrants

There are many types of warrants, so it is not possible to have just one definition. To begin with it is useful to divide the types of warrants into:

- Warrants that are useful for investors (the "investment warrants"), and
- Warrants that are useful for traders (the "trading warrants").

It is the trading warrants to which we turn for this discussion and course.

Trading Warrants

There is a correct definition of a trading warrant (we will refer to trading warrants from now on as, simply, warrants), which we will come to in time. But a useful way of defining a warrant is to think of them as things that we trade that can generally give us the sort of potential percentage returns (and potential losses too!) we might expect from speculative shares. Warrants are generally quite volatile (volatility has a specific meaning in the terminology of warrants, but, again, we shall come to this in time), which is why they can give us high percentage returns/losses in short time periods.

If a trader was to begin trading warrants with the above definition in mind, it would serve him or her very well. Care needs to be taken when trading speculative shares, and indeed care needs to be taken when trading warrants. Just as a well-planned, consistent and disciplined approach to trading speculative shares can reap above-average rewards, so it can when trading warrants. An emotional, ill-disciplined approach to trading will give the opposite result, whether trading shares or warrants.

A nice difference between shares and warrants, though, is if one buys a share on emotion, without a plan, and holds on to it long enough it *may, just may*, at some time in the future, come to be worth more than it was bought for. If one buys a warrant in a similar manner, though, one is *absolutely guaranteed* to lose money in time. This is a key difference between warrants and shares; warrants have an expiry date. The expiry date is a date upon which the warrant *ceases to exist* and its value is thus zero.

Ok, now for some more precise definitions.

Warrants are referred to as derivative financial instruments. That is, a warrant derives its value from the value of some other financial instrument. Think of petrol and oil; the price of petrol is going to vary as the price of oil varies. If the price of oil increases, the price of petrol is going to increase.

"Trading warrants" can be classified as either *put warrants* or *call warrants.* These warrants are actually contracts; they are not shares in a company. A contract, of course, is a legally binding agreement between two parties.

A warrant, then, is a contract.

Call warrants

A call warrant is a contract that specifies the right to buy a share at some price, agreed to today, on or before some date in the future. Given that this contract is between two parties, a more correct definition is that a call warrant gives:

- one party to the contract the *right* to buy a share at some price, agreed to today, on or before some date in the future;
- while the other party to the contract takes on the *obligation* to deliver that share, at the agreed price, on or before the agreed date, if called upon to do so.

A call warrant contract might be a piece of paper that looks something like this:

Call Warrant:

This contract gives the holder the right to buy, from the issuer of this warrant, 1000 shares of "XYZ" at $10 per share, at any time up to, and including 21 September 2010.

Of course, this example is only an example for illustrative purposes. Warrants are not pieces of paper, there is no physical piece of paper; share "XYZ" is an imaginary share; and an expiry date of 2010 is fanciful – most call warrants will have an expiry date somewhere within 12 months time.

Nevertheless we can learn a lot from this example.

We can learn a very basic idea behind warrants. A purchaser of a warrant is purchasing a choice – the choice of whether or not to buy these shares (shares in XYZ company) at $10 per share. This choice expires after 21 September, 2010. On 22 September 2010, for instance, the choice is no longer available.

If a trader wanted to purchase this warrant, to buy for herself the *right* to buy XYZ at $10 up to 21/9/2010, how much would she pay for it? That is, how much is this warrant worth?

The Premium

The price of a warrant is referred to as the warrant **premium**. The warrant premium is paid by the purchaser of the warrant to the seller of the warrant.

So what is the premium of this warrant in our example? Well, this question is impossible to answer at this stage. There are a number of things we would need to know before we could possibly begin to answer.

The first thing we would like to know is what is the current price of "XYZ"?

Why?

Well, if XYZ, the share, was currently priced at $12, then the right to purchase XYZ at $10 would have to be worth…how much?

The answer is $2, at the very least.

This is the **intrinsic value** of the warrant – the difference between the current share price ($12 in our example here) and the strike price, or exercise price of the warrant ($10 in our example). (Important note: the intrinsic value of a warrant can never be negative; it can only be zero or positive. If this doesn't make sense now, it will soon).

So the current price of the share XYZ is an important input into figuring out the premium of a warrant.

We see the expiry date on the warrant is in 2010. This will also be an important input into our figuring out the premium. Now we don't know what XYZ is or what the company does, so let's replace XYZ with BHP. As of writing these notes the share price of BHP is around the $9.50 mark. Would the right to buy BHP at $10 per share, a right that doesn't expire until 2010, be worth something?

Where will the price of BHP shares be in 2010? Well, we don't know that, but there would have to be a good chance it will be above $10. This possibility of BHP moving up in value gives rise to **time value**, so called because the more time the warrant has to run (in this example up to 2010), the greater the chance of it being worth something.

This **time left until expiry** is another important input into determining the premium of a warrant. Actually putting a figure to this time value is a very complex issue and is well beyond the scope of this course. (For those interested the equation most commonly used is the Black-Scholes equation. Most university libraries will have texts, in the finance section, on the pricing of warrants and options using the Black-Scholes equation. The people you see with glazed expressions in the finance section of the university library are most likely to be those pretending to read these texts).

As we noted previously, an expiry in 2010 is fanciful, so let's have a look at two more likely examples, so as to illustrate the impact of time value upon a warrant premium.

For the purpose of this example **let's assume**:

- today's date is July 21, 2002;
- the share price of BHP is $9.50;
- and we are looking at two warrants, identical but for the expiry date:

Call Warrant A:	Call Warrant B:
This contract gives the holder the right to buy 1000 shares of BHP at $10 per share, at any time up to, and including, 21 *September* 2002.	This contract gives the holder the right to buy 1000 shares of BHP at $10 per share, at any time up to, and including, 21 *November* 2002.

Note the only difference between these two call warrants is that A expires in September, and B expires in November.

Which one of these warrants is worth more, i.e. has a higher premium? It is worthwhile breaking the premium down into its two components, intrinsic value and time value, and considering each separately.

Firstly, consider intrinsic value. What is the intrinsic value of Call Warrant A? What is the intrinsic value of call warrant B?

Given the **exercise price**, or **strike price** of each warrant is $10, and the share price of BHP is currently $9.50, the answer to both questions is the intrinsic value of the warrants is zero.

What about time value?

The way to think about time value here is to think about the likelihood of the share moving above the strike price of the warrant. That warrant with the greater likelihood of showing some intrinsic value will have the greater time value. Remember, if BHP moves above the strike price then the warrant will attain some intrinsic value.

Which one of the warrants, A or B, is more likely to attain some intrinsic value in the future? The answer must be example B, since it does not expire for four months (remember, we are assuming today's date is July 21, 2002), whereas example A will expire in just two months. Just through sheer common sense we can see B is more likely to be worth something than A. This is time value – it is the measure of the likelihood of the warrant being worth something at expiry (i.e. having some intrinsic value at expiry). The longer time a warrant has left in it, i.e. until expiry, the more time value it will have.

To summarise, then, the premium of a warrant is a sum of the intrinsic value and the time value:

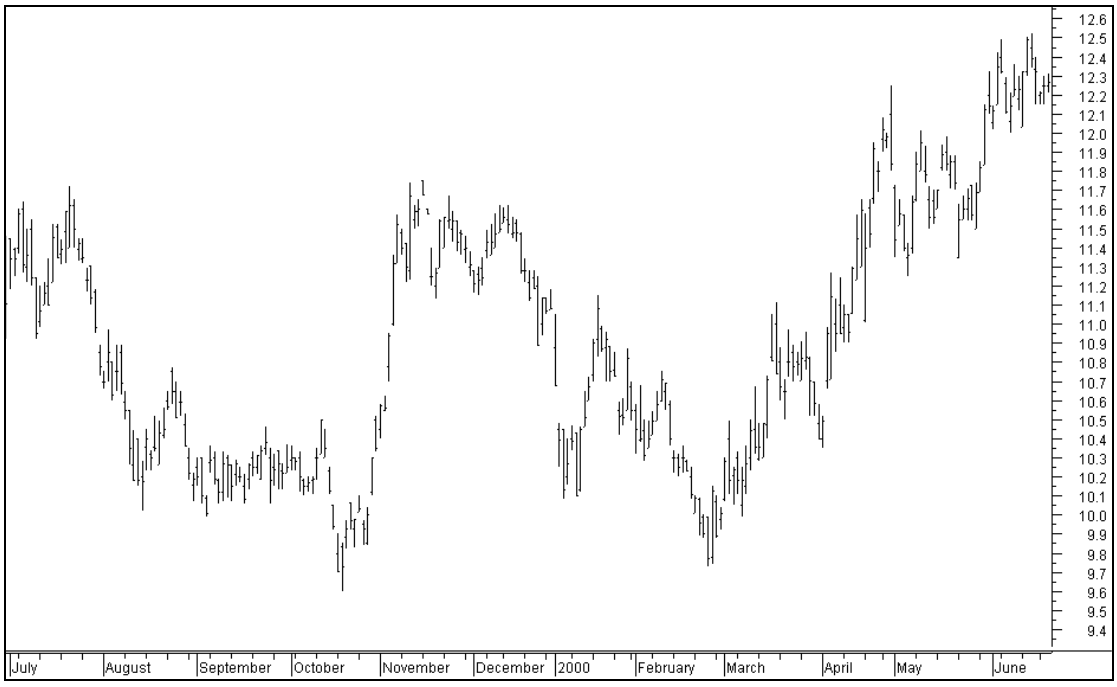
Premium = Intrinsic value + Time value

Volatility

As stated, the time value of a share is a complex issue to determine. It is important to note that a factor of major importance in putting a figure to time value is the **volatility** of a share. The more volatile a share is, the higher will be its time value, and hence its premium. Again, this issue is too complex to define mathematically here, suffice to say that it is important to understand that as the volatility of a share increases, so does its time value component of the premium.

This is illustrated by considering two shares that have different volatility characteristics. Take a look at the following two charts, showing the same time period for ANZ Bank (ASX code ANZ) and Rio Tinto (ASX code RIO).

ANZ



RIO

Note how the price range in the time shown is much greater for RIO than it is for ANZ. The definition of volatility used in warrant and option pricing is complex, but a good idea of variations in volatility across shares can be seen in these two examples. The greater the volatility of a share, the higher will be its time value and thus, the greater will be its premium.

Note that volatility is thus measured by looking at the historical price activity of a share. We cannot know the future, so we don't know how volatile a share will be in future and so we do not know its future volatility. Past volatility is thus used in the Black-Scholes equation as a proxy for expected future volatility.

One of the ways the premium on a warrant changes is through changes in volatility. If the volatility of a share increases sharply, the time value component of a warrant premium will increase.

The Style of a Warrant

We may have gotten a little ahead of ourselves with our discussion of volatility, but no matter. Let us now go back a step and continue our defining of warrants. As we have seen there are call warrants and put warrants.

A call or a put may be **American style**, or **European style**.

An **American style warrant** may be exercised at any time up to and including the expiry date. Any time of course means within normal market hours. Compare this with a **European style warrant**, which can only be exercised on the expiry date.

Our example warrants from earlier in this discussion were specified as American style. As a reminder, this is what our example looked like:

> Call Warrant A:
>
> This contract gives the holder the right to buy 1000 shares of BHP at $10 per share, at any time up to, and including, 21 *September* 2001.

The specifications of this warrant could be written more simply as:

> Call Warrant A:
>
> This contract gives the holder the right to buy 1000 shares of BHP at $10 per share. This right expires on 21 September 2001. This is an American style warrant.

Thus, the holder of this warrant has the right to buy 1000 shares of BHP, at $10 per share, at any time, during market hours, up to and including 21 September, 2001.

The Warrant Sellers

So far we have focused on the rights of the warrant purchaser, and not at all on the obligations of the warrant seller. The sellers of warrants are usually referred to as the warrant 'writers' or 'issuers'.

A writer/issuer of a call warrant takes the opposite side of the contract to the purchaser; the writer is obligated to deliver the shares if the purchaser of the warrant decides to take delivery of them (after paying the agreed purchase price for the shares specified in the contract to the writer).

A writer/issuer of a put warrant is obligated to take delivery of the shares, and pay for them at the agreed price, if the holder of the put warrant (the party that has purchased the warrant) decides to deliver them.

Why would anyone be a writer/issuer? Why would anyone be interested in taking on what would seem to be quite onerous obligations? The answer is that the warrant issuer receives the premium when he or she sells a warrant. The premium received is kept by the writer, regardless of whether the warrant is exercised or expires without value. Obviously warrant writers go through a process whereby they assess the risks of writing a warrant to ensure, as far as possible, that they will not lose money by writing the warrant.

Warrant writers also reduce the risks they take on board when writing warrants by hedging their portfolios. For instance, the writer of our call warrant in example A:

Call Warrant A:

This contract gives the holder the right to buy 1000 shares of BHP at $10 per share. This right expires on 21 September 2001. This is an American style warrant.

is obligated to deliver 1000 shares of BHP at $10 per share on or before 21 September, 2001. If the share price of BHP thus starts to trade above $10 the writer may find him or herself in a risky position.

Writers manage this risk through a process known as **dynamic hedging**. A discussion of dynamic hedging is well beyond the scope of this course, suffice to say that what the warrant writer does as the share price begins to trade up to approach $10 is he or she buys enough shares to cover her risk. Her risk is calculated using complex mathematical models. If the share price then continues to rise above $10 the writer buys more shares to continue to cover the risk, again determined by the mathematical models. Of course if the share price begins to fall after the shares have been purchased as a hedge the trader is now in the unenviable position of perhaps having to sell these shares at a loss – and then the next day may find herself having to buy them back at a higher price if the price begins to rise again! Such is the life of a warrant writer, but the premium the purchaser pays covers some of the aggravation, and usually any of the losses, incurred in dynamic hedging.

The process of dynamic hedging, entailing buying shares to cover the sale of call warrants, and shorting shares to cover the sale of put warrants can add impetus to share price movements, as discussed in the section “Analysis, Trading, and Price Moves”.

With this very brief introduction to the idea of dynamic hedging one nevertheless needs only a little imagination to begin to understand that sometimes the risks involved cannot be covered – the shares cannot be bought at a suitable price to cover the risks (imagine a

take-over bid being announced for a company at a price perhaps 10% higher than the strike price of a written warrant). This is a real risk for warrant issuers.

The final, very important, point to make about warrant issuers is that ASX rules specify that warrants may only be issued by specific financial institutions. What this means in practice is that warrants are only ever written by banks or brokers; members of the public are not permitted to be warrant writers.

These warrant writers are more commonly referred to as warrant issuers. With the privileges involved with being a warrant issuer come certain obligations. The most important obligation on these issuers, from our perspective as potential buyers of warrants, is the issuer's **market-making obligation**.

What is market making?

If a trader telephones a broker and asks where the market is in a share, the broker will habitually report a bid price and an offer price. If there is no bid or offer showing for the share there is said to be no market. Similarly, if a trader telephones a broker and asks where the market is in a warrant, the broker will habitually report a bid price and an offer price. If there is no bid or offer showing for the warrant there is said to be no market. If there is no bid or offer showing in a share (which can certainly be the case for illiquid shares), then no trades can take place. In the warrant market, though, a warrant issuer will **make** a market; that is a market maker will shows a bid if there is no bid in the market, or, conversely a market maker will show an offer if there is no offer in the market. If there is no bid or offer in the market, a market maker will show both a bid and an offer.

In the warrant market, an issuer of a warrant is obliged, by ASX rules, to make a market *in all warrants the firm issues*. Thus if there is no bid, offer, or perhaps both, a warrant issuer will place an offer, bid, or both into SEATS to make a market. These prices may

only be placed in response to a request from a warrant trader, but some of the warrant issuers show prices to the market at all times during market hours without having to be requested to do so. The warrant issuers that ensure a constant market in their warrants are taking their market-making obligations seriously. Such a warrant issuer that takes a serious interest in her market making obligations is ensuring a liquid market in her warrants and is building her business for the future. Some of the issuers in the market are thus more serious in keeping their obligations than others – trading with these issuers is a win-win situation. We as traders win by having liquid markets and the issuers win by having traders deal with them and thus pay premium.

Ok, so now we have covered a lot of the basic information about warrants. Let's now go back over some of the definitions, refining and deepening our knowledge where needed.

The warrant premium

Recall that …

Premium = Intrinsic value + Time value

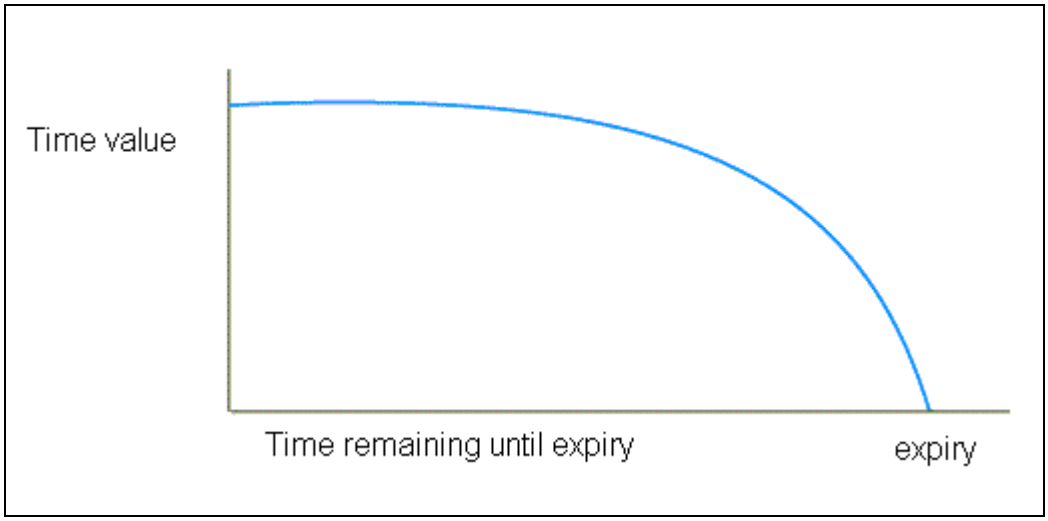
Intrinsic value equals:

(Current share price – exercise price).

Also remember that intrinsic value can be no lower than zero.

Time value is complex to calculate. One of the most important determinants of time value is the amount of time remaining until expiry of the warrant. That is, as a warrant approaches its expiry date, it loses time value. Let's rephrase that last sentence, the less time that remains until expiry of a warrant, the less time *value* it will have. Thus a warrant is often referred to as a *wasting asset* – its value "wastes away" as time passes.

Time decay can be represented in the following diagram. (Note that we are assuming that all other variables that can affect time decay (such as the volatility of the share) are remaining constant):



Notice how the time value actually decays. Time value does not waste away in a linear, i.e. straight line, fashion. The warrant loses time value slowly at first, and then as we approach expiry date the time decay accelerates. The knowledge of the pattern of time decay has important implications for how we make our trading decisions with warrants.

The warrant issuers and trading information

Warrants can only issued by those institutions approved by the ASX. This means that individual traders are not permitted to be writers of warrants. The institutions licensed by the ASX to issue (or write) warrants are trading banks, investment banks and brokers. Institutions with a large presence in the warrants markets are such names as ANZ Securities, Societe Generale Australia (a branch of the French investment banks Societe Generale), Banque Nationale de Paribas Australia (BNP) (a branch of the French investment bank Banque Nationale de Paribas, or BNP for short). There are others.

Warrants are traded on the Australian Stock Exchange (ASX) in the same manner as shares. That is, one trades warrants through a normal stockbroker (note that a broker advising on warrants will need to be accredited as an Accredited Derivatives Advisor). When opening an account to trade with a broker the broker will often ask if the trader wishes to trade warrants as well. Extra forms need to completed, and a disclaimer signed to acknowledge the trader understands the risks involved with trading warrants. The risks of trading warrants we are yet to cover, but it is wise to be aware that warrants are generally more volatile than shares; both profits and losses can be the result of trading warrants and the profits and losses tend to be greater than when trading shares. An added risk, of course, is that warrants have an expiry date, after which they are worthless

There are a number of sources for ascertaining what warrants are currently available for trading. Of course the Traders Success website provides comprehensive information on the warrants available for trading; information is also available in *The Australian Financial Review* and *The Australian* newspapers. The information in the newspapers is of a basic standard. The ASX website provides a comprehensive listing of all warrants currently available for trading.

Whereas shares on the ASX have three letter codes (Coles Myer, for example, has the code CML), warrants trade under a six letter code. Thus a call warrant in CML might have a code: CMLWAB.

The code "CMLWAB" means:

> **CML**WAB – the first three letters of the six letter code refer to the underlying share. That is this warrant is issued over the share Coles Myer, thus Coles Myer is the underlying share.
> CML**W**AB – the fourth letter means the warrant is either a call or a put. Calls or puts are often referred to as "vanilla" warrants; in the jargon of the industry; this means they are "plain" calls or puts. We referred to investment warrants in the first few lines of this warrant section; investment warrants are more complex than

the "vanilla" calls or puts…although they are not usually referred to as chocolate or strawberry warrants!

CMLW**A**B – the fifth letter refers to the warrant issuer. An "A", for instance, lets us know the warrant is issued by ANZ Securities (a business unit of the ANZ bank). A list of warrant issuer codes is available from many sources; the ASX website for example.

CMLWA**B** – the sixth and final letter of the code is an internal code used by the warrant issuer. It is not of much significance to us warrant traders, beyond the fact that it is necessary to specify all six letters of the code when wanting the trade in a warrant. In general, call warrants will have the final letter between A and O, while put warrants will generally have the final letter between P and Z.

Entitlement, or Conversion Ratio

Another of the components of a warrant definition is Entitlement, which is also often referred to as Conversion Ratio. While we have been discussing warrants and defining example warrants so far we have not referred to Entitlement, but merely noted that one warrant covers the right to buy one share. In the real world of warrant trading, this is rarely the case – that is, it is normal that more than one warrant will be required to purchase one share. It is not irregular for two warrants to be required to purchase one share. This 2-for-1 requirement is the Entitlement, or Conversion Ratio.

How does this work?

Let's go and have another look at the example warrant we have been examining.

Call Warrant A:
This contract gives the holder the right to buy 1000 shares of BHP at $10 per share. This right expires on 21 September 2001. This is an American style warrant.

And let's assume BHP is currently priced in the share market at $12.00 (and also that the date is now *prior* to 21 September). What then is the premium for this warrant? Well, we do not know the time value, but we can assess the intrinsic value quite easily, it is (current share price minus exercise price), or ($12 - $10) = $2. Let's assume the intrinsic value is the premium, i.e. $2.

But what if the warrant had these specifications?

> Call Warrant A:
>
> This contract gives the holder the right to buy 1000 shares of BHP at $10 per share. This right expires on 21 September 2001. This is an American style warrant. Conversion ratio is 2:1.

Now the warrant has the same specifications as before, but the Conversion ratio is 2-to-1, that is 2 warrants are required to purchase 1 share. This changes the price of the warrant. In our first example we figured the premium to be $2, but now the value of the warrant must be halved, because two warrants are required to purchase one share against only one warrant required to purchase one share in our initial example.

Just about all warrants will have an Entitlement greater than 1-to-1.

Put Warrants

So far we have only looked at examples of call warrants. The other type of trading warrant is a put warrant. Recall that a call warrant gives the trader the right to buy a share at a pre-determined price up to some defined date in the future (or maybe only on that date in the future for a European style warrant).

A Put Warrant, on the other hand, gives a trader the right to *sell* a share at a pre-determined price up to some defined date in the future (or only on that date in the future for a European style warrant). All the definitions that we have discussed for call warrants apply exactly the same to put warrants with this one crucial difference.

A put warrant is a contract that specifies the right to sell a share at some price, agreed to today, on or before some date in the future. Given that this contract is between two parties, a more correct definition is that a put warrant gives:

- one party to the contract the *right* to sell a share at some price, agreed to today, on or before some date in the future;
- while the other party to the contract takes on the *obligation* to take delivery of that share, at the agreed price, on or before the agreed date, if called upon to do so.

A put warrant contract might be a piece of paper that looks something like this:

> Put Warrant:
>
> This contract gives the holder the right to sell, to the issuer of this warrant, 1000 shares of "ABC" at $20 per share, at any time up to, and including 31 March 2002.

What *style* is this warrant? Remember a warrant may be European style, or American style. An **American style warrant** may be exercised at any time up to and including the expiry date. Any time of course means within normal market hours. Compare this with a **European style warrant**, which can only be exercised on the expiry date. The example we have here, where the put warrant may be exercised at "at any time up to, and including 31 March 2002", means the warrant is an American style warrant.

What about the premium of this warrant, how much is this warrant worth?

Remember the premium = intrinsic value + time value.

Let’s assume the underlying share, “ABC”, is currently priced at $18.50. What, then, is the intrinsic value of the ABC put warrant? The intrinsic value of a put warrant can be worked out in a step-by-step manner:

> If a trader holds a put warrant to sell ABC shares at $20, and ABC is currently trading at $18.50, the put warrant could theoretically be exercised, the shares therefore sold at $20, and bought back in the market at $18.50. Thus the intrinsic value of this warrant is $1.50.

The time value of this warrant cannot be ascertained from the information given, but the principles we discussed earlier regarding time value are exactly the same as in a call warrant. That is, given one of the most important determinants of time value is the amount of time remaining until expiry of the warrant, as a warrant approaches its expiry date, it loses time value. Again, let's rephrase that last sentence, the less time that remains until expiry of a warrant, the less time *value* it will have.

Volatility is, of course, also critical in the valuation of put warrants. The greater the volatility of a share, the greater is the time value component of all trading warrant premiums.

Options

The theory relating to options is much the same as that relating to warrants. Reading pages 1 through 11 of the warrant notes, and the section on put warrants from pages 17 through 19, replacing the word warrant with options each time is a good preparation for learning about options.

There are a few key differences between warrants and options, which we will concentrate on here.

We are talking here about Exchange Traded Options (ETO's). A distinction needs to be drawn between ETO's and company issued options. Company issued options are capital raising exercises, whereas ETO's are not. The writers of ETO's are completely unrelated to the companies over which they are writing options, no capital is being raised for the company.

The Derivatives Trading Facility

Warrants trade through the ASX SEATS system. ETO's do not, they trade through what is referred to as the Derivatives Trading Facility. In practical terms this is of no relevance to traders, ETO trades are executed through talking to a stock broker, just as with shares or warrants.

Similarly, settlement procedures are different. Warrants settle through the CHESS system while ETOs settle differently, through the Options Clearing House (OCH). Again, this difference is of little practical consequence to traders.

American style

Remember that warrants may be American or European style, but that all Exchange Traded Options in Australia are American style. Recall that a European style warrant can be exercised only on the expiration date, whereas an American style warrant can be exercised any time up to and including the expiry date. An ETO, then, being American style, can be exercised any time up to and including the expiry date. (during market hours of course!).

Standardized contracts

The terms to a warrant, such as the underlying security, the issue size, the expiry date, and the strike price, are all set by the issuer. These terms to an option contract are all standardised, with terms set by the Options Clearing House (a division of the ASX).

For instance, options are only available on certain **underlying shares**. These underlying securities are selected by the OCH (the shares must correspond to certain criteria, available from the OCH if interested). This is quite different to the situation with warrants, where the issuers determine which underlying shares over which they will issue warrants.

Options, whether calls or puts, over the same underlying security are termed “classes”. Thus, all options listed over BHP-Billiton (BHP) form one class of option.

The size of a warrant issue is determined by the warrant issuer, as is the conversion ratio which defines the number of warrants required to claim one share. An option contract, however, is standardised. All ETO contracts cover 1000 shares. That means 1 option contract covers 1000 shares, there is no conversion ratio to contend with.

The **expiration date** of a warrant is set by the warrant issuer. The expiration date of an ETO, however, is standardised, set by the OCH. All options in a particular class will follow one of three cycles:

- January/April/July/October;
- February/May/August/November;
- March/June/September/December

What this means is that the XYZ (example) class of options will have an expiry date in January, April, July and October (if they follow the first cycle listed above), on February, May, August and November (if they follow the second cycle listed above) and so on.

The expiry day in each of these months is generally the Thursday before the last business Friday in the month. (A calendar showing each expiry day is available from the ASX website, and also from brokers).

In addition to the quarterly cycles listed above, a "spot" month expiry is available on most classes of options. These are options that expire at the end of the current month. (More information on these options are available from a broker).

The **warrant issuer sets the strike price, or exercise price, of a warrant**. The exercise price of ETO's is set by the OCH; and again the way these prices are set is standardised.

When a new option is issued, the OCH specifies a range of exercise prices for the expiration date. An exercise price close to the current share price, with two exercise prices above, and two below are specified. Then, as the share price moves, new strike prices are added. This allows traders to choose from a range of options that will always be fairly close to the current share price; unlike in the warrant market where the only warrants issued of a particular share may have a strike price quite a price distance from the current price of the underlying share.

Market Making in ETO's

The way markets are made in the ETO market, as compared to the way markets are made in warrants, is another key difference. Recall that warrant issuers (or warrant writers) are under an obligation to make a market in the warrants they issue. We have not yet covered who writes options, but in any event the market makers in the option markets are not necessarily the same people/organisations that are writing options.

The market makers in the option market are referred to as Registered Traders, and they have undertaken to provide prices in certain option classes. Registered Traders make markets in the options:

Where the strike price is closest to the current share price;
One strike price above this closest to the money option; and
One strike price below this closest to the money option.

Markets are only made in the spot option (i.e. the option with the closest expiry date) and the next expiration date out.

To clarify, markets are made in 3 strike prices by 2 expiry dates, a total of 6 options. When one considers all the options trading for any class, this is not a great deal of market making. The implication for traders is that the liquidity in the options market can be very poor compared to the liquidity in the warrants market. This can be checked by looking at the bid-offer spread in many options and comparing it to the bid-offer spread in a closely equivalent warrant. One should find the spread in a close to the money warrant is of the order of about 3 to 5%, whereas it would not be unusual to see a much wider spread, perhaps 10 to 15% (or greater) in a close to the money option.

This generally poorer liquidity is a critical consideration for traders, it adds risks to option trading.

The Option Writers

Warrants are issued by large financial institutions. Recall that being the issuer, or writer, of a warrant exposes the issuer to the obligation to deliver shares should they be requested by the exercise of a call warrant, or to take delivery of shares should a put warrant be exercised. In the options market, the writing of options is not restricted to large financial institutions. Anyone can write an option, provided he or she meets certain collateral requirements (full information on which can be provided by a broker).

It needs to be noted, very, very clearly, that writing an option has the potential to expose the writer to unlimited risk. There are strategies that allow options to be written where the risk can be strictly limited, and profits can be made; these strategies will be covered at a later time.

It is important to consider carefully the risks of writing options. Even those strategies where the risk of writing an option can be limited are not perfect because of the liquidity constraints of the option market. A trader can find him or herself in a losing position and be unable to transact in the option market so as to close the position out, in which case the losing position will continue to be carried and must be managed. We suggest that traders avoid open or 'naked' written option positions. However, written positions that are 'covered' by another option or the underlying security do offer some good trading opportunities.

The specifics of option trading, along with warrant trading (what and when to buy, when to sell and so on) are covered in the trading strategy.

Futures and Currencies

Performance bond deposit

Traders will be required to deposit a "performance bond" with their futures broker. The amount of these bonds does vary from time-to-time (the broker will inform the trader of any changes). As a guide, the performance bond requirement (and, again, all figures are in U.S. dollars) as of January 3, 2002:

- For the E-mini Nasdaq-100 Futures contract is $4125
- For the E-mini S&P 500 Futures contract $3938
- For the full Nasdaq-100 Futures contract is $20,625
- For the full S&P Futures contract is $19,688.

Further information about the E-mini and the full contracts, and on much more, can be found at www.cme.com, the website of the Chicago Mercantile Exchange.

What are we trading? E-mini contracts and "full" contracts, similarities & differences

The E-mini Nasdaq-100 Futures contract and the E-mini S&P 500 Futures contract are stock index futures contracts. Both of these contracts trade on the Chicago Mercantile Exchange. Both of these contracts trade via an electronic, computer-matched trading platform (this is the GLOBEX trading system) as opposed to an open-outcry "pit" trading platform.

What this means in practice is that traders can enter orders directly into the computer matching trading program via their broker's software (which is most conveniently accessed over the internet). There need not be any human intervention in the trading process from when the trader enters his or her order on the internet to when the order is executed via computer matching with an offsetting order. This method of trading is quick, with trades, and confirmations of trades, taking place in seconds.

"Pit" trading, on the other hand, can be a cumbersome process, requiring a trader to telephone in an order to a broker, the broker relaying the order to the "floor" of the exchange, the floor clerk relaying the order to the pit broker, the pit broker transacting the order, with the process then reversed to convey confirmation to the trader back at the other end of the chain. There are stock index contracts traded via the pit, the "full" contracts, which we will cover in a moment. Traders Success does not trade these full contracts due to the cumbersome nature of trading them via the pit combined with an increased risk due to these contracts trading in larger monetary values.

In addition to the E-mini Nasdaq-100 Futures contract and the E-mini S&P 500 Futures contract there is the Nasdaq-100 Futures contract (sometimes referred to as the "full" Nasdaq Futures contract) and the S&P 500 Futures contract (sometimes referred to as the "full" S&P Futures contract). The E-mini contracts and the full contract are very similar, the big differences between them being the size of the contracts and the method of trading (during the day the E-mini contracts trade on GLOBEX while the full contracts trade in the pit).

The Nasdaq-100 contracts

The size of the E-mini Nasdaq-100 Futures contract is $US20 times the Nasdaq-100 index, whereas the size of the "full" Nasdaq-100 Futures contract is $US100 times the Nasdaq-100 index. That is, the E-mini Nasdaq-100 Futures contract is one-fifth the size of the full Nasdaq-100 Futures contract.

The E-mini Nasdaq-100 Futures contract might be trading at a price around 1800.00. What is the value of the E-mini Nasdaq-100 Futures contract at this price? It is 1800.00 multiplied by $20, which equals $36,000 (**all dollar figures are U.S. dollars**). The E-mini Nasdaq-100 Futures contract trades in minimum price fluctuations of 0.5 of a point. The minimum price movement of an index futures contract is referred to as a "tick". So

if a traders buys one contract at 1800.00 and then sells at 1800.50 (i.e. one minimum price fluctuation, or one tick, higher), what is her profit on the trade?

Buy price was 1800.00, multiplied by $20 = 36,000
Sell price was 1800.50, multiplied by $20 = 36,010

So the profit is $10. (Disregarding brokerage fees etc.)

So, $10 per contract is the minimum price fluctuation.

If the buy price was 1800.00 and the sell price was 1801.00, the index has moved up one "point". A one point move is worth $20 on the value of an E-mini Nasdaq-100 Futures contract.

Compare this situation with the full Nasdaq-100 Futures contract. The value of this contract is $100 times the Nasdaq-100 index. A minimum price fluctuation is again 0.5 of a point, or a minimum price fluctuation of $50 (one tick in the full contract is worth $50). A one point move is equivalent to a $100 change in the value of the contract.

The S&P 500 contracts

The size of the E-mini S&P 500 Futures contract is $US50 times the S&P 500 index, whereas the size of the "full" S&P 500 Futures contract is $US250 times the S&P 500 index. That is, the E-mini S&P 500 Futures contract is one-fifth the size of the full S&P 500 Futures contract.

The E-mini S&P 500 Futures contract might be trading at a price around 1100.00. What is the value of the E-mini S&P 500 Futures contract at this price? It is 1100.00 multiplied by $50, which equals $55,000 (**all dollar figures are U.S. dollars**). The E-mini S&P 500 Futures contract trades in minimum price fluctuations of 0.25 of a point. So if a

traders buys one contract at 1100.00 and then sells at 1100.25 (i.e. one minimum price fluctuation, or one tick, higher), what is her profit on the trade?

Buy price was 1500.00, multiplied by $50 = $55,000.00
Sell price was 1500.25, multiplied by $50 = $55,012.50

So the profit is $12.50 (Disregarding brokerage fees etc.)

So, $12.50 per contract is the minimum price fluctuation. One tick in the E-mini S&P Futures contract is worth $12.50.

If the buy price was 1100.00 and the sell price was 1101.00, the index has moved up one "point". A one point move is worth $25 on the value of a E-mini S&P 500 Futures contract.

Compare this situation with the full S&P 500 Futures contract. The value of this contract is $250 times the S&P 500 index. A minimum price fluctuation is 0.1 of a point, or a minimum price fluctuation of $25 (i.e. one tick in the full contract is worth $25). A one point move is equivalent to a $250 change in the value of the contract.