

Research Comments

Glenn E. Atkins, CFA

Director of Research

Computers, Decisions, Investment Puzzles and Other Problems

Computers do not make investment decisions. Computers do not make investment decisions any more than power saws and air nailers make houses. Each are only tools of their respective craftsmen. If you are under 30 years of age you will probably check out now and deposit this newsletter in that 1MB receptacle that sits on your floor called the "round file." If, however, you are over 30 you know exactly where this article is going. If you read newsletters like I read newsletters you are probably skimming this at light speed. But pause for a minute and think about the statement that "computers do not make investment decisions." If you are still convinced that they do, call the folks at Long Term Capital and get their most recent opinion.

Did you ever wonder why a bell curve does not touch the X axis? It is because there are things lurking in that crevasse between the tails and the X axis called three, four, or even five standard deviations that can make your life absolutely miserable if you should have the misfortune to experience them with money on the line and when you are leveraged. Come to think of it, three for four standard deviations might be miserable even without leverage.

The problem with risk is that it cannot be measured with absolute certainty with the expectation of one or even two future observations. It can only be statistically estimated, based on theory and the expectation of enough future observations to make it "statistically significant."

Think of it this way. In the gambling arena a computer is nothing more than a glorified card-counter. If in the game of black jack you were holding a queen and a nine and there were only four cards left, three that you knew were 2's and one that you knew was a 3, you could be statistically fairly certain that if you "hit" you would win. The problem is that you cannot be absolutely certain and you only get one chance. Yes, over many observations you may draw a 2 three out of four times, but the first time you draw a 3 you lose and the game resets. You do not have the opportunity to be statistically correct over many observations, because the game changes. In order to be statistically correct in this example you would have to have an unlimited access to funds and the same setting would necessarily have to repeat itself many times in succession. This rarely, if ever, occurs in the real world.

The same general observations are true about leverage and risk. Yes, you can be 68% (o.k., 68.27%) certain that observations will fall within one standard deviation and 95% certain that observations will fall within 2 (o.k. 1.96) standard deviations. But unless you have unlimited access to funds and many future iterations with which to play, if you experience three or four standard deviations on the first try, you're out of business. In our black jack example you drew a 3 and the game starts over.

The problem with computers is that they are a paradox. The very thing that makes them so seductive is also their greatest weakness. That thing? Precision. You should never assume that computers are either right or wrong, only that they are precise. In the opening paragraph of this article I could just as easily have said that if you are unwise you would not know where this

article was going and that if you were wise you would understand. Almost everyone would still be reading. But you were intentionally misled. I gave you the precision (under 30/over 30) that you have come to expect from this world in which we live and many people stopped reading. In fact, wisdom, experience, and understanding are the only applicable criteria by which you understand this article, not the arbitrary, false precision of age. Yet we have come to rely too heavily on precision, even when it leads us to the wrong conclusions. There are two ways to appear smart: Either be smart or don't be stupid.

In order to use the tools at our disposal properly, they must never be confused with the craftsmen that use them. Risk, as defined, is great for your college text book, but in the real world risk is drawing a 3. The problem with risk is that it almost never occurs in the artistically pleasing part of the bell curve that draws your eye, but in the crevasse of the tails where you are not looking.