

EQUITY TRADING TECHNIQUES

Cheap tail protection

BY PABLO TRIANA

Plain vanilla puts are effective, but expensive tail insurance. You can save by adding extreme drop protection to more moderate insurance.

Everyone is looking for tail insurance these days. Asset managers the world over, brusquely awakened by the brutalities of the credit crisis, desperately are searching for hedges that would shelter them from extreme market events, the probability of which now are deemed significant. In contrast to the situation prevalent pre-crisis, those actively seeking crash protection are so numerous that the price for such strategies has skyrocketed.

Many alternative tail-hedging strategies have been suggested by experts and commentators, but only a few truly protect from a sharp decline in asset prices. Inflation, volatility, commodity, currency and Volatility Index (Vix) hedges, for instance, have been proposed as cushions for stock market investors.

Protecting against tail risk Barrier options

But these are not straightforward hedges. They may or may not end up providing cover should equity prices tumble, and there likely is going to be a severe mismatch between losses incurred and compensation payments. (The hedge would suffer from substantial basis risk.) Even assuming that volatility or gold would shoot up as stocks dive, who's to say that the gains from the former positions would offset perfectly the setbacks

from the latter? You would need to know beforehand the precise future correlation between volatility or gold and stocks — a decidedly implausible task.

The only way to obtain sufficient tail insurance for a long equity play (or long any asset class) is to buy equity puts. As the market tanks below the pre-selected put strike, you will receive an amount of money commensurate to your cash losses below that point.

Unfortunately, puts (even far out-of-the-money puts) can prove costly following a historic crisis that has made everyone more receptive to the idea that crashes happen. Rather paradoxically, those who didn't believe in the rare event helped cause the meltdown that unavoidably highlighted the ubiquity of the rare event, resulting in much more expensive tail protection. An ounce of protection may be worth a pound of cure, but since no one spent the ounce in '08, it is now more expensive.

While managed futures have been shown to provide "crisis alpha" (see "Diversify with crisis alpha," February 2011), some folks are prohibited from certain derivatives. There are, though, innovative ways to lower the price of put cushioning, if you are willing to venture into exotic territory.

One possible strategy can be termed "gapped tail insurance." You gain protection from disaster and mega-disaster sce-

narios, but not in between. The final tab could be significantly cheaper than a plain vanilla put. The hedge would be just like a put's, except for the region (the gap) where you are unprotected. Should you decide that such risk is probabilistically negligible, you can employ this strategy to shelter yourself economically from meltdowns.

Building the gap

Gapped tail insurance would be built upon so-called barrier options, derivatives that either begin or cease to exist if an asset reaches a certain price level. Instead of buying, say, a six-month Dow Jones Industrial Average (DJIA) vanilla 9000 put, you could buy a 9000 put that knocks-out at 8000 and a 9000 put that knocks-in at 7000.

If during those six months the DJIA never reaches 8000 (near 30% drop from early January 2011's levels) you would have owned a 9000 put throughout. If the DJIA does reach 8000 but doesn't reach 7000 (near 40% drop), you would end up unhedged (the put would be knocked-out). If 7000 is reached, you again become the owner of the 9000 put (the put is knocked-in). In other words, your protection would be akin to a vanilla put except if the market stays below 8000 and above 7000 (the gap region). You are insured from disaster (a dive to 8000) and from mega disaster (a dive below 7000), though not from a well-defined semi-mega-disaster.

How much would you save by valiantly going exotic? Given early January 2011's levels for stocks and interest rates and using a rough Black-Scholes model, the combo of exotic DJIA 9000 puts could be roughly 55% (with 25% volatility), 45% (with 30% volatility) or 35% (35% volatility) cheaper than the vanilla alternative. Those are tasty savings.

Whether you should go this route depends on your probability assessments. If you believe that if the market sinks 30%, then it would surely spiral into the abyss of -40% returns, then the combo would have provided protection for a market gone to hell far more affordably than a straight put. But what if the market decides to rest in the purgatory of 8000-7000 (see "Finding a spot to avoid," right)?

While the knock-out/knock-in combo surely appears as good value from an initial premium point of view, it is essential to point out that it may suffer from much more turbulent market value than the simpler vanilla alternative. Barrier options can experience wild swings in mark-to-market valuation, a phenomenon typically described as having discontinuous Greeks.

For a vanilla put, the option's risk factors — delta, gamma, vega, theta and other Greek parameters that are supposed to indicate changes and rates of change in an option's value given certain key factors — are straightforward, typically displaying the same sign throughout (either negative or positive sensitivities to changes) and smooth behavior. This makes it less likely that one would experience wild and sharp modifications in the market value of the contract, thus in principle not subjecting one's accounting results to undue shocks.

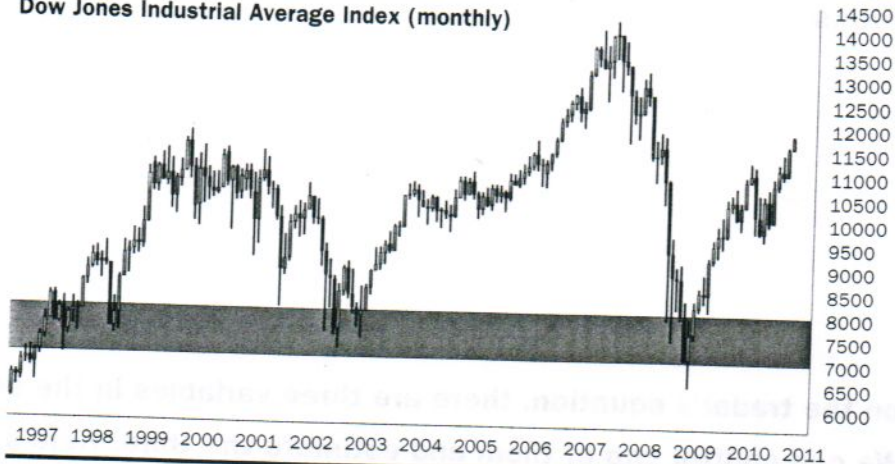
When it comes to barrier options, things are not so smooth. Here, delta, gamma, vega or theta can switch abruptly. If you own a typical vanilla put, price decreases in the underlying asset always help you, always add value to the option. Same with volatility increases. But if you own a barrier option, those certainties can disappear.

Consider our 9000 strike 8000 KO option. As the DJIA dives below 9000, we're quite happy given that the put is gaining intrinsic value; however, at some point, we stop enjoying the sight of a sinking market, given that the knock-out level is getting closer and we don't want my option

FINDING A SPOT TO AVOID

By slicing out a range of protection around an unlikely target for a market drop, you can save on your put insurance. Here, we see a range where the Dow has plunged down through or barreled up through, but rarely parked.

Dow Jones Industrial Average Index (monthly)



Source: eSignal

to die precisely when it is in-the-money and we are in real need of the hedge. My delta at some point switches from a negative sign to a positive sign, indicating that further declines in the underlying asset are now undesirable. In our example, with the help of a rough Black-Scholes-type calculator, that switching point would be around 8600 for a 10% volatility figure: You are quite content at that juncture given how the option is hedging you from a decline in the DJIA below 9000. You don't want the option to get deeper in-the-money as the day of reckoning gets closer and as your position starts to bleed value. Volatility also begins to look undesirable.

Owners of vanilla puts tend to love volatility as more uncertainty is assumed, in principle, to enhance the possibility of a large payoff. But owners of knock-out puts can learn to hate volatility. As the KO point gets closer, you want the market to stand still, because too much movement can cause the dreaded 8000 mark to be breached. Vega, thus, also switches from positive to negative.

Finally, it should be clear that the Greeks can be much larger and experience much greater jumps in the case of barrier options than in the case of vanilla ones. As the DJIA travels beneath 8000, the put has previously been knocked out and is now looking to be alive again. Delta is very small initially, as a small move in the

underlying asset won't add much value to the option (we need to get to 7000 before the 9000 put blossoms again), but as we get very close to 7000, delta explodes. Why? Because now just a little extra market drop can make the difference between not owning a put (being dangerously unhedged) and owning a very deep in-the-money put (being perfectly hedged). Borrowing from our rough model, the delta of the vanilla put for a DJIA level of 7005 and a volatility of 10% would be -1 (reflecting an unassailably deep-in-the-money situation); the delta for the knock-in put would be -3,189 (quite larger, as you can see). Imagine that the DJIA instantly goes to 6095; now both deltas become -1. The barrier option has experienced a very sharp rise in value in a very short period of time. Needless to say, the opposite would take place were the DJIA to revert above 7000.

In sum, gapped tail insurance would present potential end-users with a conundrum: juicy savings in upfront premium costs when compared to a vanilla play, in return for perhaps ending up totally uncovered and for possibly experiencing unwelcomingly unsmooth valuation swings. Mind the gap? ■

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