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Let's Forget Big Data

It is somewhat ironic that the complex objective of better problem-solving through the amassing and analysis of increasingly detailed information has had to be condensed into a two-word catch phrase: 'Big Data'. Perhaps this is more a reflection on the human inability to cope with information beyond the attention span of a proverbial goldfish, but the metaphor serves well to illustrate the problem with Big Data.

There are a number of issues that should be sounding buzzers and waving red flags, most of which have nothing to do with data per se (regardless of how big or small), but human behavior. To be clear, there is not a question that more information is available, particularly in digitalized form, there is no argument that storage and processing power has increased exponentially or that our ability to delve into this data can certainly produce insightful connections and correlations.

Data Alchemy

Data Science is only a science in the Weberian *Value Free*¹ sense so long as it remains in an abstract laboratory – an empirical ideal (if you'll pardon the contradiction). The minute, second, nanosecond you go to do something with the results of your data science, it becomes social and as such becomes value-laden. Suddenly data science isn't looking so 'sciency' anymore. Maybe data science/alchemy might be a more appropriate term. Add a tincture of "marketing" to the mix and value free has become VALUE full and it can be measured in dollars and cents. Amazon Prime Day is a recent example where the going rate was \$10/per person's data².

But let's return to the matter of the attraction of Big Data, the hope that by gaining access to endless information it will by extension lead us to endless answers.

It might be a good idea to stand back and reflect on our human propensity to repeat the same old record taken from a different sleeve. Think of previous holders of a similar mantle, psychology, for instance. Then just take a look at the work of Brian Nosek on the Reproducibility Project³ in examining whether important scientific studies in the field of psychology were repeatable. This does not write off psychology as worthless, but rather shows the need to question, probe and be healthily skeptical.

Chasing the Tortoise

In a Xeno-like paradox Big Data will never be big enough. You will always be chasing continuously-expanding volumes of data to be analyzed. This brings with it the potential for continuous revision on the premise that this equals continuous progress in getting to a more correct answer.

¹ See Max Weber on *Werturteilsfreiheit*

² Reuters, Jun 16, 2019

³ Center for Open Science – The Reproducibility Project, 2015

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Take for example the 2015 revelation in a Yale University study '*Mapping Tree Density at a Global Scale*' that counted trees⁴. Having acquired the ability to gain much better tree counting data, the research estimated that there were over three trillion trees or 422 trees/person. This figure was 7.5 times more than previously thought.

Pause and take a breath (it's easier with all that extra oxygen). Think of all the (mis)calculations stemming from the old number of 56 trees/person, including of all the CO₂ or deforestation-related calculations gone haywire, as a result of this revision. Did anyone mention "fake data" or accountability? Can you imagine erroneously reporting losses by 750%?

But some might ask, "Does this not illustrate the importance of the acquisition of bigger-and-better data?" In short, no. It illustrates the illusory allure of bigger-and-better data. The arrival of better data *a posteriori* has little more value than hindsight. Imagine in the above case the money spent as a result of using the 'wrong' figure. This indicates a certain farcical element in the valuation of data and with the dawning of Big Data. We see the possibility of vastly overvalued data in every sense of the word, from monetary to information-content.

Stocks or Socks?

Financial markets are not the same as High Street or internet shopping. One of Big Data's areas of success is the identification of consumers' buying patterns. The more data you can accumulate on 'Person X' about their buying behavior, the more you can successfully tailor marketing to prod along future purchases. That process stimulates a self-fulfilling prophesy. Surely, by extrapolation, the same should be true for Wall Street. After all, it is just another market, right? The speculative element of financial markets, combined with their less-than-rational nature, ensures that they are not the same as an online retailers' sales funnel to prod you into acquiring an extra pair of socks or trainers.

Damp Powder

Finance-related mathematical data will churn out complexity at the least invitation because that data contains the untethered human component of the human activity of the market. Take a recent incident as an example. The Federal Reserve's fuddle on Thursday, June 18. The New York Fed's John Williams—in a speech to the Central Bank Research Association—said that policy makers shouldn't keep their "powder dry" and it "pays to act quickly to lower rates at the first sign of economic distress." The conclusion was drawn that he was indicating that the Federal Reserve was more likely to cut interest rates by 0.5% rather than the anticipated 0.25%. The expectation of the likelihood of a 0.5% rate cut soared from 40% to 66% on the comments, provoking a surge of 0.8% in the S&P 500 and a drop of four basis points on 10-year US Treasury Bonds. On clarification by the New York Fed, asset prices rolled back their price shift.

⁴ Crowther, T.W. et al. Mapping Tree Density at a Global Scale, Nature, Sep 2015

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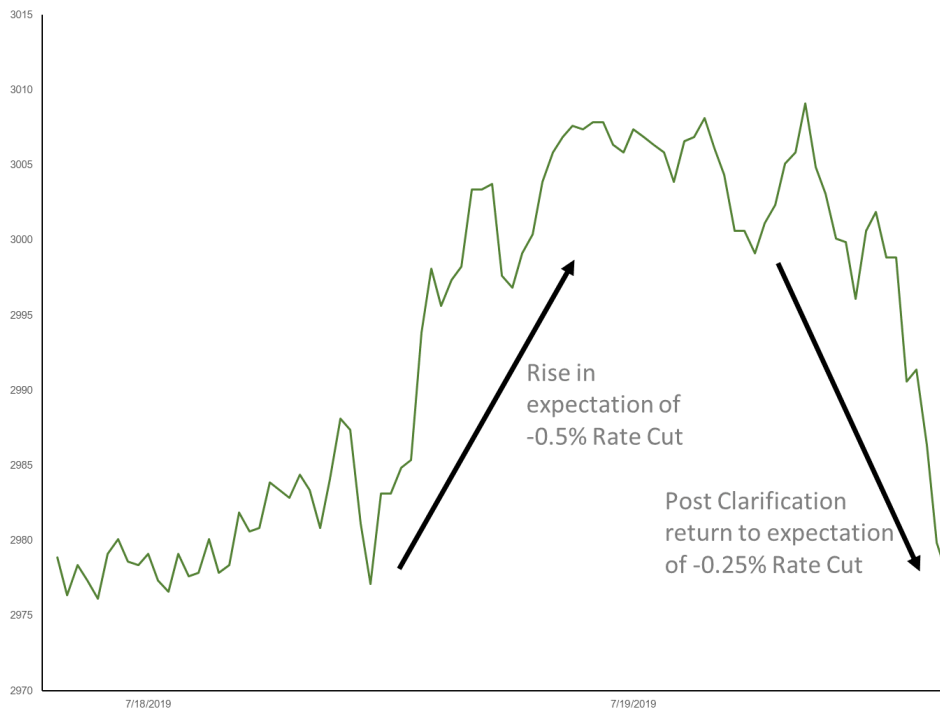
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Think Big Data. You have all the data at hand to construct modelling, to recreate the sentiment/market response to the comments and their clarification. Envisage all the possible data to be amassed to recreate that complex environment belying this scenario. Deal with the fact of its unusualness: Was it an aberration? Well, it probably wouldn't be treated the same way, if such a scenario were to be seen again, or would it? Should you model for a scenario that might never happen again or should you scale factor in the potential lesser impact of a repeat of such occurrence? Or should you stop to ask yourself to what extent can you ever accumulate enough data to help you construct the perfect analytic model? And then, is it relevant to do any of this at all? Even if it were, would it be useful? Would you have something that in any way would be relevant and that would reproduce repeatable, helpful analysis in the future?

Go back to simple price data as per the chart below. All the human components surrounding this incident are contained within the associated market movements.

The Fed Fuddle as Observed on S&P 500 Futures



Source: Plotinus Asset Management, LLC (Data CME).

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Smaller Data, Bigger Understanding

The value of data is in the eye of the beholder. In our opinion, it is better to be aware of the frailty of data and the consequent use of that data. We believe you are better off curtailing the volume of data, whilst acknowledging the limitations of that data, instead concentrating one's efforts on trying to develop understandings of the context in which you view that information. In our work, we prefer to use technology primarily to separate the wheat from the chaff in solving the actual problem you want solved, not to seek the generic Big Answer from Big Data.

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