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Houston, We Have Beta

There are 5,000 institutions in the world claiming to generate 'alpha'. Depending upon your point of view, we are going to make a somewhat more modest claim, or the most immodest claim of all: We have deciphered Beta.

500 years ago, Henry VIII ended the Papal monopoly on talking to God. He is believed to have said 'When I speak, the Lord answers.' Today, if liquidity is the new god of our market driven world, as Chairman Turner of the FSA bemoans, then it is high time someone ended Standard and Poor's monopoly on defining the risk of an investment, or Beta, as its historical correlation to S&P's indices. The idea that assets should be allocated to a capitalization weighted index, essentially based on the historical performance of its components, or that one generates excess returns based on outperformance vs. the portfolio's correlation to the S&P 500, is ingrained into institutional investment thinking.

So what really is Beta, anyway? And what then might alpha be?

The idea that a stock's risk can be measured as a correlation of its historical returns vs. the S&P500 and then be applied as its volatility contribution to a portfolio going forward, is now defunct. To paraphrase Warren Buffet, if historical statistics were all that mattered, the actuaries would be rich. Not to mention, the financial world would not be in the mess it is in today. What matters is a forward looking measure of a stock's expected correlation to the market, driving which is the expected sensitivity of the company's future health to that of the economy. The question then arises: What is the time horizon? Beta is a dynamic number, and its value over 30 days may be very different from results over 3 years. The performance of almost any firm is correlated to that of the economy, but that correlation evolves with the cycle of the economy and the life cycle of the firm.

The other question that should be answered here is: Is Harry Markowitz right? Is Beta all that matters? From our point of view, the answer is an unequivocal Yes. If so, why is the evidence of its contribution to US equity returns so weak? Mr. Markowitz likes to begin his presentations with a slide stating that 'In theory, there is no difference between theory and practice. In practice, there is.' In practice, we need an estimate of Beta looking a year forward, not a year back.

The first ones to explain historical US equity returns comprehensively, Messrs Fama and French, used additional factors Size and Book / Market (distress) that reflect the life cycle of the firm. We drank the Kool-Aid as well, but our belief today is they are proxies from historical data, useful as components to construct expectations based risk, but of limited value by themselves to an investor, especially a hedged one with a monthly reporting cycle. Those using historical correlation vs. S&P, or generating a 'multi-factor' understanding of returns, are fighting this basic fact: it is not that Beta is conceptually wrong or insufficient, it simply needs to be forward looking.

But even that is not the tricky part. The goal is to estimate what one cannot measure fully even with hindsight, because expectations at any point in the past differ from subsequent

outcomes. What matters rather, is capturing mean *expectations*, i.e. an understanding of how information impacts probability assignments and expected value by the market as a whole. Any individual ticker's deviation from this mean expectation, which is our definition of 'alpha', or a risk adjusted return, typically reverses to that mean estimate over the course of a few months. Whether it proves correct over the course of a few years is largely irrelevant. (This also answers why index funds distort markets – they promote momentum by targeting historical success, not likely outcomes.) In academic finance, where the benchmark of success is peer review, defending a measure of risk expectations is a near impossible task. In real life, where the benchmark is profitability, this is achievable. Good traders manage this more often than not, and good models should, too.

So what exactly does Rational Investing do? Using financial statements and financing conditions, and NO outside influences, such as consensus estimates, of any kind, our models estimate future cash flows of a company and their sensitivity to the present point in the economic cycle i.e. their dynamic risk, leading to a present Discounted Cash Flow value for the stock. The development of the logic in our valuation model, like most things in life, was path dependent; not intuitive when I started the task of building a DCF valuation, but it dawned on our team over time. A bit like staring at the sun and deciding that mass is being transformed into energy – obvious after several generations of work in Newtonian physics. We built a data quality process second to none early on, and the ability to review finished models for noise allowed us to calibrate our logic better than anyone we are aware of. One does not need a lot of history to understand markets, just a very, very accurate version of it.

Why have we succeeded in measuring risk accurately, a rather treacherous task by any standard? The key reasons are somewhat ironic and quite human: – One - While I managed to pass the statistics classes at Chicago, programming was my primary strength. Hence I used observations that anecdotally fit then current market conditions and common sense as the start of modeling logic, with statistics as the validity check for designing Rational Investing's valuation system. For some, massaging data is the first step, and the common sense check – well, occasionally one reads hypotheses in the financial press and wonders. The second is that our team focused entirely on the forward looking impact of variables, using as little history as possible, because we first tried to understand the 50x revenues being paid for Yahoo and Amazon in the late nineties, where little history was available. A projection mechanism helped contrast plausible future outcomes the market was paying for vs. the most likely ones. The fact that we test results using history should not imply that models need much of it. Statistical finance faces significant hurdles because future outcomes are based on assumptions about economic circumstances, such circumstances or contingencies evolve, so assumptions useful historically are hard to test at present, making it questionable whether modeling conclusions, based on contingent probabilities, remain valid.

The third, institutional, reason is that risk measurement is the unexciting part of the business, which star analysts / portfolio managers would rather not do. Someone claimed, tongue firmly implanted in cheek, that the hedge fund business has outsourced risk management to Barra, which works all the time except when you need it to. To build a risk measurement tool that captures expectations in the equity market took half a dozen bonus cycles, and would get one fired from 5 jobs at most banks before getting it right. And few in their right minds would have risked 5 bull market paychecks to put in our effort in a startup. While my family and friends occasionally question my sanity, they somehow put up the capital and time to allow us to reach our goal.

Four, we focused exclusively on testing market neutral returns. Our simulations are not vague claims of performance over decades with large periods where the outcome is

dissatisfying. These are monthly, sector neutral, long / short returns, and they are double digit for each sector over most periods.