13 LEAPS

You should probably read all the previous chapters before this one.

LEAPS[1] are just very long-term options, which expire in years rather than months. There are LEAPS calls, LEAPS puts and they aren't terribly different from the short-term options you have become familiar with. Because leaps are much longer lived, certain factors will be magnified and some strategies may have to be modified.

13.1 LEAPS Pricing

The same factors that influence short-term options also influence LEAPS. As discussed in section 1.2, they are:

1. The relationship of underlying stock price and strike price of LEAP.
2. The time to expiration and volatility.
3. The risk-free interest rate
4. The dividend yield of underlying stock.

While there is no change in the calculation of intrinsic value for LEAPS, the longer lifetime of LEAPS is the cause of significant differences in the effects of the other factors. We will deal with each in turn.

13.1.1 Time to Expiration

Figure 13.1 compares the price curve of options with different expiration dates. Note that over the time-frame shown (3-months), the LEAPS' price curve is nearly straight. Even when it is very out-of-the-money, there is so much time-value in the LEAPS that it is considerably flatter than any of the other curves.

This highlights a possible danger for the buyer of LEAPS calls. If there is a stock selling for $25, and you buy a 2-year LEAPS with a strike price of $30 for 10-points, the stock must reach $40 by the expiration date of the LEAPS in order for you to just break-even on your call purchase! This is a change of 60% in the stock price. There are very few stocks which increase that much even over two-years. The presence of so much time-value in LEAPs is something that must be taken into account when using them.

[1] It stands for "Long-term Equity AnticiPation Securities".

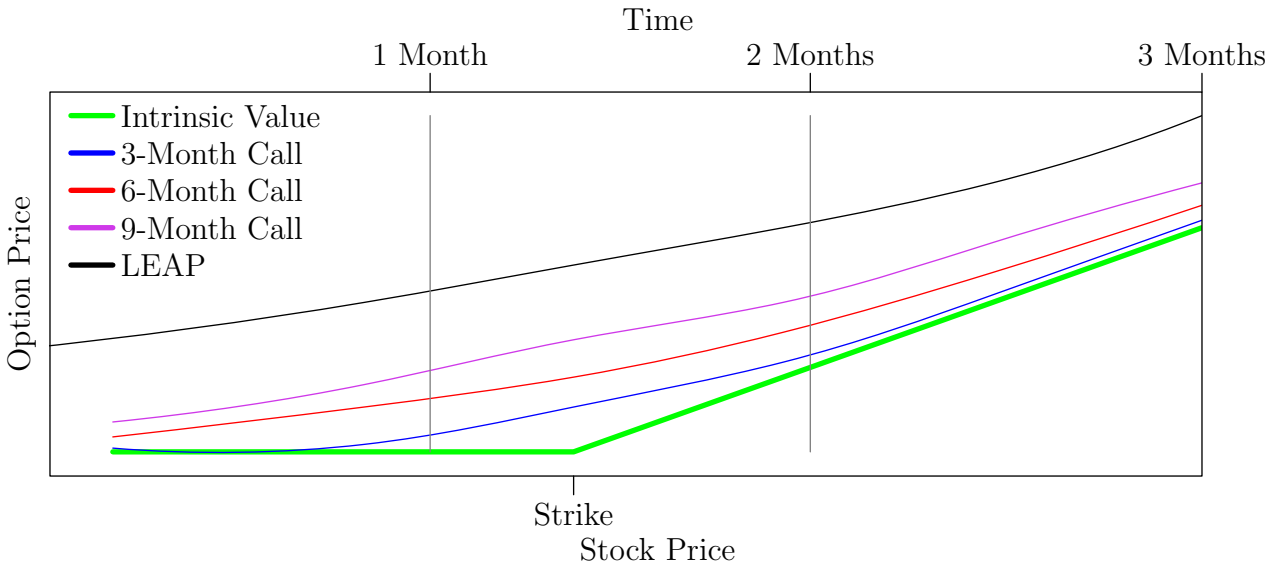

Figure 13.1: Comparison of options with different lives with a LEAP.

13.1.2 Effect of Volatility

Volatility also has a stronger effect on LEAPS than on short-term options. Table 13.1 gives the increase in option prices for an increase of 1% increase in volatility for a 3-month call and a 2-year LEAPS call.

Considering that market volatility can change by as much as 50% in the space of a single month, volatility becomes a very significant factor in LEAPS option pricing.

	Out-of-the-money	At-the-money	In-the-money
Three Month	0.3	0.21	0.4
Two Year Leap	0.43	0.48	0.33

Table 13.1: Comparison of the effect of volatility on LEAPS vs. short-term calls.

13.1.3 Effect of Interest Rate

The effect of interest rates on short-term options is so small that it was not worth discussing. This is not true for LEAPS.

Figure 13.2 shows the effect of rising interest rates on the LEAPS' premiums. For out-of-the-money LEAPS, the difference is quite large — almost an entire point. And when the LEAPS are in-the-money, the effect is dramatic. A change of 3% in interest rates causes the price of the at-the-money LEAPS to increase by over 2-points. And surprisingly, premiums of in-the-money LEAPS increase even more. This is a huge effect.

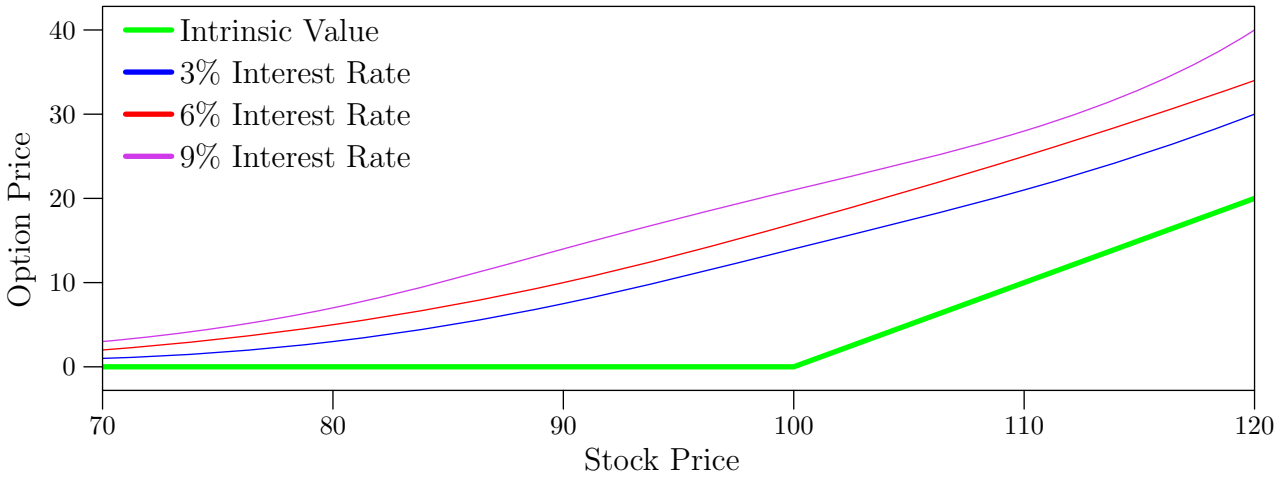

Figure 13.2: Effect of interest rates on LEAPS.

13.1.4 Effect of Dividends

Recall that dividends reduce the premiums of short-term calls. Figure 13.3 shows a similar effect on LEAPS. However, the reduction of premiums due to dividends is less than the increase due to rising interest rates.

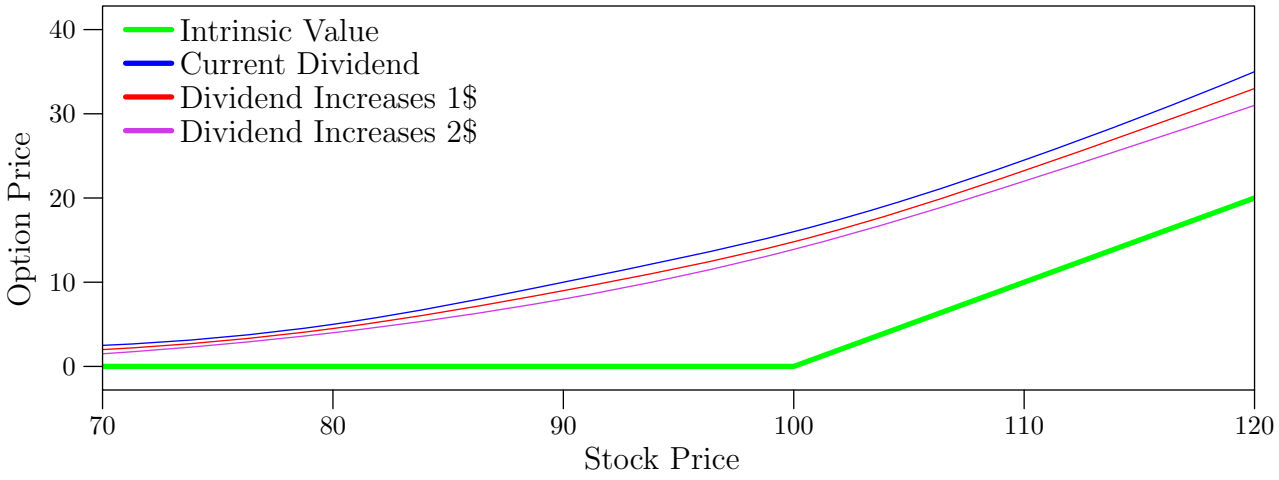

Figure 13.3: Effect of dividend increases on LEAPS calls.

LEAPS puts have a premium increase, just as with the short-term puts. The life of the LEAPS shown is two-years — LEAPS with less time to expiry would naturally experience a reduced impact from dividends.

The large effect of dividend increases on LEAPS is logical. A 3-month call would be affected by only one ex-dividend. A two-year LEAPS would have eight ex-dividend periods.

If the dividend increased by $0.25 every quarter, a three month call would see a premium reduction of perhaps $0.14. But the two-year call might see a reduction of as much as $1.50.

13.2 USING LEAPS

LEAPS may be used in any strategy, with little or no modification. However, failure to consider the important effects that time value, interest rates and dividend payments have on LEAPS may give you an unpleasant surprise.

While not the only considerations, the data on interest rates and volatility suggests that you should be inclined to purchase LEAPS when interest rates and volatilities are low. When interest rates and volatilities are high, your inclination should be to sell LEAPS. You will be living with your LEAPS for a long time, it makes sense to position yourself as favorably as possible when you open a position.

13.2.1 Buying LEAPS Instead of Stock

When using LEAPS for a long term holding instead of stock, one possible strategy is to take the money saved and invest it in something "safe", such as a treasury or an interest bearing account.

For purposes of illustrating the idea, we will assume that you are considering buying 100 shares of Xaio Mei Enterprises at $40 a share. You see that there are 1-year LEAPS with a strike price of $30 that are selling for 12-points. Xaio Mei Enterprises pays an annual dividend of $0.50, and short term interest rate is 3%.

First calculate the difference in investment required for the stock vs. the LEAPS

Stock	
100 shares @ $40:	$4,000
Plus Commissions:	$9
Net Stock Costs:	$4,009
LEAP	
1 @ $12:	$1,200
Plus Commissions:	$10
Net LEAPS Costs:	$1,210
Subtract LEAPS Costs from Stock Costs:	
Net Difference:	$2,799

We want to calculate the costs and the savings of each position. An investment in an option involves paying for time that will disappear over the course of a year. If we invest in options, we won't be receiving dividends. In compensation, we receive interest on the $2,799 we saved:

Costs	
Time Value Cost	($200)
Net Dividends Lost	($50)
Savings:	
Interest on $2,799 @ 3%:	$84
Net Costs:	($166)

It may be more meaningful to express this as a per-share figure. Your costs of investing in a LEAPS vs. Stock are $1.66 per share. With the LEAP, you enjoy all the appreciation of the stock (except for $1.66 worth), but have risk only down to $2,799 + $84 = $2,883 or $28.83 per share (assuming you do put the money somewhere that will bring you $84 dollars, of course).

It would seem that using a LEAPS in this particular situation is an excellent idea. You can also take that money and invest it elsewhere, such as other option plays or in stock. However, the results of doing this are impossible to quantify.

13.3 Using LEAPS Puts as Insurance

This was discussed in chapter 9 using short-term puts. If you have long-term holdings and like the idea of insurance, LEAPS puts have much to recommend them. Carefully calculate all the cash inflows you expect from the stock, such as dividends, or special dividends, and consider how the purchase of the LEAPS impact your returns.

13.4 Using LEAPS Puts Instead of Shorting

This was discussed for the short-term case in chapter 8. Doing this with LEAPS has the same advantages discussed there: limited risk and no need to make dividend payouts. There is little to be done to decide if it is better to use LEAPS instead of actually shorting the stock. If the time value premium purchased with the put is small in comparison with the dividend payout that you would save from shorting, then the put is unquestionably the better choice.

Incidentally, this is one of the few areas where the small investor has a slight advantage over exchange traders. Exchange members receive interest on their short sales, so for them to use puts, it would require a time premium of zero for it to make it worthwhile.

13.5 LEAPS Selection

As discussed, opening a long or short position with a LEAPS call or put purchase instead of stock can be advantageous. As always in investing, there are disadvantages — you risk the loss of 100% of your investment, and time decay works against you with LEAPS just as it does with shorter term options. It just takes longer.

LEAPS expose you to less risk of time decay on a day-by-day basis. But the LEAPS will eventually become short-term options. When that happens, just as with short-term options, the rate of time decay as expiration draws near will increase. But at the beginning of the LEAPS life, that is far in the future.

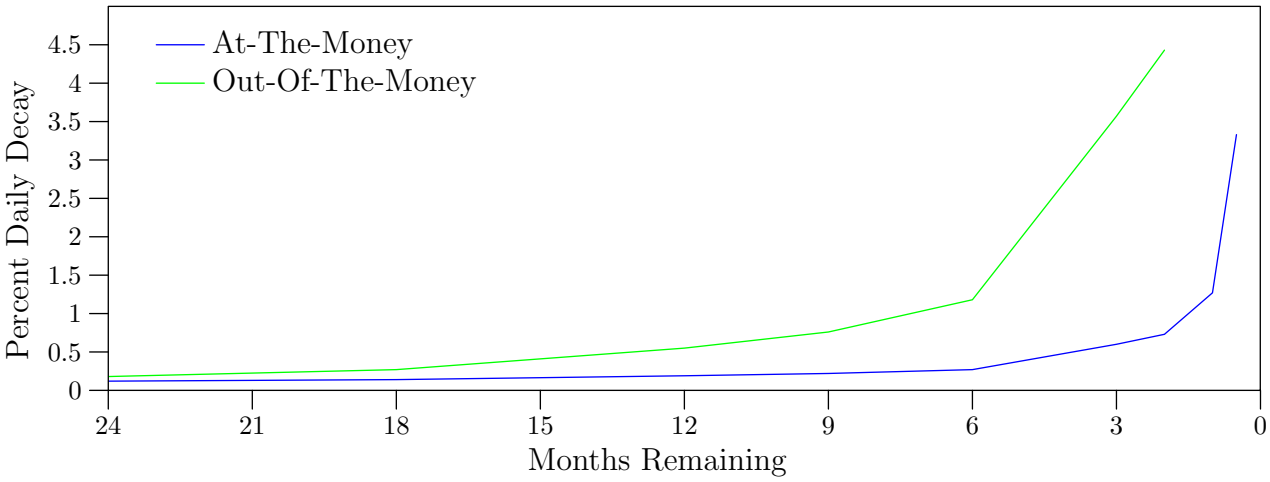

Figure 13.4: Comparing the time decay of an at-the-money 2-year LEAPS call with an out-of-the-money 2-year LEAPS call.

Figure 13.4 shows the rate of decay of two options. The vertical axis shows the percent of an options price that is lost daily due to time-decay – the higher the line, the more time-decay gets rubbed off of your options value. At 9-months away from expiration, the options still qualify as leaps. After that, they become ordinary options.

Notice that out-of-the-money LEAPS decay considerably more than in-the-money LEAPS. This is still much less than the time decay of short-term options. For most of their lives, out-of-the-money LEAPS lose less than 0.3% of their value each day. This is a microscopic amount compared to the 1% per day lost by a 6-month, out-of-the-money option. And the short-term option loses that with 6-months still remaining to expiration!

This slow rate of decay is a great advantage, both psychologically and strategically. Your timing of the option purchase does not have to be as precise as it does with short-term option buying. If you feel the stock will move in your favor, LEAPS give you the luxury of time. And if the stock does not move as you hope, even giving the stock 6-months to play out, you still be able to recover a reasonable portion of your investment, thanks to the slow rate of decay.

Even little dabs of lost time add up however. An at-the-money LEAP call will decay by about 0.125% per week. Assuming no change in stock price, this means that in six months it will have lost 25% of its original value. While vastly better than short-term options, which lose 25% of their value in four to five weeks, a 25% loss remains a significant one.

Looking again at Figure 13.4, you can see that the decay curve starts to move up around the 6-month mark. If you have an at-the-money LEAPS whose underlying has refused to

budge, that would be a good time to make a decision. If you still believe in the stock, then this would be a good time to roll the call into another 2-year LEAP. Otherwise you can exit the position.

The out-of-the-money call is more extreme. It begins to decay more rapidly a bit before the end of its first year of life. But the same logic applies here as with the at-the-money option. When the rate of time decay begins to increase, consider liquidation or a roll.

13.5.1 Increasing Volatility and Interest Rates are Your Friends

As a LEAPS buyer, you should be happy to hear that interest rates are moving up and volatility is increasing. This can improve the situation for you even if the underlying has refused to budge. If the stock is moving the way you want, then so much the better for you when rising interest rates and increased volatility lend a hand.

Historically, interest rates, when they have risen, have increased as much as 0.4% a month (3% in 6 months). It would take about a 6% rise in six-months to maintain the price of a LEAPS call whose underlying remained unchanged. So interest rate increases alone are not enough to help you.

However, it is quite possible for volatility to increase as much as 50% from its previous level in a single month, and certainly in 6 months. To keep your LEAPS call at its opening price for 6-months despite an uncooperative underlying, volatility would only have to increase by 20%. If it increased by 50%, the price of your call would actually go up, even though the stock had not changed at all.

Of course, if you are a call seller, the shoe is on the other foot. The last thing you want to see are increased volatility and interest rates. This is why it is always a good idea to be aware of the general rates of volatility and interest rates before using LEAPS.

13.5.2 LEAPS and the DELTA

The delta of calls was introduced in subsection 3.4.1, put deltas were covered in subsection 8.2.1. Recall that the delta is the amount that the option price changes for every point of change in the underlying. There are some significant differences between the deltas of short-term calls and LEAPS deltas.

Delta's of at-the-money LEAPS tends to be quite large, around 0.70. Very short-term at-the-money options have deltas of about 0.50, while slightly longer-term ones have deltas as high as 0.60. In general, the longer the life of an at-the-money option, the higher its delta will be.

As a general rule, in-the-money and out-of-the-money LEAPS will move more in line with the stock than short-term options will. This will change only if both the short-term option and the LEAPS option are more than 5% in the money.

The delta of the 2-year LEAPS option does not change very much when the stock moves, while the delta of a comparable 3-month option will change dramatically as it moves from out-of-the-money to in-the-money. This means the amount the LEAPS can be expected to

change is rather stable. With short-term options, you expect the in-the-money call to move more in-line with the stock, which makes them worthwhile purchases. With LEAPS, there is much less difference in the amount of price movement that will occur. The delta of an in-the-money LEAPS call might differ from the delta of an out-of-the-money LEAPS call by as little as 0.25. Since the out-of-the-money LEAPS call would probably be cheaper, there may be little reason in this case to pay more for the in-the-money option.

Most of the above applies to puts deltas. Because of the interesting relationship mentioned earlier:

1 = Delta of Call - Delta of Put

the relationships discussed above are inverted. In other words, while a short-term calls price moves more slowly than a LEAPS call, the short-term puts price moves faster than the LEAPS.

Out-of-the-money LEAPS and short-term puts don't behave very differently from each other, but the in-the-money puts move quicker if they are short-term. The deltas of LEAPS puts are not very large. For example, a 2-year LEAPS put typically has a delta of only 0.30. This has important implications for those who are considering using LEAPS puts as a short position on stock. The leverage factor here is not great — it takes about a 3-point move by the underlying for an at-the-money LEAPS put to increase by one point. In short: Long-term puts don't mirror the stock movement anywhere near as well as short term puts do.

13.6 LEAPS Selling

The strategies involved in selling LEAPS do not differ very much from those discussed for shorter term options. The main difference is that due to the slow rate of time decay, option sellers who enjoy watching their options time value decay will not have this pleasure with LEAPS. This has a bearing on follow-up actions. Most follow-up actions for the selling strategies depend on being able to buy back the sold option when it has little or no time value left. This won't work very well with LEAPS, because LEAPS hold on to their time value quite strongly even when deeply in or out-of-the-money. Be aware that you may end up repurchasing substantial amounts of time if you sell LEAPS.

The large premiums that LEAPS pay are enticing, but this can be deceptive. If you calculate the returns carefully, you may find that you end up with better profits if you stick with the short-term options.

In the sections that follow, we will examine the use of LEAPS in several of the strategies covered earlier for short-term calls.

13.6.1 Covered Call Writing

EXAMPLE

Shares of McKinnon's Instant Haggis are selling for $30. You are considering a 500-share covered call position, and are being tempted by the 2-year LEAPS with their luscious premiums. The January $50 LEAPS sell for 8.5-points and have two years before expiration. On the other hand, there is a 6-month July $50 call which sells for 4-points. McKinnon's pays a dividend of $0.25 each quarter.

To decide which is better, you have to do the math.

	July $30	January $30 LEAP
Stock cost (500 share @ 30)	$15,000	$15,000
Plus Stock Commissions	9	9
Less Premiums Received	(2,000)	(4,250)
Plus Option Commissions	15	15
Net investment	$13,025	$ 10,774

For simplicity, we will assume the stock stays above the strike price so the return if unchanged will be the same as the return if exercised. Recall from subsection 2.6.4 that the return if unchanged is the preferred metric for evaluating covered calls. Note that the LEAPS seller gets to collect more dividends - eight of them in two years.

	July $30	January $30 LEAP
Stock Sale (500 @ 30)	$15,000	$15,000
Less Stock Commission	9	9
Plus dividends earned	250	1,000
Less net investment	13,025	10,774
Profit if unchanged	$2,235	$5,235
Return if unchanged	17%	48%
Annualized Return	34%	24%

To get the big picture, we must also calculate the downside break-even:

	July $30	January $30 LEAP
Net investment	$13,025.00	$ 10,774.00
Less Dividends Received	(250.00)	(1,000.00)
Total Stock Cost at Expiration	$12,774.00	$9,774.00
Divided by shares held	500.	500.
Break-even price/share	25.55	19.55

To compare the two returns, we must annualize them. We multiply the 6-month return by 2, and divide the 2-year return by 2 to get the equivalent yearly returns. The annualized return for the 6-month call is 34%, and the annualized return for the LEAPS is 24%.

Clearly, on an annualized basis, the short-term call is the better choice. But the situation remains murky. To make 34% a year for two years, you need to repeat your achievement three more times. This may not be likely. How likely it is that your short-term calls will bring you 34% annualized only you can decide. It is certainly very difficult to predict.

You must also be comfortable holding shares of McKinnon's Instant Haggis for two years. If you are becoming uneasy about PUKE's price, or the conditions of the Haggis market, you might want the flexibility to exit your position completely in less than two years time. Perhaps you are worried that Chinese Haggis exports will do better than McKinnon's. In this case, the short-term calls are the better choice.

Downside protection is something that must also be considered. If you use the LEAPS and the shares closed above $19.55 at expiration, you would at least break-even on your investment. But LEAPS introduce a small wrinkle that must be considered. Should PUKE fall quickly to $20 shortly after you purchased the LEAP, there would still be considerable time value left. If you then attempt to recover your costs by closing the position, you would have a loss. This can happen even if the shares are above their break-even point. Remember that the break-even points are calculated assuming you are at expiration — the LEAPS will have a higher price at all times prior to expiration. In some cases, considerably higher.

Rolling down is always problematical, and even more so with LEAPS. While you will continue to bring in large premiums by rolling down, you also reduce your maximum profit potential for a much longer time. You may not wish to roll from LEAPS to LEAPS, but to a shorter term call instead. Doing this may involve you in a large debit transaction.

13.7 Selling Uncovered Leaps

Selling naked short-term puts was described in chapter 7. The almost insurmountable problem with selling LEAPS puts for beginners is the cash security requirement. This has the potential to tie up a substantial amount of cash for a very long period of time, and it is difficult to justify this economically. If you are allowed to use margin to secure the puts, you are in a much better position to sell naked LEAPS puts.

13.8 Early Assignment With Leaps

Any LEAPS option can be exercised any time it is in-the-money. As with short-term options, the best clue as to whether early assignment may occur is to see if there is any time premium left in the option. If the LEAPS is trading at parity or even a discount to parity, then assignment may be near. This is generally unlikely, but it does occur. The reason for the LEAPS selling at parity has to do with the actions of arbitragers. The

arbitrage is complicated, but you don't need to understand it. All you need to do is to pay attention to the time premium of your call. If it disappears, you should take action if you don't wish to be assigned.

13.9 Spreads Using Leaps

Any of the spreads discussed earlier can be done with LEAPS. Diagonalized spreads, where you buy a longer-term option and repeatedly sell short-term ones are particularly well suited to having a LEAPS arm. It is very useful to own the option that is resistant to time decay, while selling the options that are subject to time decay. A risk that using LEAPS bring to the position is that since LEAPS are long term, they are also expensive. This increases your risks — the losses may be substantial if the stock underperforms.

13.9.1 Diagonalized Bull Call Spread

Example

Xiao Mai's Nursing Supplies is currently selling for $75. There are the following calls:

May $70 Call	10.50
May $80 Call	5.50
January $70 2-year LEAPS call	26.00
January $80 2-year LEAPS call	21.50

There are several possible spreads here:

Near-term Bull Spread	Buy May $70	10.50
	Sell May $80	5.50
	Cost:	$500.00
Diagonal Bull Spread	Buy January $70 LEAPS	26.00
	Sell May $80 Call	5.50
	Cost:	$2,050.00
LEAPS Bull Spread	Buy January $70 LEAPS	26.00
	Sell January $80 LEAPS	21.50
	Cost:	$450.00

Because the cost of the LEAPS spread is close to that of the near-term bull spread, they should have about the same profit potential at their individual expiration dates.

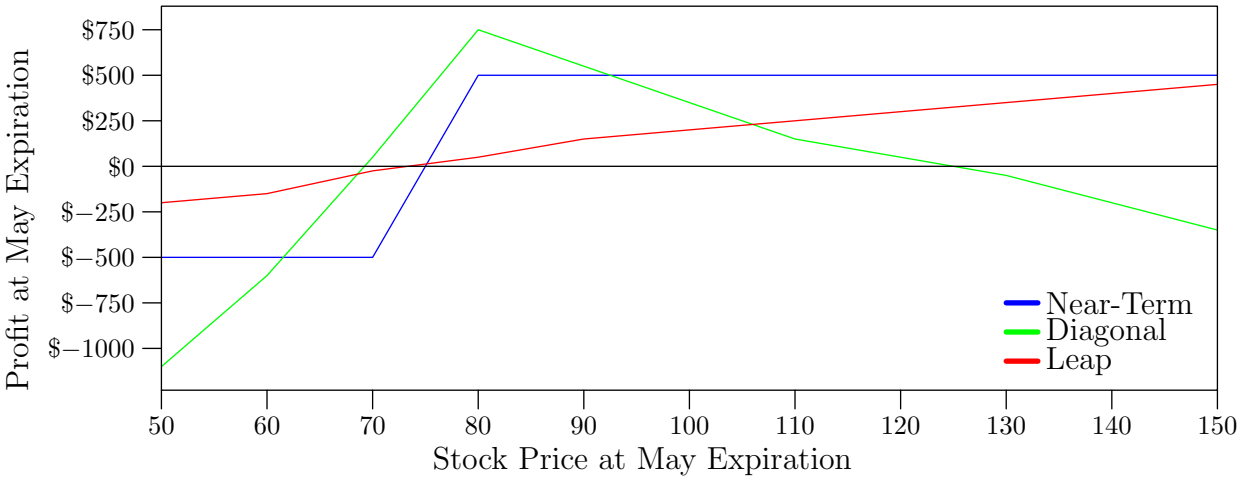

Figure 13.5: Comparing near-term, diagonal and long-term LEAPS spreads.

The profit graph of all the spreads at the near-term May calls expiration is shown in Figure 13.5. The near-term bull spread has the very familiar profit graph we first met in chapter 4 ((Figure 4.4). The maximum profit occurs anywhere over a share price of $80 and the maximum loss anywhere below $70.

The LEAPS spread hasn't done much in the 3-months that have passed. Even if the stock rises to $90, the LEAPS spread will have only a $150 profit. On the good side, if the shares should drop to $50, the spread will lose only about $200. This is very typical behavior for long-term bull spreads when both options still have plenty of time premium left.

One glance at the graph will show you that the diagonal spread is a spread of a different color. The profit graph shows that this is by far the most bullish of the three possibilities. As with any spread, it makes its maximum profit at the strike of the short option. Notice also that once this maximum profit point is reached, if the stock trends higher, the diagonal spread begins to lose money, and can even begin trading at a loss if the stock really takes off.

The diagonal also has the greatest dollar risk (not percentage risk), because it also has the largest initial investment. If the shares fall to $50 by May, the diagonal will lose about $1,100, or nearly 50% of the initial investment.

The diagonal will pay more than the others when the underlying is near the strike of the short call. If it moves a lot — in either direction — the diagonal spread is the worst of the three possibilities. This illustrates that *the diagonal spread is a neutral spread. Selection of the proper underlying is crucial to the success of the diagonal bull spread. Slow, stable and steady growers are the best candidates for this strategy.*

The deltas of the options can be used to predict how it is going to perform. A short-term, in-the-money option will have a rather high delta, especially as expiration approaches. On the other hand, an in-the-money LEAPS call will not have a particularly high delta, because

of the huge amount of time value remaining. If you are short an option with a high delta, and long an option with a smaller delta, you will lose money if the underlying stock rises. For the present example, given a LEAPS with a delta of 0.60, and a short call with a delta of 0.90, should the underlying rise by one point, the spread will lose 30 cents, since the delta of the short option is 0.30 greater than the delta of the long option.

A diagonal spread can actually lose money when the stock outperforms. This is especially true when the long arm of the spread is a LEAP. This may be hard to believe, but the graph makes it clear. Do not forget that this is a distinct possibility. It is not easy to fix this problem by fiddling with the options. You can try to widen the strike prices so that there is some profit potential remaining even if the stock has a dramatic rise, but that can be difficult to do and still get a decent price for the short call. This is something that is best dealt with before the spread is initiated, with the proper selection of the stock to begin with.

There are other dangers with the diagonal. If, instead of going up, the stock goes down, you may be inclined to roll down the short call. If the stock continues to drop, you may reach the point where you would end up with the short call's strike *below* the LEAPS. Aside from the fact that this would involve you in a naked call and your broker might not let you do it, even if you were allowed to, this would also involve you in a locked-in loss.

I write so much about the dangers of the diagonal mainly because so many other writers consider diagonals with a long LEAPS arm to be "free money". This is not the case. However, in practice, with the proper selection of the underlying stock, this can be an extremely successful strategy and it is a favorite of mine. While even stable companies can have sudden spurts in their stock price, the spurts are typically short-lived, and can be easily dealt with by rolling the short call up. In my experience, losses with a diagonal spread have been extremely rare.

13.10 Up To The Minute Summary

- LEAPS are very long term options. Other than their longer life, they are the same as the short-term options.
- Factors which are negligible in short-term options pricing become significant for LEAPS. These are:
  1. Volatility.
  2. The risk-free interest rate.
  3. The dividend yield of the underlying.
- As the risk-free interest rate increases, the price of the option will also increase. The increase is large over a 2-year period.
- If dividends increase, the premiums of LEAPS calls will go down, while the premiums of LEAPS puts will go up.

- Volatility has a very large effect on LEAPS option pricing.
- LEAPS can be used in any strategy that short-term options are used. The increased time value and the effects of interest rates, volatility and dividends can cause some surprising results.
- If interest rates and volatility are low, it is a good time to buy LEAPS.
- If interest rates and volatility are high, it is a good time to sell LEAPS.
- LEAPS puts as insurance has a lot to recommend it.
- Selling LEAPS puts instead of shorting shares is not recommended, because of the cash security required.
- The rate of decay of an at-the-money LEAPS is very slight until the last 6-months.
- The rate of decay of an out-of-the-money LEAPS is very slight until its final year.
- Deltas of at-the-money LEAPS are very large.
- In-the-money and out-of-the-money LEAPS move more in line with the stock than short-term options.
- They are more stabile, since the delta does not change much when moving from out-of-the-money to in-the-money.
- Calculate the differences between a position with LEAPS and the same position with short-term options before making your decision.
- Also consider the time frame of the investment. If it involves holding stock, make sure you will be comfortable with that over the life of the LEAP.
- Downside protection provided by a LEAPS is poor in the early days of its life.
- You anticipate early assignment with LEAPS the same way as with short-term options. If the LEAPS is trading at or below parity, it is likely to be exercised soon.