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Editor: The professor and Great Investor ("GI") views options in a unique way to carve out precise risk and reward investments. You can, for example, combine this technique with steady, stable companies like Coke (KO) or Campbell Soup (CPB) or a quality cyclical like 3M (MMM) to craft limited losses with more leverage or commit less capital for higher reward. The reasons these companies may offer better opportunities are because of their liquid option markets and profitable growth which will increase their intrinsic value over time. Of course, you must pay a reasonable price for those securities—the LEAPS are another arrow in your quiver. This is an important lecture for individual investors.

Read: *You Can Be a Stock Market Genius* by Joel Greenblatt

LEAPS:

There is almost no other area of the stock market (with the possible exception of stub stocks) where careful research can be hugely rewarded. But be careful in your total commitment on LEAPs so as to protect your capital. If you study the mechanics of options well and apply their use to stable franchises, you can carve out precise risk/reward investments. *Editor: Be aware that when LEAPS work, you will feel like you are on crack cocaine. Who doesn't want 200% to 400% returns on your capital, but you must use discretion so you don't "over-invest" in this instrument. Pick your spots.*

Investing more than 10% to 20% of your portfolio in these instruments at any one time would be ill-advised due to their leveraged nature.

Professor's Option Trading Days at *Bear Stearns*

Options were not as efficient back then as they are now[1]. If I could create a situation if our borrowing cost was 10% and make 12%--it was a risk-less spread at 2%. I was doing forward conversions.

+

I spent the whole summer trading options.

Another way to look at a *Call* is it is similar to owning 100 shares and 1 put (one put controls 100 shares of underlying stock). The put price is expressed on a per share basis. A put price of $3.70 costs $370.

The equivalent of owning a *Call* is like buying a stock and a put. Why is that? Once I own a put at $50 strike price, I can't lose money below $50. I have to lay out $$ for the interest cost of owning the stock at $50. That is the same as owning the *Call* at $9. The economics are exactly the same other than the interest difference.

Dividend Issue: You have to adjust for dividends because if you own the stock you are getting dividends and if you own the *Call* you are not getting dividends.

The *Call* gives you the right to own stock at $50 and the right not to lose money below $50. So here I own the stock and I bought the put.

[1] The bible on options investment is *Options as a Strategic Investment 4th Edition* by Lawrence G. McMillan

So what I was doing all summer at *Bear Stearns* was to buy the stock and a put while selling the *Call* -- and make money. I was executing *forward conversions*.

If I bought the stock at $50 and the put at $3.70 (identical to owning a *Call*) and I sell the *Call* at $9--this is an *arbitrage*.

I bought the stock at $56.65 and sold a *Call* for 9.00 which will expire Jan. 07.

Arbitrage or Forward Conversions

If the stock is at $60 or above.

So whole position is $56.55 and $60 = $3.45 and I have the cost of laying out the $56.55 for two years--$3.45 in interest for two years. If I put this down $56.55 minus $9 (*Call*) = $47.55 is the cost of the trade. Now, I own a stock and I own a put *and* I sold a *Call*. The stock is at $60. How much is this $47.55 worth with the stock is at $60?

I laid out $47.55 and I get $50 two years later or a $2.45 profit or 5.15% over two years.

If the stock is at $40 or below.

What happens if the stock is at $40 at expiration? Own the stock at $40 and a put that is worth $10 (put stock at $50 when the stock is trading at $40 for a difference of $10). The *Call* is worth $0.

What if the stock is at $50, the trade is worth $50. Because the put and the *Call* are worthless and I own the stock at $50.

I put trade on at $47.55 I collect $50 *no matter* what happens to the stock price. The difference is $2.45, so the cost is $2.45/$47.55 = 5.2% and annualized over two years is 2.7%. This rate equates to the risk-free rate for the amount of time of the trade.

Gee, if I (a trader at Bear Stearns) could borrow money at 3% and I can make 5%, it is risk-less.

The key is thinking of buying a call as the same thing as buying a stock with a put attached.

There is no difference. When you are investing, you want to know what you are doing.

When I buy a Leap, I am basically buying a stock with protection. The difference in any price has to do with dividends and any interest that is paid out, but it is fairly priced. It is a cheap way to borrow money. The implied borrowing costs in the *Call* will really be the risk free rate. You will be borrowing close to the risk-free rate.

The volatility will come into what is the put worth? If the stock can vary widely, then the put won't be priced so cheaply.

Don't worry about volatility or any complicated stuff. Remember that when you buy a *Call*--you are buying a stock and a put (protection).

The fundamentals regarding American Express (AXP).

Constructing a thesis using Leaps.

In Sept. 2005, they will spin off the financial advisory business. An analyst said it would earn 56 cents and he gave it a 16 multiple, so it is worth $8 or $9. Let's say it is at $9, so you are buying the other business (which I am interested in) at $43.85.

Let's construct a thesis for *AXP*. Analyst estimates were roughly $2.50 for this year. The company is telling you that they will grow earnings at 12% to 15% per year. This works out to $3.20 in earnings per share in 2007. Since the options expire in two years, in Jan 2007 what is the multiple of earnings in 2007?

The question now is: are loss ratios in credit cards lower than normal or are their spreads larger than normal? Are they making more than normal profits? Or is this situation now normal earnings? We can quibble if this $3.20 EPS could turn into $3. I will argue that it will be $3.20.

When we went to analyze this thing--and this excludes the American Express Bank which earns about a $0.10 and is not a high multiple business--so I give that a $1 at the end of the day.

So the question is what is that $3.20 worth? Remember when the 20 year govt. bond is below 6%, we will use 6% as a safety net, then we compare our investment in *AXP* to this. What *multiple* should we place on the $3.20? This is a pretty good business. Actually when they suck out money from spinning off the financial advisors, they won't have to spend money anymore on that division, their returns on equity will approach 40% at that time. Not quite *Moody's* or not quite *Coke*--but a good business. There are no natural barriers to entry. AXP will grow with the economy. *AXP* has unending growth as long as the economy grows. There is no natural end to their business. As long as the financial world grows and AXP can retain share, AXP will grow.

They can do stock repurchases or through dividends--last year they returned 87% of cash through buybacks and dividends. That reminded me of a *Coke/Moody's* type of situation. *Moody's* could return 100% of their capital and still grow while *Coke* could do the same with 80% of their capital. *Coke* needed to reinvest 20% in their business to grow. I am thinking they *(AXP)* are saying 65% and they are paying out 87% while they could do 75% or 80% in the future. This is a decent multiple business. **The question is how much of a multiple and that is more art than science at this point.**

Having seen a lot of things, would I rather have a 5% on AXP earnings that it is growing 12% to 15% or a 6% bond? I would rather have the 5%.

A conservative[2] P/E of 22 x $3.20 in 2007 = $70.40
Then we have $1 from the bank. Then we have $9 from the spin-off.

The spin-off is supposed to happen in Sept. 2005. But we are buying options for Jan 2007. So what happens to my options with the two separate companies post spin-off? You get both of those companies--the right to buy the spin-off and AXP at $50. If you buy the $50 *Call* you get each share.

[2] The Editor disagrees with the Professor in the lecture that a 22 multiple is "conservative" due to the amount of debt that AXP employs and the cyclicality of AXP's business. Reasonable people can differ.

Which risk/reward do I like better? I value it $9 in two years. To spend to get to this earnings growth of $3.20 in two years you will collect dividends and buybacks. Add another $2. $82.40 in two years. The Jan 07 *Call*s bought at $9.00 are worth $32.40 ($82.40 - $50.00).

If you own the stock at $52.40 and sell in two years at $82.40. So you make $30 or a 55% return over two years or 25% annualized. The options you will make 300%.

At $70 then you would make 14.5% a year, but the options would be worth $20 or a profit of $11 or 100% return.

The market turns down and the market will not pay a projected multiple on reduced earnings. You have to include your interest carry.

Do a decision tree, but I give it a 30% chance of it being worth $30 and I give it a 20% of being worth $70 and give it a 25% of being $60 or 25% for $50. An expected value of $20 for these $9.00 *Call*s.

You would not buy as much of these *Call*s as a stock, but the option gives you an opportunity to get more leverage and a greater risk/reward. With the stock you don't know your risk reward exactly--the stock could be at $30.

Here with options you know your loss is no more than $9.00. Buying a stock and buying a put is the only difference.

The way I choose to look at a LEAP - owning a LEAP is buying the stock and owning the put. What is the difference between interest cost in laying out the $52 or paying the interest cost of the $9 *Call?* Here I am paying $6.15 above the intrinsic value of the *Call*. Look I am paying $6.15 in interest over 22 months to borrow $52.85 and $9. Or……..$61.85 or 4.8% per year.

I am paying $6.15, which is 14% cost of money over two years (14%/2 = 7%). So my effective borrowing cost is 7%. So instead of saying I am borrowing money at the risk free rate and buying a put to get my LEAP. What I am saying is forget the put. Let us add the cost of the put to my interest cost.

The difference between my buying this stock and this LEAP is that today--instead of laying out $52.85 today and paying the interest on that--I am paying an additional $6.15 (all interest). And what I get in exchange for the put and my effective borrowing cost is not 3% per year but 7% per year. So I get to borrow at 7%, but I can't lose any more money than this. I am basically borrowing at 7% but I have a non-recourse loan. **In other words, if it doesn't work out, I owe the interest, but I don't have to pay the loan back.**

In effect, I buy the put. I say look, they are lending me money at 7%, but I have to pay the interest no matter what, but if things don't work out, I don't have to pay the loan back. That sounds like a better deal. You pay high interest rates but you don't owe the loan.

Reread the chapter on LEAPS in *You Can Be a Stock Market Genius*[3]**.**

You pay your interest costs up front. You are paying the difference between the value of what you are buying (all interest)--what that put is giving you is a non-recourse loan--and my interest rate instead of

[3] See pages 10 - 17 for excerpt.

being the risk free rate of 3%, I pay 7%. Say I put 8% of my portfolio into these leaps. I judge by how much I am willing to lose. 8% over two years or 4% a year. I won't lose it all at once.

Listen, if I have these opportunities and they don't come along very much, I will try to take as much as I can of them. And I think if I did this and my expected value is $20 and I am any good at this at handicapping horses then if I do 6 or 8 or 10 of these and I have a horizon of five years and my expected value is 100% over what I am paying, then I can afford to lose a few--as long as **I am good at handicapping**[4]. I have been doing this awhile.

I would like to know as opposed to buying the stock at $52.85 and when the stock goes to $70 and I make x percent with whatever implicit risk reward is there. Or can I take my bet this way or could I take partial stock and partial leaps. It is a different risk/reward. It is a different alternative that is worth working at.

I don't know if I am right, but I think if I looked at 10 of these, I would get 8 of them right or 7 of them right. There is a case for 25 P/E for AXP.

I am comparing the 6% bond yield to the opportunity. I might use 14 or the economy turns down and the consumer drops dead besides bad credit and loss reserves. You can't lose more than $9. In my leaps I would lose some of my 7% interest a year and won't have a stock loss. That is the way **I choose to look at it.**

BULL SPREAD

There is another choice in options. You don't want to be as aggressive. You bought these 50's at 9 and sell the 55s for $6.20 for a net $2.80 cost. The stock is worth $55 so the 50 *Call* is worth 55 or $5 and the *Call* at 55 expires worthless. Profit is $5 + $6.20 -$9 or $11.20 - $9 = $2.20. In short, you laid out $2.80 to make $2.20 net profit for a 79% return on your capital. The spread you paid $2.80 for, you will make $5 on any stock price above $55. Your break-even is at $52.80. So you can create all sorts of interesting risk reward situations even if the stock doesn't go very far. There a lot of things you can do to with options to create interesting risk/reward situations.

SEARS

There was a lecture on *Sears*. *Dean Witter (DW)* and *Allstate* spun-off. The deal was announced in Sept. and *Michael Price* said in July--Sears is spinning off Sears and *Allstate*. Once they spin off *All State* and *DW*, by buying Sears and shorting those two companies, you could create the rest of *Sears* the department store for $35 per share. The department had $9 per share in sales. It was trading at 6% of sales (5/90). When we looked at *JC Penny*, it was trading at 60 cents per dollar of sales--10 times higher. That $5 you could create Sears for $5 and it was worth $50. By Sept. the $5 had moved to $30, and then I sold my stock. Then the stock moved to $50.

Here we have the catalyst; it is not just a LEAP--that is the thesis anyway. There is a spin-off coming in Sept. Once the subsidiary is spun off, people will have a new company too look at. Things will be reassessed. What are the attributes of that company? You say it doesn't work that way, but Sears was pretty darn big. I can guarantee you I have done this many, many times since that time. And so stuff happens. It may not make a ton of sense. This (*AXP*) may not work out.

[4] The Editor guesses that 50% of the Professor's excess returns come from this skill. The Professor knows how to weight his investments for the risk involved (permanent loss of capital).

With Leaps you can create a very exciting risk reward play if you have a strong opinion, and you are right. It is a nice weapon to have in your arsenal.

Discussion of LEAPS in Book, *You Can Be a Stock Market Genius* by Joel Greenblatt (pgs: 213-220, 236, and 242).

LEAPS (Long-term Equity Anticipation Securities).

This is a way to create your own version of a stub stock. A situation, which has many of the risk/reward characteristics of an investment in the leveraged equity of a recapitalized company.

A *Call* is merely the right, but not the obligation--to buy a stock at a specified price for a limited period of time. A June *Call* to buy IBM at $140 per share gives the owner of the *Call* the right to buy IBM at $140 per share until the *Call* expires in June. Let's assume that IBM is trading at $148 in April, two months prior to June expiration. In April, these *Call*s are worth more than the intrinsic value of $8 (148 price - $140 Strike Price). They're more likely to be trading closer to $11.375.

Why? First, the owner of the *Calls* doesn't have to lay out $140 for another two months, yet he is entitled to all of the stock's appreciation until June. To compensate for this, the amount of interest that could have been earned on the $140 for the two months until expiration should be reflected in the price of the *Call*. This is called imputed interest rate which is the rate for the amount of money the *Call* buyer didn't have to lay out for the two months is also included in the *Call* price.

That is how we move the from a *Call* price of $8--the intrinsic value of the *Call*--to approximately $9.40--the value of the *Call* including the interest on the $140 the buyer of the *Call* did not have to lay out. But I said the *Call* should trade at approximately at $11.375. What accounts for the nearly $2 difference between the $9.40 already figured and the actual price of $11.375? Clearly there has to be another benefit to owning *Call*s--and there is.

The buyer for the *Call* can only lose the amount of money invested in the *Call*. If IBM falls to $80 per share, the *Call* buyer only loses $11.375 while the owner of IBM at $140 would lose $60. This is probably worth about $2. So, if you pay the $2 in "protection money" as part of the purchase price of the *Calls*, then your cost of $9.40 moves closer to $11.375. The $2 cost for assuming the risk below $140 is actually the same as the cost of the put option.

Buying calls is like borrowing money to buy stock, but with protection.

The price of the *Call* includes your borrowing costs and the cost of your "protection"--so you are not getting anything for free, but you are **leveraging your bet** on the future performance of a particular stock. You are also limiting the amount you can lose on the bet to the price of the *Call*.

Owning a *Call* isn't too much different from owning a stub stock.

STUB EXAMPLE: The company with a $36 stock recapitalized by distributing $30 to its shareholders, the result was a leveraged stub stock at $6 that magnified changes in the value of the underlying company. There, a relatively modest 20-percent increase in earnings resulted, in one scenario, in an 80-percent gain on the stub stock's price.

On the other hand, if the company declared bankruptcy, an owner of the stub stock was only at risk for the amount invested in the stub, not for the $30 of debt taken on by the company to complete the recap. **Stubs** have unlimited life unlike options which have expiration dates.

LEAPS, which are long-term options, can be purchased up to two and a half years before they expire. Additionally, two and a half years is often enough time for many just plain cheap stocks either to be discovered or regain popularity. Long-term gains are another advantage of holding investments past one year.

Investing in LEAPS will come about as a by-product of your research efforts. Being able to compare the risk/reward of a stock with the opportunities available through an investment in the related LEAPS will provide you with another good investment choice.

END

An Option Question: Weighting your position in Stocks vs. Options

Let us say you find something interesting, **how much do you weight your position in options vs. a stock position?**

GI: That is a great question. This is how I would view it. If I had a 30% position in a stock, I don't think I am at risk for that 30% of the portfolio because the investment is in an unleveraged company. I view a disaster as being down 33% (or 10% of the portfolio—33% x 30%) because if I am going to be buying a 30% position I am buying it at ½ of intrinsic value. So I am buying at $5, and I think it is at worth $10. So I assume it goes down to $3.50 or $3. That is how much I have at risk. But with a LEAP…

What is great about investing in stocks—one way to look at them--is that they are like perpetual options. They never expire unless the company goes bankrupt. So…the comfort you have being a value investor is it may take an extra year but I think it will get to fair value so I may have to hang out for two or three years.

Then you go buy an option that expires in two years you are taking that off the table. We have a few bets like that. We have some combination of stocks and some options that expire in two years and some in 2.5 years. You are adding another risk because stuff happens. The market could crash; the housing market could crash; the consumer drops dead; another 9/11. I know that if I draw a line from now until the next five years I know where the business will be—sort of a *Warren Buffett* thing; I feel very confident from here to there the business will grow and go up. The business will grow 7% to 15%. I feel very confident that the business will grow 15% during that time. If things stink and there is a big drop in the middle, it will still grow 7% from today until five years from now.

With an option, it may get very lumpy, so I take that into account. The way I compare a 20% position to risk 40% of my money so right away I risk 8% in that position. Then I take the time element (of a wasting asset), because I could get it right but have the timing wrong. So I take the position down to 5% from 8%. I assume I could lose all my money in my option. So an option position might not exceed 5% of my portfolio not 15% to 30% of a stock position.

What I mean by not leveraging, is that they can't carry me away with my entire portfolio. When I make money I look at it pre-tax and when I lose money I look at it post-tax. Oh, I lost 50% on that but after-tax it was only 10%. There are little mind tricks you can play.

Student: Do you buy in the money or out of the money options? How do you choose what strike price of an option?

GI: Generally I buy a little bit in the money. A Call option or a Call/Leap is the same as **buying a put and buying a stock; they are identical to each other**. Generally, I don't want to pay a lot of money for the put so usually I would rather take a lower strike price where the Call strike price is struck at a lower price so the put option aspect of the Call is not worth as much. **I am not investing as much money in my put the lower the price I go.**

So bottom line—another way to look at it is your **risk & reward**. There are two ways to look at that in answer to your question. One is the risk/reward. Let us say I own IBM and it is $60 and I think my valuation thesis is that in two and a half years I think it has a good shot it can be worth $90. Ok? I can buy these $75 calls for a $1 for a 15 to 1 payoff. Or alternatively I could say, "Look, right now I could buy the $55 calls at $9—they are $5 in the money—the stock is at $60 and it is costing me $9 or $10 to buy that but that $10 can go to $30 so I triple my money and even if I am wrong I will get back all my money back if the stock is at $65." So I will factor that in. It would be unlikely to lose all my money if I am close to right, because I am thinking $90. To lose all my money it would have to go to $55. I factor that in, but it is not a science.

The thing that I showed you was—how do I know to buy the $55 calls at $10 instead of the $60 calls at $7.50 when the stock is at $60? Which is better of the two Call strike prices? What I say is, "I always I look at the call spread—a bull spread." What that involves is buying the $55 call and selling the $60 call. If I bought the $55 call for $10 and sold the $60 call for $7.50 for a net cost of $2.50 ($10 - $7.50, not including commissions). The most I can make if the stock is above $60 is $5.00 or a 100% return. If the stock is at $55 then I lose 100%. The spread is worth $5. If the stock is at $57.5, I am at break-even ($55 Call Strike Price plus $2.50 paid for the call spread = $57.5).

If the stock is above $60 it will be a double in 2.5 years because I believe the stock will be at $90. Does that sound like a good bet based on my thesis? I think the stock will be at $90. So I will buy the 55 call because I am effectively buying the spread of $55 call/$60 call.

It is an exercise that I do in my head when I want to own an option outright. I don't really buy the spread. Do I want to own the 55 call or the 60 call? So I compare the two by doing the bull spread in my head. By laying out an extra $2.5 to buy the $55 call at $10 vs. the $60 call at $7.50, I am effectively choosing a bull spread.

The most I can make is $5 but the spread will never close until the end. I would never pay $4.5 for example.

The $55 calls are plus $10 or lay out $7.50 for the $60 call? **Buying the $55 vs. the $60 is effectively like owning the spread.** If I buy the $55 call I am effectively paying for the $60 call and the $55/$60 call spread. Laying out the $2.50 brings me $5.00 if I am right for a 100% return. Just go home and think about it in your head.

Student: Why would you *ever* buy a stock when you can get a higher return with an option?

GI: If the stock goes down 8% over the next two years because the world is a crazy place, I lose 8% in owning the stock, but 100% of my money owning the option spread. The problem is that I am wrong a lot despite what I tell you in here so that is risky. If it is a good bet--and I would call any option or spread position a bet--I will win over time but not necessary on any one bet. I want to be the betting house

where I will win a series of bets over time if my valuations of the companies in the group of bets are correct.

Anyone read *Fortune's Formula* by William Poundstone—it is a new book out (See shaded box below). It talks about the optimal way to structure a portfolio. **It is about horse racing and odds.** What is the optimal way to structure a portfolio if you have good odds? If I could flip a coin and I could get $1 if it is heads and lose $0.50 if it is tails. You want to do that a lot but if you have a pile of money you wouldn't put 100% of your money on that particular bet. Even though it is a great bet, you wouldn't put all your money into it because you could hit a bad run and lose all your money.

From www.bankstocks.com Solve the following problem. You're at the track with $1,000 in your pocket, and see that the posted odds on a certain horse winning an upcoming race are 5 to 1. You (and only you) have a secret line of communication to the horse's trainer, and learn that the horse's chances of winning are meaningfully higher than the posted odds—say, 1 in 3. Which is to say, you have **a material information advantage over other bettors.** How much of your $1,000 do you bet?

That, in a nutshell, is one of the most crucial and least discussed dilemmas in the capital allocation process. While CAPM types preach about the virtues of diversification, the Warren Buffets of the world know better. Diversification only assures mediocre returns, they point out; the *real* money is made **when you put a lot of capital to work in those rare opportunities when you have a true edge.** Like, say the 1-in-3 shot above that's going off at 5-to-1.

William Poundstone gets at this issue in ***Fortune's Formula:*** *The Untold Story of the Scientific Betting System That Beat the Casinos and Wall Street.* The book is a history of a formula called the **"Kelly Criterion"** that allows gamblers (and other capital allocators) to **maximize their profits on a series of bets where they have an information edge**, but without betting so much that they risk going broke. Take the horse-racing example, above. Yes, you'll want to bet more than you normally would, to make the most of your insider knowledge. But you don't want to bet everything: even by your own reckoning, the horse has just a 33% chance of winning. Once you're bankrupt, you can't get back in the game. The optimal bet size is somewhere in between.

The namesake and inventor of the Kelly formula is a man named John Kelly, a mathematician at Bell Labs in the 1950s and 1960s. Kelly developed his formula by building on the work of another Bell Labs mathematician, Claude Shannon. Poundstone says Shannon is considered by many to be the second-most-brilliant individual of the twentieth century, after Einstein. In particular, Shannon is the father of "information theory," which serves as the **broad mathematical foundation for essentially the entire electronics and digital revolutions.** Everything from integrated circuits to fiber-optic cable to DNA sequencers rely at rock-bottom on Shannon's work. His models apply to any kind information conduit, electronic or otherwise. They allow communications engineers to minimize the amount of noise—static, gossip, whatever--in a given conduit, and maximize the amount of information the conduit can carry. Which is to say, Shannon essentially **developed a mathematical way to convert uncertainty into certainty.**

Communications engineers aren't the only ones with an interest in **separating information from noise, of course.** Bettors and investors could use some help there, too. So it's perhaps not coincidental that some of Shannon's math can be put to use at the race track, the blackjack table, and on Wall Street. One of the first to apply Kelly's formula was a young physics grad student, Edward Thorp, who used it in conjunction with a card counting system he developed for blackjack. (Thorp later wrote a book on card counting called *Beat the Dealer* that's now considered a classic among blackjack

aficionados. Later on he ran a hugely successful quant fund, Princeton-Newport Partners that eventually got tangled up in Rudolph Giuliani's pursuit of Michael Milken in the 1980s. But that's another story.)

How does the Kelly formula work, you ask? It's pretty simple. The formula says that the optimal wager size is determined according to the following fraction:

Edge/Odds

The denominator, odds, is the public odds posted on the track's tote board. The numerator, edge, is the **amount you stand to profit, on average, if you could make this same bet over and over and over.** Let's go back to the horse racing hypothetical in the first paragraph, and see how it works. The posted odds are 5 to 1. So we'll put a 5 in the denominator. But recall that you believe the true odds are 1 in 3, not 5 to 1. If you bet $1,000, then, you'll have a 33% chance of winning $6,000 ($5,000 plus your original $1,000 wager), or $2,000, on average. On a $1,000 bet, your profit is thus $1,000. That's your *edge*. For the formula's purposes, the $1,000 becomes a 1.

So according to Kelly, the edge is 1 and the odds are 5. Plug in the numbers and you get 1/5. **You should bet 20% of your bankroll.**

A few comments are in order. First off, this **only works in instances when you have a true, material information advantage.** If you don't, your edge is zero, so you shouldn't bet. Second, the only time the formula will tell you to bet all you've got is when you're absolutely, positively sure you'll win. In the real world, that hardly ever happens. Thus Kelly prevents bettors avoid being wiped out completely, so that they'll have capital to put to work when the next opportunity rolls around. This is no small advantage. Other capital allocation strategies gamblers use, most notably "martingale," in which the player doubles down after a losing bet in order to quickly recoup losses, a can be quick trips to bankruptcy. Finally, using Kelly on a series of bets is the most efficient way to compound your winnings. Models show that, say, a more aggressive "Kelly times 2" strategy actually leads to *lower* long-term returns.

Kelly's advantage shows the results of various strategies for betting on a series of hypothetical coin flips where the bettor has a 55% chance of winning.

It scarcely needs to be added, of course, that **the economics profession has roughly zero use for all this.** First off, the formula was developed by a mathematician, not an economist, which naturally makes economists skeptical. Second, the notion that an investor can have a true edge is anathema to the efficient-market dogma that still dominates most economics departments. Paul Samuelson is particularly scornful of Kelly (or "g," as it's referred to in economics circles), calling it a "fallacy."

The Kelly criterion's virtual absence in economics and M.B.A. curricula explains why the formula is not well known on Wall Street. It shouldn't be. It is hard enough to find ideas where an information advantage is even possible. When those do occur, **investors can use all the help they can get** in figuring out how much capital to apply. Kelly may not be as ideally suited to Wall Street as it is to blackjack, but it sure seems like a good place to start.

Student: Do you use the *Kelly Formula*?

GI: It (investing in stocks & options) is not as clear as the *Kelly Formula*. What are the odds of doing that? You are not taking bets where you lose it all; it is not as clear as the *Kelly Formula*. There is not an optimum way to bet on stocks.

A. It is uncertain and
B. You don't lose all the money you put up.

Student: What if you have an inkling of *IBM* moving quickly to $90.

GI: If I put on a bull spread…. The opposite of a bull spread is a put spread. The puts at $60/$55 by definition has to be at $2.50 because they (call and put prices) have to add up. There is still a chance that within a year the spread will still be worth something. Sometimes in the spreads, a shorter expiration is better than a longer expiration. If it is expiring. You have a whole year for the stock to fall. There is an interesting dynamic in spread. A lot of this stuff has been learned the hard way*. (Study the time decay of options).*

End

Appendix for Long-term Equity Anticipation Securities (LEAPS)

A *call* is merely the right—but not the obligation—to buy a stock at a specified price for a limited period of time. So a June call to buy IBM at $140 per share gives the owner of the call the right to buy IBM at $140 per share gives the owner of the call the right to buy IBM at a price of $140 per share until the call expires in June (the third Friday of each month is considered the expiration date for listed options). If at the expiration date IBM stock is trading at $148, the call would be worth $8. This is because the right to buy stock at $140, when the stock can be immediately resold for $148, is worth $8. If, on the other hand, IBM stock is trading at only $135 on the call's expiration date, then the call expires worthless. This is because the right to buy stock at $140 (usually referred to as the strike or exercise price) isn't worth anything if everyone can just go out into the marketplace and purchase the same stock for $135. Well, that just about covers the basics—except there is one more step.

Pretty much whenever the stock market is open, the options market is also open. There aren't listed options available for every stock that trades, but option do trade on thousands of the largest companies. Therefore, if a stock has listed calls, you can usually buy and sell them during market hours up until their respective expiration date. In our example, the June $140 calls to buy IBM stock were trading for months prior to their June expiration. We've already discussed what the call would be worth on its expiration date. The question is: What is the fair value of the call before the expiration date? To be more specific, how much should you pay for the call if you buy them in April. Approximately two months before the calls expire? (While you don't really have to figure out the correct pricing for a call, it *is* good to understand where the price comes from. Note: For purposes of our discussion, the effect of dividends can be ignored).

Let's assume that IBM is trading at $148 in April, two months prior to June expiration. We already know that, if it were the third Friday in June, these IBM calls would be worth $8. In April, however, these calls are worth more than $8. They are more likely to be trading closer to $11.375. Why? There are really two reasons. First, the owner of the calls doesn't have to lay out $140 for another two months, yet he is entitled to all of the stock's appreciation until June. Think about it. If IBM stock were to gain another $10 per share by June expiration, then IBM would be trading at $158. The owner of stock (since April) would have a gain of $10 on his $148 investment. In the other hand, if the IBM June $1450 calls could be purchased for only $8 in April, then the owner of an $8 call option would also make $10 in the same

two-month period. (That's because, on the expiration date, the owner of the call could purchase stock at $140 and sell it for $158; after subtracting the $8 initial cost, the profit would be $10.) This result wouldn't be fair.

After all, the owner of the stock laid out an additional $140 for the same amount of profit. The owner of the call received the upside in IBM's stock without having to invest an additional $140. To compensate for this, the amount of interest that could have been earned on the $140 for the two months until expiration should be reflected in the price of the call. It is. Assuming a 6-percent interest rate, the interest earned on $140 would be approximately $1.40 per share. So, in addition to what is known as the *intrinsic value* if the call—the amount by which the call is already *in the money* (in our example, the difference between the market price for IBM of $148 and the exercise price of the call of $140, or $8)—an imputed interest rate for the amount of money the call buyer didn't have to lay out for the two months is *also* included in the call price. That is how we move from a call price of $8—the intrinsic value of the call—to approximately $9.40—the value of the call including the interest on the $140 the buyer of the call didn't have to lay out.

But I said the call should trade at approximately $11.375. What accounts for the nearly $2 difference between the $9.40 we already figured and the actual price of $11.375? Clearly, there has to be another benefit to owning calls—and there is. The buyer of the call can only lose the amount of money invested in the call. While this doesn't sound all that great, when you compare it to owning the common stock of IBM, it is. This is because, at the June expiration date, if IBM stock falls to $140 per share, the owner of the call loses his original investment of $11.375. If IBM stock falls to $130 per share, the owner of the call loses the same $11.375—at $120 per share, or even $80 per share, the call owner only loses $11.375. Sounding better yet?

At the price of $140 at the June expiration date, the IBM holder is down $8 from his April purchase price of $148. At a price of $130 in June, he is out $18; if IBM's at $120 he is our $28; and at a price of $80—the loss gets really ugly—he is out $68 per share. See, there is an added benefit to owning the calls—it is the benefit of not losing any more money after the stock falls below the strike (or exercise) price of $140 per share. What is that worth? Well, in this case, it is probably worth about $2. So, if you pay the $2 in "protection money" as part of the purchase price of the calls, then your cost of $9.40 moves closer to the $11.375 price we talked about before. The $2 cost for assuming the risk below $140 is actually the same as the cost of the put option (but I said we would only talk about calls—so not another word).

Buying calls is like borrowing money to buy stock, but with protection. The price of the call includes your borrowing costs and the cost the cost of your "protection"—so you are not getting anything for free, but you *are* leveraging your bet on the future performance of a particular stock. You are also limiting the amount you can lose on the bet to the price of the call.

So, getting back to the main point (the whole "create your own recap" thing), owning a call isn't too much different from owning a stub stock. With a stub stock, you have a leveraged bet on the future of a company, and you can only lose the amount invested in the stub. In our original example, where the company with a $36 stock recapitalized by distributing $30 to its shareholders, the result was a leveraged stub that magnified changes in the value of the underling company. There, a relatively modest 20-percent increase in earnings resulted, in one scenario, in an 80-percent gain in the stub stock's price.

While LEAPS don't have an unlimited life like stub stocks, they can usually be purchased up to two and a half years before they expire. This often gives ample opportunity for the stock market to recognize the results from an extraordinary corporate change (Like a spinoff or restructuring) or a turnaround in fundamentals (like an earnings gain or the resolution of an isolated or one-time problem). Additionally,

two and a half years is often enough time for many just plain cheap stocks either to be discovered or to regain popularity. Since current tax law favors holding investments for more than one year, buying LEAPS is also a way to receive long-term capital gains treatment while receiving the leverage benefits of an option investment.

Because this is an implied interest cost factored into the price of the LDAPS, interest expense does get included in the LEAPS holder's tax basis.)

You can choose the company you want that has LEAPS and create your own "stub" stock. Being able to compare the risk/reward of a stock with the opportunities available through an investment in the related LEAPs will provide you with another good investment choice.

CASE STUDY: WELLS FARGO LEAPS

I "stole" one from one of my favorite investment newsletters, *Outstanding Investor Digest (OID)*, After reading an incredibly compelling investment case for investing in Wells Fargo stock outlined in the newsletter (go here: http://www.scribd.com/doc/68687688/Oid1992-Wells-Fargo), I concluded I had to steal this idea. Only I liked it so much that I decided to leverage my returns through investing in the company's LEAPS. In this case, because of the added element of protection that the LEAPS afforded, I was able to make a great risk/reward situation even better.

In December 1992, I read that Bruce Berkowitz made a compelling investment case for Wells Fargo stock was overwhelming on its own. At that time, Wells Fargo, a large California-based bank, was trading at around $77 per share. California was in the middle of the worst real estate recession since the 1930s. Wells Fargo had by far the largest concentration of commercial real estate loans of any bank in California. According to Berkowitz, BankAmerica, Well's largest competitor in California, had commercial real estate loans on its balance sheet equal to only $48 per share (its stock price was approximately $47 per share). Wells Fargo, on the other hand, had commercial real estate loans totaling about $249 per share (as compared to a stock price of about $77). Further, Wells had taken a loss provision (reserves that anticipate future loan losses) of $27 per share the previous year, wiping out almost all of its earnings. In just the first nine months of 1992, Wells had provisioned for an additional $18 per share of losses. Many investors questioned whether Wells Fargo would survive the real estate downturn.

Berkowitz's investment case was fairly simple. **If you excluded the loss provisions, Wells (adjusting for cash earnings and one-time expenses was already earning nearly $36 per share before taxes).** If the real estate environment ever recovered to a more normalized level, loan-loss provisions, based on past experience would probably fall to approximately $6 per share on an annualized basis. This would translate to normalized pretax earnings of $30 per share, or $18 per share in earnings on an after-tax basis (assuming a 40 percent tax rate). At a price of nine or ten time earnings, Well Fargo could be trading at $160 to $180 per share (versus its then current price of $77). The question wasn't how Wells Fargo could increase its earnings power to reach $18 per share in after-tax earnings. Wells was *already* earning that kind of money—but for the effect of the extraordinary loan-loss provision. According to Berkowitz, the real question was: What was the right way to look at the loan-loss provision and how bad were they?

Berkowitz explained that the financial position of Wells Fargo was actually quite strong. Even the loans that Wells had already classified on its balance sheet as "non-performing" were actually earning interest for the bank (although, to be conservative, this interest was not included in the bank's reported earnings). Non-performing loans are loans that are in some way substandard–either loans that are not paying any interest, not applying the full interest obligation, or loans where it is merely anticipated that

future interest charges and principal payments *might* not be met on a timely basis. Far from being worthless, these nonperforming loans, which equaled approximately 6% of Well's total loan portfolio. Still had a cash yield of 6.2 percent. This meant that at a time when the prime rate was 6 percent and the cost of Well's money (the rate Wells paid its depositors) was only around 3 percent, the "questionable" part of Well's loan portfolio was still earning a very respectable cash return of over 6 percent.

In other words, if Wells was still able to collect such large interest payments from these nonperforming" loans, maybe they weren't so terrible after all. At least, it made sense that a good portion of the face value of the nonperforming loans' value would ultimately be recovered. In fact, according to Berkowitz, Wells was being so conservative about classifying its loans that 50 percent of those loans it had classified as nonperforming were still up-to-date on all required interest and principal payments.

Further, for purposes of reporting income and taking reserves against its balance sheet, Wells had already assumed the worst for its portfolio of nonperforming loans. Including the hefty loss provisions of the previous two years, reserves for future loan losses stood at 5 percent of the bank's total loan portfolio. Since currently only 6 percent of Well's loans were classified as "nonperforming" (remember, these loans were far from a total loss), before this 5-percent reserve would become inadequate, either almost all of the nonperforming loans would have to become completely worthless of the loans that were now considered "performing" would have to take a dramatic turn for the worse. Given the level of Well's apparent conservation, the way Berkowitz had it figured, both seemed highly unlikely.

Two other points clinched the deal for me. The first was a comparison made in the OID piece between Wells Fargo and BankAmerica. According to most investors, BankAmerica's stock was the much more conservative investment of the two banks. As it turned out, however, although Wells did have a much bigger exposure to the California real estate market (and therefore more nonperforming loans), it had already reserved for much bigger losses than BankAmerica. Despite these reserves, Wells Fargo still had higher capital ratios than BankAmerica (tangible equity to total assets, etc.), even after adjusting for its riskier asset profit. This was just another sign that Wells wasn't in as bad shape as the stock market apparently believed.

The second point was even more persuasive. With all of the nonperforming loans, loss reserves, and actual loan losses, Wells Fargo still hadn't shown a loss for any year in its 140-year history, Most industrial companies don't have anywhere near that level of *predictability* to their earnings. In what many considered to be the worst real estate environment for California in over fifty years, Wells had still managed to eke out a profit in 1991. This indicated to me that Wells was a good bet to get through this difficult period and that a multiple of nine or ten times normalized earnings (an earnings multiple substantially below most industrial companies) was a reasonable and attainable goal for its stock. The bottom line was, if Wells survived the current real estate downturn and its annual loss provisions returned to normalized levels, the stock looked like a potential double.

While the whole analysis made tremendous sense, I did have some nagging concerns. What did I know about California real estate market? What if the environment in California turned drastically worse? It appeared as though Wells could weather a pretty severe storm, but what if the once-in-fifty-years turned into an unprecedented monsoon? Of course, I never invest in situations with complete certainty, anyway. Situations that make sense and offer attractive returns given the risks involved—that is all I can really ask for.

But still—a bank is a funny animal.[5] You never really know exactly what makes up its loan portfolio. The financial statements only give a very general overview of the bank's assets. Then again, Wells did offer some comfort in this area. Between its reserves, the "quality" of its nonperforming loans, and especially its ability to earn huge returns each year, Wells seemed to have a huge cushion to cover any future loan losses. Nevertheless, **there was a still a chance**, no matter how slight, that the bank's portfolio of real estate loans could spoil what looked like a great investment.

LEAPS Analysis

That is why investing in the LEAPS seemed to make such sense. Although the stock looked like an outstanding investment—combining a great chance for a double with a remote possibility of disaster—the LEAPS looked even better. At that time (December 1992[6], I could buy Wells Fargo LEAPS that gave me the right to buy stock at $80 per share until January 1995—more than two years away. By the time those two years were up, I figured it would be pretty clear whether or not Wells and survived the California real estate crisis. If things were looking up by then, there was an excellent chance that Well's earnings power would be reflected in its stock price; a price of $160 or more didn't seem outlandish. On the other hand, if the severe downturn turned into a real estate debacle, the stock could trade substantially below $80. And in the absolute worst case, there would be a government takeover of the bank with the stockholders wiped out.

With that outlook, and at a price of $14, the January 1995 calls (referred to as LEAPS because of their long duration) to buy Wells Fargo stock at $80 per share looked pretty enticing. These LEAPS would give me the right to buy Wells Fargo stock at $80 per share until they expired in January 1995. If Wells were trading at $160 by then, these LEAPS would skyrocket to $80—because I could buy Wells at $80 and immediately sell it for $160. On an investment of $14, this would mean a profit of $66, or a gain representing almost five times my original investment. If Wells crashed and burned, I would be out just the $14. So, one way to look at an investment in the LEAPS was: here was a way to set up a risk/reward ratio of 1 down to almost 5 up.

The stock, if you looked at this extreme scenario (Wells was either going to make with flying colors or not make it at all[7]), did not offer as good of a risk/reward investment. At a price of $77 per share, if the stock hit $160, stockholders would make a little more than $80. If Wells didn't make it, a stockholder could lose almost $80. This was a bet of 1 up to 1 down. Since the facts in the situation outlined in the OID interview seemed to check out, I was actually pretty excited about the upside prospects for Wells. Right or wrong, my assessment of the chances for the extreme downside case where below 5 percent. While this analysis made both the stock and the LEAPS look like terrific investment opportunities—the LEAPS, under this scenario, provided the better risk/reward.

A simpler case for the LEAPS went this way: If I liked Wells Fargo so much, why couldn't I just leverage up my bet by borrowing money to buy the stock? Well, that is just what I did by buying the LEAPS—only I got a really a great deal. Here is how it went: I could borrow the *entire* purchase price of Wells stock in December 1992. The only money I had to lay out up front was for the interest charges on my borrowing. This would represent interest for the next 245 months, taking me to January 1995. The catch was that the interest charges wouldn't be low, though the rates wouldn't be nearly as high as the rates on my credit card. The interest rate would be closer to the borrowing costs of a large corporation

[5] Editor: Since banks are dependent upon outside funding (deposits) and confidence due to fractional reserve banking's leverage, a shut-off in funding can be catastrophic and/or bankrupting.
[6] The GI read of the idea in OID on November 25, 1992
[7] Editor: This is called a binary outcome.

with a B or BB investment rating from a major rating agency like Standard & Poor's –i.e., not considered investment grade, but not terrible either.

But here is the good part. I was only on the hook for those up-front interest charges. If the investment in Wells Fargo stock didn't work out (i.e., if the stock traded down—even all the way down to zero), I didn't have to pay off the principal of the loan I took out to buy the stock. My only loss would be those upfront interest charges. On the other hand, if the stock went up, I would participate dollar for dollar in Well's upside. My profits would be equal to the increase in Wells Fargo's stock less the interest charges for borrowing the money to buy the stock. Hmmmm…I had to look at this gain Interest rates equivalent to those paid by many large corporation; no repayment obligation on the loan if things didn't work out. That sounded pretty good. My only question was: Where do I sign up? (Note: This was no different from a typical LEAPS analysis. The interest costs were high because they included the cost of the "protection money." Also, for you sticklers, including the effect of dividends does not materially change the basic point.)

So what happened? California didn't fall into the ocean and Wells Fargo earned almost $15 per share in 1994 and over $20 per share in 1995. By September 1994, the stock had more than doubled to $160 per share. As for the LEAPS….what another word for "home run"?

End