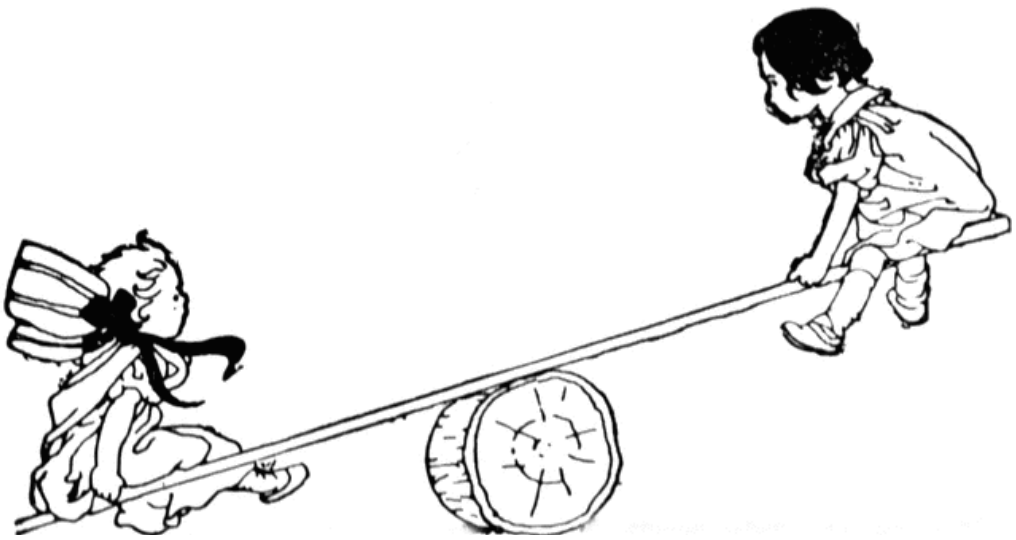
The Convexity Maven

A Commentary by Harley Bassman

November 30, 2021

"Unbalanced Leverage"

Options for Civilians



Earlier this month, my eldest daughter (finally) married her college sweetheart in a beach ceremony near my home in Laguna Beach. (Yes, it's a struggle.) Late in the evening, after a few too many Tiki Punch craft cocktails, one of the guests boldly asked me the source of my good fortune.

I eventually distracted him by a pithy paraphrase of Thomas Edison: "Success is missed by most people because it comes dressed in overalls and looks like work."

But upon a bit more introspection the next day, I came to recognize that the real answer was always placing myself mid-stream in a river of positive Convexity; or in layman's terms, situations where I could win much more than I could lose.

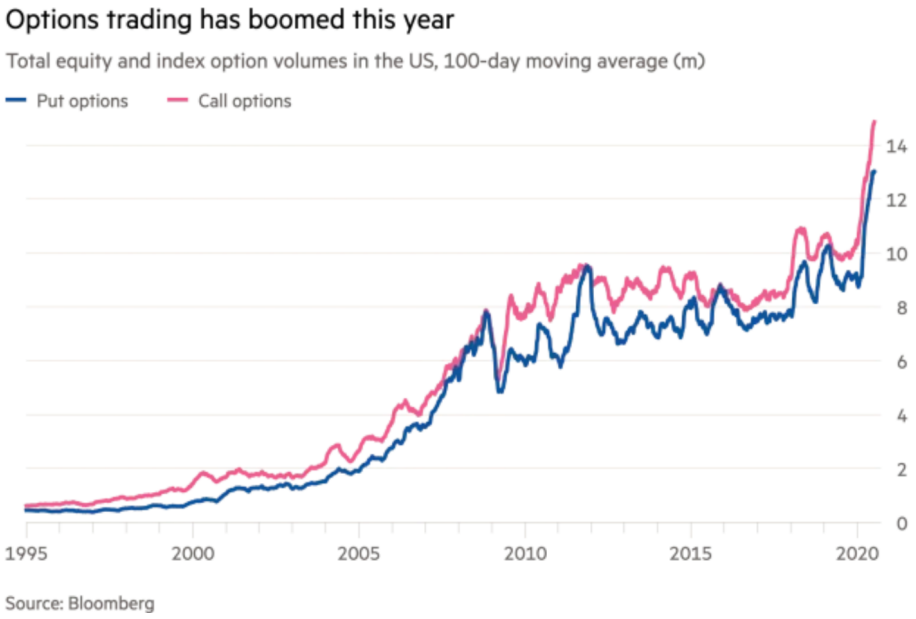
Math geeks will banter about Convexity as the second derivative, a Physicist will measure it as acceleration, while an Economist will calculate the change in the cost to produce an additional item.

Civilians will not be bothered with such hifalutin equations, rather their contact with Convexity occurs via options, both financial and otherwise.

One does not need a Robinhood account to appreciate options. When you make a reservation at a sumptuous restaurant that you can cancel at any time, you own an option to decide later if you care to dine there. If you buy a refundable airline ticket, you own the option to fly to a fancy resort. This is good for you, but not so much for the restaurant or airline as they may not be able to resell the service if you rescind at the last minute.

This is why service providers often charge a cancellation fee, which is essentially is the price of the option. These sorts of options are common in our daily lives, but they are neither transparent nor fungible, which is why an airline can ask for a $150 change fee on my $39 ticket from LAX to Las Vegas.

So, let's consider the incredibly liquid and visible market for options on stocks, which has exploded since the start of COVID. Trading of -gaeta line- call options and -picotee line- put options have both jumped over 40% since early 2020.



A more startling observation – for the first time, -delft line- option trading volumes now exceed trading volumes of their underlying stocks. This might seem strange until one examines the underlying construction and profile of options.

Exhibit 1: Single stock options trading volumes are bigger than shares volumes for the first time

Average daily notional traded for options vs the underlying stocks

Source: Goldman Sachs Global Investment Research, OptionMetrics, Data as of 21-July

Option trading has expanded over the past eighteen months for several reasons, including the ease of access via online trading platforms, as well as boredom from quarantined barstool gamblers.

But I think the greater contributor is a deeper appreciation of **"unbalanced leverage"** and **"non-recourse borrowing"**, two key features of options.

Before we dig in, let's recall that a "call option" is the right, but NOT the obligation, to buy an asset either on a given date (European option) or anytime up to a given date (American option). A "put option" is the right, but NOT the obligation, to sell an asset, on or up to a given date. This given time is known as the "expiration date" of the option.

The price where one has the right to buy or sell the asset is the "strike price" (or "K"); and the price of the option is known as the "option premium".

And of course, the most important input into an option price is the "Volatility". Most often one hears this expressed as "Implied Volatility" since usually only the option premium is visible; as such, one must work backwards from the option price to determine the Volatility implied by the (Black-Scholes) pricing model.

For an added options warm-up, please go to my Maven's Classroom; specifically:

"Wall Street Babylon" – November 28, 2011 (A discussion of Volatility)
"Skewered by Skew" – April 17, 2013 (Valuing out-of-the-money options)
"Options for the Magical Path" – May 23, 2016 (Analyzing digital/binary options)

The Unique Properties of Options

Over the next few pages, I will be using an 11/16/21 snapshot of the market:
Spot level of SPY = 470
Expiration = December 15, 2023
Interest rate = 0.75% (~ the 2yr rate)
Call Strike @ 470…option price = $52.50; (IVol = 20.9%)
Call Strike @ 420…option price = $83.50; (IVol = 23.6%)

Unbalanced Leverage simply means that the gains can be larger than the losses for equally opposite outcomes; mathematically this is positive Convexity.

With SPY (S&P 500 Index ETF) at 470 (4700 on the S&P 500), an at-the-money (ATM) call option that expires in two-year costs $52.50. This is the most one can lose, while the gains are unlimited. Well, not exactly unlimited, but the gains can certainly be much greater than the losses – as such, they are "unbalanced".

Moreover, this unbalanced leverage can occur well before expiry. Assuming an instantaneous 10% shift in the price of SPY, the call option will rise by 54% to $81 versus declining by 43% to $30, holding all else equal.

This leverage compounds as the price changes become more extreme; so, for a 20% shift, the option rises by 119% to $115, or declines by 72% to $15.

This is probably not news to investors with even a cursory familiarity with options. But it is likely unappreciated that in buying a call option versus purchasing the underlying asset, one is implicitly borrowing the funds saved.

When one pays $52.50 for 10 call options, K = 470, they gain exposure to 1000 shares of SPY at $470.

Pencil to paper, those 10 call options will cost $52,500, which gives one the upside gains to $470,000 of stock. Cutting a few corners, one is borrowing $417,500 ($470,000 - $52,500) as a **non-recourse loan;** a loan that never needs to be paid back no matter how low SPY plunges.

Better still, one borrows at the advantageous institutional rate (currently 0.75%) paid by the large market-makers like of Citadel, Susquehana, and Jane Street.

Options: A Value Proposition

As I detailed in "A Cheerful Sisyphus" – November 2, 2021, longer-dated Implied Volatility is strangely low relative to the wider range of outcomes conceivable over the medium-term.

The Federal Reserve Bank (FED) recently announced that it will soon start to "taper" its bond buying program, and days later it was reported that year-over-year inflation clocked in at 6.2%, the highest rate in thirty years.

Nonetheless, -castelvetrano line- Implied Volatility for SPY two-year expiry 10% out-of-the-money puts is in the lowest quadrant since April 2020.

Near record low interest rates, combined with depressed levels of Implied Volatility near the apex of stock prices offers the perfect opportunity to use options to improve one's portfolio.

I suggest replacing exposure to SPY with ~10% in-the-money (ITM) call options; in this case, options struck at 420 that cost $83.50.

One is implicitly borrowing money at 0.75%; if the two-year borrow cost rose to its January 2019 level of 2.75%, the option's price would rise by $7.75 to $91.25.

Cutting a few more corners, the price of a 50-point ITM call option is $50 plus the price of a 50-point out-of-the-money (OTM) put. As such, the "time value" of this ITM call is only $33.50; 36% lower than the ATMs $52.50.

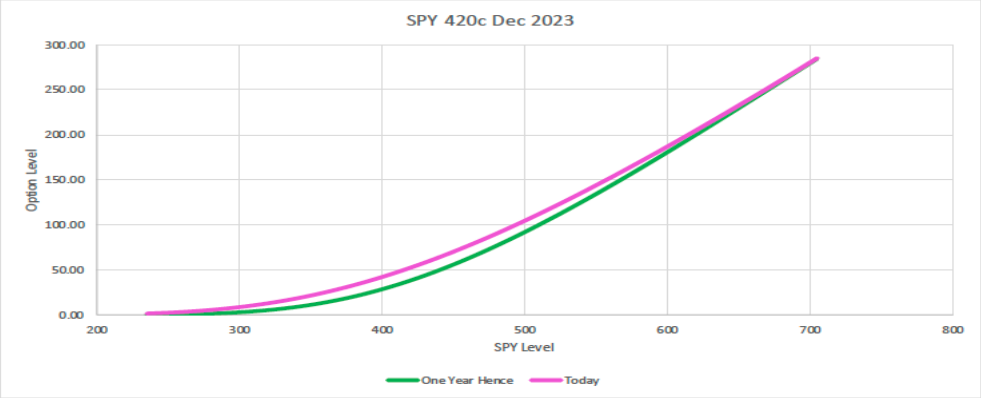
This concept is critically important as it forms the basis for all option models. Known as "**put/call parity**", it stipulates that owing SPY and the K = 420 put option has the same payoff profile as simply owning only the K = 420 call option.

Building A Better Portfolio

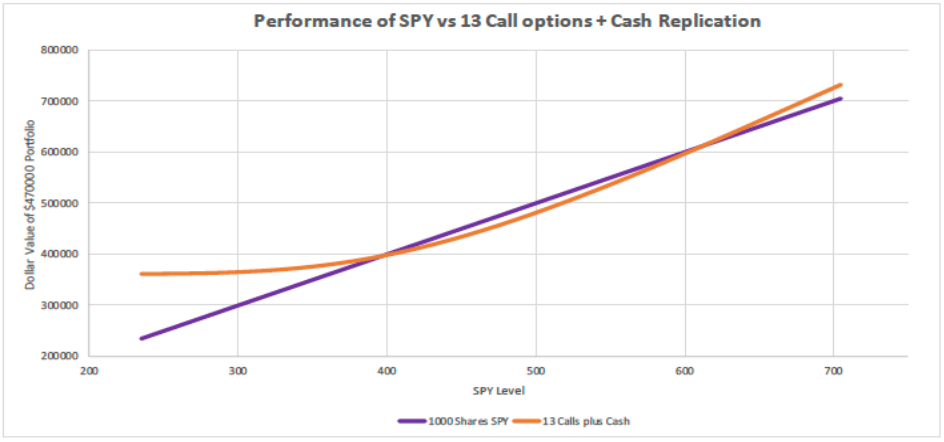
We are now shovel-ready for construction. Let's consider an Index portfolio that holds only 1000 shares of SPY, trading at $470; a total value of $470,000.

One could sell all 1000 shares of SPY and buy 13 call options (expiry December 15, 2023, with a strike of 420), at a price of $83.50 for a total cost of $108,550. This leaves $361,450 in cash. In this illustration, the 13 call options have a notional exposure to $611,000 of SPY, selected to balance out the risk-reward profile. One can use greater or fewer options (detailed below) as suits their view and risk profile.

Below, the -alfonso line- is the immediate price change of this listed two-year expiry in-the-money call option as SPY ranges between 235 and 705 (+/- 50%), while the -cerignola line- is the option price one year later, all else held constant.

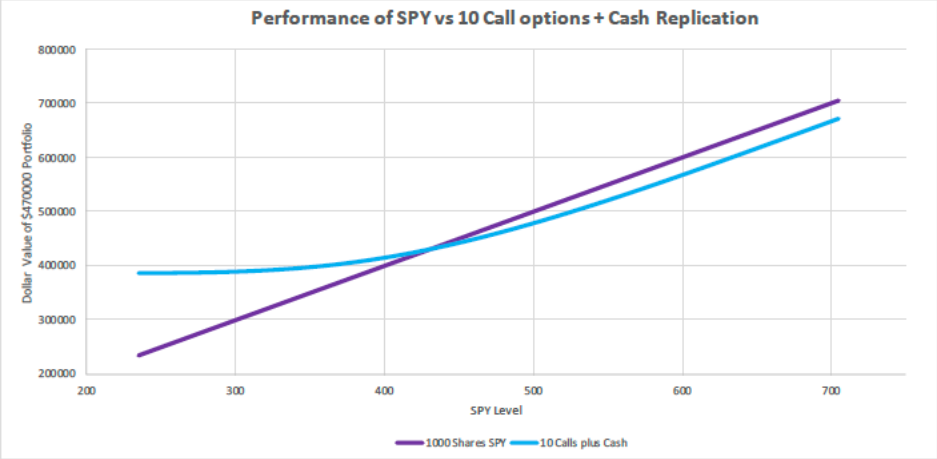


Used as advertised, compare the -kalamata line- value of 1000 shares of SPY versus the -arbequina line- portfolio construction of 13 options + cash; one year hence, all else equal. This weighting maintains a bullish exposure while offering protection if SPY breaks below 400.

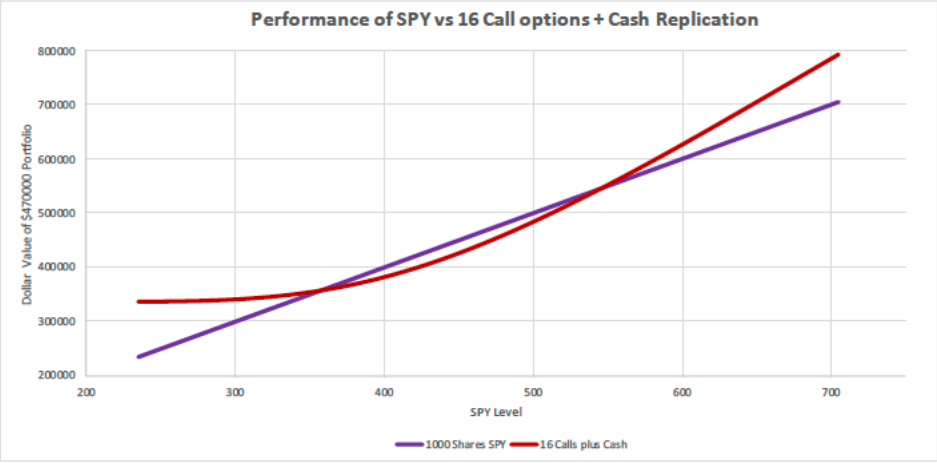


As noted, I selected the 13 calls weighting for its balance between upside participation and downside protection, but one can easily create a different balance.

If you have enjoyed most of the 145% rally since the March 2020 lows and would like to take a few chips off the table without totally cashing out, perhaps the -beldi line- construction using only 10 SPY call options is more suitable.



Conversely, if you want to juice the upside with an emergency parachute in your backpack, then consider a -amfissa line- profile with 16 call options.



As a reminder, these are not guaranteed returns, but rather modeled profiles with a few base line assumptions. A slow grinding rally or decline will hamper performance as Implied Volatility will decline. However, I have not projected what might occur in a sharp decline where Volatility jumps. As modeled, a mere 10% increase in IVols would jump the current option price by $5.50, or 6.6%.

Taking the car out for a spin…

I noted that I "cut a few corners". Specifically, I did not account for the loss of the ~1.25% dividend on SPY when the portfolio was converted to options and cash. However, recall that via option math we effectively borrowed the proceeds of the sale at 0.75%, thus, creating a low hurdle to earn back that lost income.

I profiled the balanced portfolio with 13 options and $361,450 in cash; but what if we invested that cash in assets that kicked off a yield greater than zero ?

If I may ask the widows and orphans to skip this section - here is what I do:

Half of the cash is invested in high-grade, long-term, (mostly Municipal) Bonds.

Much of the balance, as detailed in "Blind Faith" – July 7, 2021, goes to bond-like securities such as Mortgage Real Estate Investment Trusts (mREITs), Closed-end Funds (CEFs), Business Development Companies (BDCs) and Oil and Gas Master Limited Partnerships (MLPs). These listed products yield between 7% and 11%, albeit they are volatile (!), often illiquid (!), and rely upon financial leverage (!!).

Circling back to the top where my Tiki-infused guest inquired about the source of my success, the real answer is this:

1) I buy long-dated options (SPY or SX5E) to gain **unbalanced** equity exposure;
2) I use the conserved **non-recourse borrowed** cash to invest in bond and bond-like assets that yield more than the embedded borrowing cost;
3) I recognize that the Kryptonite for this levered portfolio is interest rates above 4.25%, so I overlay an **Interest Rate Hedge Strategy**.

The Interest Rate Hedge was detailed in "Fire Insurance" – June 8, 2021, so I will not repeat it here. Rather, below is a somewhat recent "modeled profile". [And please be reminded, this is a profile and not a prediction.]

	-50bp	Unchanged	+50bp	+100bp	+150bp	+200bp	+250bp	+300bp
20yr Swap Rate	1.35%	1.85%	2.35%	2.85%	3.35%	3.85%	4.35%	4.85%
Stretegy Value Today	$36.59	$42.00	$49.75	$60.11	$73.15	$88.64	$106.10	$124.84
1x listed Future Value	$39.40	$42.00	$44.42	$46.67	$48.76	$50.71	$52.52	$54.22
Px Difference	-$2.81	$0.00	$5.33	$13.44	$24.39	$37.93	$53.58	$70.62
Two year hence Strategy Value	$33.45	$38.23	$45.63	$56.21	$70.29	$87.82	$108.34	$131.01
3x Listed Future two years hence	$29.82	$37.63	$44.88	$51.63	$57.91	$63.76	$69.20	$74.28
Px Difference	$3.63	$0.60	$0.75	$4.58	$12.38	$24.06	$39.14	$56.73

Closing Comments

My base case view is that inflation is neither transitory nor hyperbolic; I suspect CPI will continue to clock in near 4% well past March of next year, the time where the deflation crowd (Rosie, Lacy, Snider) expect inflation to retreat.

I think that the FED will be slow to raise rates, but will "taper" their bond purchases such that longer-term rates can rise and steepen the Yield Curve, i.e., the spread between short-term and long-term rates will widen. As detailed in "An Open Letter to the FED" – July 26, 2021, this would be good public policy.

If inflation runs "hot" (over the 2% target), but the FED continues to suppress interest rates (negative "real" rates - which is the nominal rate minus inflation), stocks will rally and most of CEFs, mREITs, BDCs and MLPs will do fine.

Let's be clear, the portfolio construction I have described is "adult swim", and both sizing and security selection are important (See Mark Grant).

It is likely the FED has (temporarily) broken the correlation between interest rates and inflation. Thus, it is indisputable that Implied Volatility is way too low since the range of possible outcomes is now much wider. As such, adding positive Convexity to one's portfolio should be seriously considered.

Remember: For most investments, sizing is more important than entry level.

Harley S. Bassman
November 30, 2021

Follow me on Twitter: **@ConvexityMaven**

Your comments are always welcome at: harley@bassman.net
If you would like to be added to my distribution, just ping me.

For reference literature on the financial markets - particularly about options and derivatives - I will immodestly direct you to my educational archive at:

http://www.convexitymaven.com/themavensclassroom.html

If you still have kids in the house, please take a vacation that is more interesting than the Four Seasons, Costa Rica – life is not a dress rehearsal. Turn off the Crackberry (did I just date myself ?) and explore with the family. You don't need to break the bank; rent an RV and see the U.S. We traveled with our four kids on five incredible RV trips.

http://bassman.net