IMAGINING FUTURES: USING SCENARIOS ANALYSIS TO BUILD ROBUST INVESTMENT STRATEGY

Two concepts of scenarios analysis are explored: one designed to improve asset allocation by creating non-parametric return distributions; the other designed to help organisations prepare for a number of different futures by creating detailed narratives for each. Each is different; they live in different domains. But they both provide excellent ideas to help build more robust investment strategy.

TWO CONCEPTS OF "SCENARIOS ANALYSIS"

"Scenarios analysis" is an idea that many investment practitioners say they use in the process of developing their investment strategies. But the term "scenarios analysis" can mean different things to different people. In this article I explore two different notions of scenarios analysis that I have been exposed to in recent times. No doubt there are other interesting ideas in this space, and by writing this note I am inviting others to share their thinking.

The first concept is one that was introduced to me a number of years ago by Susan Gosling[1], a colleague in the MLC investment team. The concept, as developed by Susan together with others in the MLC investment team, is principally designed to improve asset allocation.   It does this by deeply imagining a set of possible futures rather than shoehorning past returns into the convenient, but often inappropriate, stricture of the normal distribution as implied by mean/variance analysis.

The second concept was pioneered by Shell last century, and it has been promoted by Peter Schwartz, who was a member of Shell's strategic planning group. It involves organisations building narratives for different futures, rehearsing their responses if those futures were to eventuate, and thus become agile in the face of a changing environment. I thank Paul Scully, a long-standing friend in the industry, for introducing me to this thinking.

The two concepts are different; they live in different domains. In this article I will briefly describe some of the features of each, and conclude with some observations common to both approaches that may help funds improve the way they think about asset allocation.

"THE ART OF THE LONG VIEW"

I start with Schwartz concept as it is intuitive and paints on a broad canvass. Organisations and individuals can use it to prepare for an uncertain world. By designing blueprints for responding to different potential futures, organisations are better able to respond quickly when the world changes, which improves their chances of survival and can give them the jump on their competitors. They can make their organisation deliberately adaptive. And sometimes these blueprints will indicate immediate actions that are inexpensive if the risky future is not realised, but payoff handsomely if it is. This approach seems like common sense. And in a way it is. But in my experience, most organisations only do this implicitly, if at all. Schwartz suggests that this is inefficient and insufficient.

 "The Art of the Long View: Planning for the Future in an Uncertain World"[2] is the title of Peter Schwartz's 1991 book. It is his first book, and according to Wikipedia "is considered by many to be the seminal publication on scenario planning, and is used as a textbook by many business schools".

In the book Schwartz discusses the technique of planning for different scenarios. He brings this discussion alive using examples of the day. As an aside, it is interesting to look back as how a futurist in 1991 considered how the world may have changed over the period 1991 to 2011. Some of the trends he

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postulated are bang on. Many have withered. And he missed others. But the value of his thinking is not in the accuracy of his predictions, but in how he suggests firms should prepare for the future. A firm relying on a single world view may flourish if that future is realised. But this will be down to luck, not prescience. And the firm will most likely be even more susceptible to a fall, as success inevitably breeds contempt.

Instead Schwartz suggests firms should imagine a number of different possible futures. These do not have to be probable, just possible. In fact, thinking about likelihood is poisonous to effective development of specific scenarios. It narrows perspective and distracts managers from developing a narrative for the specific future in question. This is because assigning probabilities requires managers to compare and rank scenarios, anchoring thinking in the most likely.

Schwartz likes to label his scenarios with pithy and evocative names. Three examples in his 1991 book are:

- "New empires": a win-lose scenario in which the trend to globalisation degenerates to regionalism, with a number of protectionist trading blocs. Progress is inhibited by giant bureaucracies, both government and corporate. This is a bleak and conflict prone world. I am happy to say it has not eventuated, but I do worry about a pervasive complacency that does not recognise the fragility of current practices and institutions that promote international cooperation and trade.

- "Market World": a win-win scenario in which a multicultural world is full of entrepreneurialism, hope and harshness. A smart form of capitalism where international institutions set rules and standards, enabling meritocracy to survive across the world. There is nowhere to hide from Schupeter's[3] "creative destruction". There will be losers, especially those who had been cosseted from market forces. But overall the pie is much larger, and billions of people will have been

lifted from poverty. This scenario has not been realised. It does not include the mercantilist policies of many large emerging countries. And the regulators forgot their important role. But many of the attributes of such a future have come to pass. Planning for such a future would have paid off.

- "Change without progress": this is the dark side of "Market World" – full of chaos and crisis. The self interest of capitalism is not adequately controlled by regulators. International institutions are undermined by nationalistic rivalry. The divide between rich and poor deteriorates, currencies fluctuate wildly and Europe disintegrates. This too has not eventuated, but some of the features of the global financial crisis resonate in this scenario.

Armed with such narratives, firms plan and rehearse for the set of future scenarios. As the world evolves these plans evolve to reflect differences between the most the emerging reality and the most prescient scenario. Firms using this approach can quickly adjust previously considered plans, putting them at a significant advantage to competitors who are surprised by a changing world.

ABANDON MEAN/VARIANCE

Whereas Peter Schwartz' approach is in the domain of business strategy, Susan Gosling's scenarios analysis is focussed on investment strategy: how institutional investors should allocate to different asset classes to get the best future return and risk outcomes. It too involves a imagining of narratives about potential futures. However, it is more structured in that it requires explicit forecasts of investment returns from each candidate asset grouping for each scenario. History is often used as a guide to developing these forecasts, but judgement is critical, and the approach encourages the imagination of futures which have not been encountered in the past.

Before working with Susan on this concept I would look to long historical series (multiple

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decades) as a guide to estimating the statistical distribution of returns for different asset classes. This history would tend to drive the covariance matrix assumed in the asset allocation process. I would guestimate the means of the return distributions using forward looking judgement based on the notions such as economic growth, productivity improvements, real interest rates and the equity risk premium. I then used a simple form of scenario analysis, in which I would perturb the assumed means (and sometimes the components of the covariance matrix) in a type of sensitivity analysis that recognised uncertainty inherent in the assumptions. My purpose was to discover a set of candidate asset allocations that were robust under a range of conditions and recognised the known issues in the mean/variance model, and in the assumptions used by it. In other words, I was guarding against the "garbage in / garbage out" phenomenon.

Susan turned that approach on its head. She eschewed mean/variance analysis, which essentially assumes that investment returns conform to a simple parametric distribution, such as the normal distribution. Instead, return distributions in Susan's approach are non-parametric. They are built from the bottom up using judgement in the form of plausible narratives about a set of different future worlds, and how asset returns may look in those different futures. The result is a nonparametric distribution of returns, often with the leptokurtic characteristics observed in historical returns.

How do you come up with scenarios? Start with getting some thoughtful people in a room, with plenty of good coffee and PostIt notes for a no holds brainstorming sessions. Many of the techniques Peter Schwartz discusses in his book are useful. Create narratives. Make it fun. Don't let anyone say "the chances of that happening are slim"... the idea should be to flush out the possible, not the probable. Do this as a group in an environment of creative dialogue.

You should also inject external thinking into the process if possible, but only after the creativity of the team wanes. You should guard against external ideas stifling originality. With that caveat, here are some ideas I recently came across in a survey conducted by The Economist Intelligence Unit[4]. That

team developed 24 scenarios and asked 800 respondents to assess the likelihood of each, and its impact on their investment portfolio.

The six scenarios viewed as most likely were:

1. Further political turmoil in the Middle East
2. The Internet and social media are a catalyst behind rapid political and economic change around the world
3. Pension funding crisis deepens in developed countries
4. High inflation forces policy tightening in emerging markets
5. Widespread social unrest caused by rising food and commodity prices
6. Oil prices spike to US$150 a barrel highest

Interestingly, only #2 was viewed as having a positive impact on investments. These respondents were pervasively pessimistic. This may well be a sign of the times. But I suspect that it is generally easier to imagine what can go wrong that what can go right.

Personally I would add a scenario entitled something like "Greying boomers continue to work and play hard". Under such a scenario work would blur into retirement and boomers in their 70s will continue to make a huge contribution to economic activity through paid and unpaid work, and will consume hard in pursuit of active leisure. I believe that this will naturally occur, but some catalysts, such as a cure for Alzheimer's, could accentuate the trend.

The next step is to forecast asset class returns for each asset grouping under each scenario. This can be done using simple determinist return models. Don't worry about risk at this point. The idea is to imagine what return could be generated by an asset class if that scenario was to eventuate.

Here is an example for Australian equities in a scenario that worries me, one in which China's demand for Australian dirt diminishes as its pace of building infrastructure and housing decelerates. In this scenario the world generally recovers from today's economic malaise, and China itself grows but in industries that are not as resource intensive. This has an especially negative impact on

Australia. The long mining boom falters, with a flow on to other sectors, such as housing and banking. Real earnings per share declines over five years, with concomitant impact on reinvestment and dividends. Moreover, the value of Australian shares is rerated downwards as a reflection of pessimism and/or a better understanding of the risks inherent in this narrow economy. Using a simple model with simple assumptions, it is not difficult to arrive at a nominal total return on Australian equities in this scenario of -3% per annum over five years. An awful situation, but one that is entirely possible.

Similar calculations are also performed for all other asset classes and for all scenarios.

This requires a bit of work, but it is not difficult. It is best to keep the number of scenarios small, and to use aggregated asset groupings. The key is to ensure that the narratives for each scenario are clearly and obviously evident in the derived returns. A test of this is to ensure that everyone in the team can approximately reproduce any rate of return using the back of a small envelope and a calculator.

One point of difference between this scenarios model and the approach promoted by Peter Schwartz is in the number of scenarios. Schwartz recommends that only a handful of scenarios be considered, even suggesting that three is sufficient. But in doing so he is at pains to emphasise that you should not fall into the trap of thinking in terms of base, good and bad scenarios. These are not narratives, just perturbations on narrow thinking. Instead, go to the effort of developing a narrative, using the tools of fiction writers including plots and even characters and location.

On the other hand, the scenarios modelling technique developed by Susan Gosling will often use 20-40 scenarios. The richness of this approach is lost if the number of scenarios is too small. But I do believe that benefits of parsimonious use of scenarios (i.e., keeping it real and tractable) outweigh any potential benefits of greater granulation.

Similarly the number of asset groupings should also be keep as small as possible. Your return models may require some degree of building from the bottom up. For instance, estimating the returns of equities in major countries (or industries) may be necessary to generate global equity returns. But this requirement should not necessarily drive the number of asset groups over which you are making asset allocation decisions. After all, strategic asset allocation should be used for no more that setting the overall shape of the fund's portfolio; it should not result in artificial constraints on the investment teams that select individual investments.

The next stage in this process is to assign probabilities to each scenario[5]. Once again, this requires judgement. Perhaps the easiest way to do this is to use a small number of "likelihood labels", such as "likely", "possible", "plausible" and "unlikely". Each label could be given a weight, such as 10, 5, 3 and 1 respectively. Then assign each scenario a likelihood label. The probability of a scenario is then just its weight divided by the sum of the weights.

The result is joint nonparametric probability distribution of rates of return for each asset grouping. This is akin to the joint normal probability distribution as described by means and covariances. But there is a crucial difference: the nonparametric distribution is derived from careful thinking about the future rather than shoehorning the past into the normal distribution.

From here the investment team can apply stochastic asset/liability analysis to discover investment strategies are likely to deliver robust outcomes for the investment objectives of the fund. This non-trivial task is beyond the scope of this article.

SO WHAT?

Using scenarios analysis means that you don't have to be hidebound by the convenience of mean/variance analysis. Take the time to look through the windscreen, rather than forcing past returns to adhere to an in appropriate distribution. It's impossible forecast the future; so don't. Instead, imagine a set of possible futures. Have fun creating a plot (with characters, if you like) for each scenario. Develop the qualitative narrative, and then turn over an envelope and guestimate how each key asset class may fair

in each narrative. You don't have to be convinced that that future will occur. But thinking about it in these terms will make you better positioned if the world does move in that direction.

I have little doubt that this will help you build more diversified portfolios that robust in reflect today's reality and tomorrow's potential.

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[1] Gosling S, 2010, "A Scenarios Approach to Asset Allocation" , The Journal of Portfolio Management, Volume 37, Number 1, Fall 2010

[2] Published by Doubleday, New York

[3] The term "creative destruction" was used by the Austrian-American economist Joseph Schumpeter in his 1942 book "Capitalism, Socialism and Democracy" as a theory of economic innovation and progress requiring the destruction of established economic agents and/or processes to make way for more vibrant agents/processes that use new innovations in business, production and technology.

[4] Economist Intelligence Unit "The search for growth: Opportunities and risks for institutional investors", 2011

[5] This is in contravention to the Schwartz approach, but is required for asset/liability modelling.