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THE EXACT ESTIMATE!

"An unsophisticated forecaster uses statistics as a drunken man uses lamp-posts - for support rather than for illumination."

Andrew Lang

By Nimesh Chandan

Let's consider a scenario of a situation that happened in early 2011. President Obama is having a meeting in the Situation Room in the White House. This is the Intelligence Management Center run by the National Security Council for the use of the President and his advisors. The advisors include the Vice President, Director-CIA, Director-National Security, Homeland Security Advisor and the White House Chief of Staff. The issue they are discussing is the intelligence report about a peculiar compound in a wealthy neighborhood in Pakistan's city - Abbottabad. High walls of the compound encircle a cluster of buildings; the occupants are unknown. There were some pieces of information that suggested this was the residence of the terrorist mastermind of the 9/11 attacks - Osama Bin Laden.

At the end of the discussion, the President asks his team, what are the chances that Osama is infact in that compound. Let's assume each person in the room individually estimates the probability at 70% (in reality the forecasts ranged from 40–95% with a mean of around 75%). What should the President infer from it? The average is 70%, so the President can conclude that the chances of Osama being in the compound is 70%. What if all the advisors had different sources of information that led to their estimate of 70% probability? Someone may have information from a code-breaking project, someone got bits from an interception of some communication, another one got it from human intelligence source and yet another from satellite imagery. Is the chance still 70%?

In investing, we make a plethora of forecasts every day: about many different variables regarding companies, businesses, economy, consumer tastes, technology changes etc.



You are studying a company for investments. Three analysts each give you a 70% probability that this company will outperform the index. One is a fundamental analyst who created Bear, Base and Bull case scenario and arrived at a 70% number. The other is a technical analyst who analyses the volume and price-breakout on the chart. And the third is a quant analyst running a screener that suggested a 70% probability of the stock outperforming. What is the probability you infer for the stock's outperformance?

Ideally in both the above cases, subjective probabilities need to be increased from average 70% to between 85%-90%.

In investing, we make a plethora of forecasts every day; about many different variables regarding companies, businesses, economy, consumer tastes, technology changes etc. We even make forecasts about what others will forecast (Keynesian beauty contest). Working with uncertainty requires us to work with subjective probabilities (we have spoken about it <u>here</u>). Highly complex systems like financial markets add more challenges to this forecasting (we have discussed those <u>here</u>). And then the biases creep in increasing our chances of error.

In my pursuit to understand forecasting better and improve my 'hit' ratio, I picked up two fantastic books, "Superforecasting" by Philip Tetlock and "The Signal and The Noise" by Nate Silver. Incidentally both have the same subtitle "The Art and Science of Prediction". Philip Tetlock approaches the topic of predictions from the area of geopolitics and geo-economics forecasting; Nate Silver, on the other hand, is known for his work in US Election and baseball forecasts. In their advice on being a better forecaster, however, I found a lot of common ground. As I have learnt from cases presented above, when two people adopt diverse approaches and suggest a common solution, the chances of success of that solution go up!

HOW TO BE A BETTER FORECASTER

I have put together a merged list of common ideas and suggestions from the two authors that can help in better forecasting. The items in

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the list may sound simple but there is a "high probability" that they are not easy.

> Understanding probability helps deal with uncertainty

In the world of investing, one has to learn to deal with uncertainty and hence thinking probabilistically can help. Instead of claiming to know exactly what will happen, one must articulate a range of possible outcomes. The wide distribution of outcomes represents the most honest expression of the uncertainty in the real world. Analysts can run scenarios and provide a range of forecasts for earning and valuations and hence a range of target prices with probability assigned to important scenarios. This helps understand risk return payoffs and determine what to monitor, much more than just using one target price.

> Update information regularly

Good forecasters don't keep defending their previous forecasts when conditions warrant a change. Updating forecasts and probability estimates is essential as new valuable information comes in. As Keynes said, "when the facts change, I change my mind". Of course, if the forecasts keep wildly fluctuating, one must reconsider the model or check for flaws in the process.

> Break down complex problems

Italian American Physicist Enrico Fermi designed an approach to break down complex question into multiple simpler questions to help estimation problem. Suppose we are trying to estimate "when will the world be immune to Covid–19?". This complex question can be broken into parts like:

- When will be Covid-19 vaccine be ready?
- Assuming it will be shared worldwide, what is the current vaccine manufacturing capacity in the pharma industry worldwide?
- How much time will it take to administer people the vaccine through the healthcare centers?



The signal is the truth that helps your model make good predictions. The noise is a distraction which muddies the waters



Splitting parts of the question in to knowable and unknowable also helps. You can use data for the knowable and best guestimate for the unknowable. And as mentioned earlier, update the information and forecast as new relevant information comes in.

> Take the outside view and then adjust with inside view

Not every forecasting problem is brand new. Most of the time, case studies or a-priori information or base rates are available. Daniel Kahneman calls it taking the outside view. I recently came across an analyst estimate about a General Insurance company listed in India. The analyst was forecasting the company to grow its profits at a CAGR of 20% for 20 years. I checked whether any other company in any industry in India has grown at the same rate for 20 years with the kind of profit case this insurance company had. Turns out there were none. Not that the company cannot deliver the performance, but the odds are bleak based on the base rates. You have to be very accurate with your internal assumptions (inside view) to make that claim.

Distinguish signal and the noise

The signal is the truth that helps your model make good predictions. The noise is a distraction which muddies the waters. It takes effort and experience to separate the two. Mistaking a noise for a signal is called overfitting and can lead to errors in forecasts. Not recognizing the right signals (which are subtle) among the data is called underfitting and leads to suboptimal use of the data. Generally, people are prone to overfitting compared to underfitting.

Avoid under-reacting and over-reacting to new information This is like riding a bicycle. One has to be careful not to tilt on under or over-reaction to new incoming data. Using Bayesian method of calculating conditional probability improves the outcomes. This method systematically combines existing probability distribution with new information.



> Understand Correlations and causations

Evolutionary instincts sometimes lead us to see patterns where there are none. When we look at data, we may find correlations between some unrelated information. one must try to understand the cause-effect relationship before using them in the forecasting model.

Other Ideas

- Own up the failures and learn from mistakes. One should dissect the successful forecasts too to understand what worked.
- Incorporate tools that help de-bias. In pervious issues, I have suggested the use of checklists, devil's advocate, decision recording etc. to address biases that invariably creep into the forecasting process.
- For teams, it is important to have a diversity in terms of people participating in the process to make it more efficient.

Philip Tetlock is the co-leader of the Good Judgement Project (GJP) a research collaborative that works (with the US Intelligence) on improving the geo-political and geo-economic forecasting. In the project, he identified certain superforecasters who consistently scored well in their forecast accuracy and developed methods to improve their scores further. They achieved improvement of 50-80% in terms of accuracy. This still doesn't mean that they saw everything perfectly. Wherever they assigned high probability, those events did occur and where they assigned low probability those did not occur. This is an impressive accuracy to aim for. However, an intelligent investor knows that even a slightly lower number is worth investing time in!

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ABOUT STOIC INVESTOR:

The word "Stoic" is used to describe someone who remains calm under pressure and avoids emotional extremes. For the purpose of this newsletter we refer to the "Stoic investor" as an investor who is realist (avoiding extreme optimism and extreme pessimism), resilient (withstand difficult conditions) and rational (who acts with logic and reason).

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