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The Power of a Good Nap Leads to a Sharpe Ratio of 3+

Having a three-year-old creates new perspective on one's activities and knowledge. Trying to understand the child's development can bring insights into management and analytical tasks. A recent reading taught me that during naps, children learn how to forget [i]. While awake, human beings absorb more information than they can manage effectively in real-time. While sleeping, we classify what we see and hear into patterns. The brain shifts the patterns and important details [ii] from the hypothalamus to the frontal lobes and other areas, i.e. temporary to permanent storage, and builds pathways to reach those details upon demand. It prioritizes and then discards the majority of observations made through various senses. This power is developed young, and plateaus with age.

In computer science, tools called Structured Query Language, formatting, foreign reference keys, and recursive searches effectively duplicate this skill. A system that can solve complex problems in this fashion and duplicate human cognitive ability is considered 'artificially intelligent'. This capability is likely necessary to use what is called Big Data. Otherwise, another old saying of the field becomes applicable: Garbage in, garbage out.

The media is suddenly obsessed with Big Data. What the term really means is that the power to query a large amount of information has gone from the domain of the computer scientist to the realm of any scientist. To someone who has spent a decade automating the seemingly simple task of reading a financial statement filed with the SEC, which along with very basic information on interest rates, foreign exchange and credit risk gets integrated into a Discounted Cash Flow valuation model of corporate securities, the idea that one can produce trade-able results, or even competitive analytical insight, from larger amounts of even less structured data seems a stretch.

The first problem is formatting. Searches through a sea of unformatted economic data, no matter how specific, are likely to prove educational at best. Financial markets are more efficient than that. A useful final result is built upon several hundred subordinate searches or complex calculations, the results of which are then integrated successfully. Secondly, organizing information and scrubbing it requires a feedback loop with the result, so that the focus of subordinate searches can be changed rapidly. This brings us to another issue. Business school, in line with traditional forms of scientific training, teaches statistical analysis, but then skips recursive [iii] thinking as a necessary second step or alternate mechanism. A feedback loop using statistics alone becomes 'in sample' and risks skew. In the meantime, human cognition relies upon recursion, or a repeated look at more and more granular details, for a significant portion of our thinking, but the power of the approach has been used little, past IBM's Deep Blue playing chess.

Even this is the least of finance's problems. The real power of a nap is a little more subtle. What the brain does while sleeping could be called conditional formatting. It allows us, upon repeated observation, to understand which variables in a puzzle matter under what sets of conditions. So 'forgetting' is often the task of not remembering unless woken by the cue, or index key in the parlance of database design, which was repeatedly important to the information. In a complex world, a number of keys together suggest a pattern, and a triggering of that pattern awakens the memory of the original result. This is how, years after the fact, one can see a snippet of a film and immediately remember that it was a scene in Casablanca. This allows the efficiency of searches to rise to a point which makes current analytical business tools look mammoth brained (referring to the ratio between the size of the brain and the size of the task, i.e. the body being managed). Without the ability to ignore even significant details until the entire necessary set of keys is triggered, analytical effectiveness is limited.

Building these intelligent keys and resulting contingent evaluations is a task that in any field is going to take decades. But this parallel to biology explains why the effort we have made so far in corporate finance remains compelling, and why, after over a decade of work, we have merely scratched the surface of what is possible. The point isn't that a certain Sharpe in a single application e.g. market neutral equity investing, is great. In fact, the tool is still very raw, and is eventually capable of 1000x greater scale and power. Its signal/noise ratio is being achieved in a somewhat noisy surrounding. The fact that a Sharpe of 3 can be obtained on the FTSE index by a small team on a shoe-string is telling.

The question of how to build such a feedback loop between the data formatting and the results is only answerable with a user interface that allows us to observe both simultaneously. For corporate finance, the spreadsheet remains the most obvious and cheapest way to achieve that result, despite all its flaws, and spreadsheets have come a long way since Lotus 1-2-3. Quality control of a DCF model requires visual review ticker by ticker, period by period, to make sure that the model really captured the intent of economic logic applied to a mid-cap / low growth / high margin / high capex / somewhat regulated oligopoly which pays a dividend. If one isn't deeply interested in the result, this quickly becomes a remarkably tedious task as the system scales: For 5,000 tickers x 40 quarters x an average of say 5 times over the years = we have visually reviewed perhaps a million valuations to build the current results, and revisit a few hundred a day. No quantitative technique comes close, by a mile, to such painstaking review, outside the Department of Defense, where the final consequence is life or death. Even there, human operators are gradually losing control [iv]. At Rational Investing, unlike the Pentagon, people will remain 'in the kill loop' for the foreseeable future. Aside from nap breaks, that is.

What is a Discounted Cash Flow Valuation, Really?

Evaluating a company is so easy that some people, like Warren Buffet, can do it in their sleep. Ne'er-do-wells like us, despite this conceptual ease, require complicated software for the details. But here goes:

Each company has a Revenue line, and a set of Cost lines. The difference between the two is the Free Cash Flow margin of profit for the shareholder. Revenues can have a seasonally and cyclically adjusted trend, which eventually converges with GDP growth. For us, aside from inputs and overheads, costs include maintenance CapEx, taxes and financing. Cost trends can be thrown temporarily out of whack by M&A, divestitures, changes in accounting, litigation, the business cycle, etc. But over time, they converge to the natural rate of profit of a business, depending on its required marketing / R&D and capital investment. The margin projection hence creates a stream of cash flows to be discounted to a Present Value based on the 10 year Treasury and historical equity risk premium, adjusted for financial leverage, cyclicality or product cycle uncertainty, and brand / asset strength or regulatory issues.

That's it. The process is automated for most firms >500mm in market cap. Very small firms, or those in precious metals, early stage R&D or extremely cyclical or regulated businesses, or using asset backed finance, can be unsuitable for the methodology, but otherwise it can be applied and scaled globally.

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[i] http://www.economist.com/news/science-and-technology/21571121-new-understanding-emerging-memory-and-forgetfulness-remember-remember

[ii] http://www.economist.com/node/15573431

[iii] http://en.wikipedia.org/wiki/Recursion_(computer_science)

[iv] http://online.wsj.com/article/SB10001424127887324128504578346333246145590.html