

Positive Convexity

I remember reading an article about how only hedge funds that exhibited some form of positive convexity, regardless of strategy, survived over the long run.

It was a published academic paper from about 6 years ago. If anyone remembers who the author was, please let me know.

The general idea was that the returns of even funds that trade no options or other inherently convex instruments could behave in a positively convex manner, and, in fact, that these types of funds exhibited significantly superior long-term survival relative to their seemingly negatively complex counterparts. This is intuitively obvious now that we have gone through the extreme market environment of the past year, but the study didn't encompass this time period. So what's going on here? And how can equity long-short returns be positively convex and convertible arbitrage returns be negatively convex?

The story is somewhat complicated, but let's try to keep it simple and break it down to its components. There are many elements to the equity long short positive convexity story, but the simplest way to think about it is behaviorally. If a fund manager generally "cuts his losers and runs with his winners," he is going to tend to capture larger portions of favorable market moves.

It is vaguely reminiscent of the old Leland Rubenstein Obrien portfolio insurance (for those of you old enough to remember the 1987 Crash). These gentlemen were trying to replicate long options positions by dynamically trading the underlying. It works pretty well in continuous markets, but breaks down when there are gap moves (remember the Black-Scholes requirement of a diffusion process? Something about molecules bouncing off the walls of a beaker). Even so, it works much of the time.

The other problem is illiquidity in the fund's holdings. This is analogous to gap moves, in the sense that one cannot continuously re hedge. It is likely the reason that long convertible arbitrage strategies became so highly negatively convex. Sell the losers? To whom?

Similar logic may be extended across all strategies. It gets particularly interesting when you start thinking about strategies that actually incorporate options (like volatility arbitrage) or highly convex fixed income securities (like IO MBS). That's the topic for another post. As is what the implied theta is for behaving in this manner.

Remember, positive convexity is NEVER free.