SAPIAT

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Scenario Analysis - Looking Past the Crisis

Why Scenario Analysis continues to be the essential tool for Investors

SAPIAT Article

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The Current Situation

We face a coronavirus pandemic and the unprecedented shutdown of large parts of the global economy.

Most, if not all asset allocators are tasked with the challenge of combining a multitude of forecasts which can guide their risk management and asset allocation through this crisis and into the following years.

For such asset allocator there are two main tasks that arises from such a challenge:

- Take action to manage risk in the short term.

- Look into the medium term to position the portfolio for the post-crisis world.

Risk and Scenario

Risk and Scenario are separate and complementary concepts — both of which are necessary to manage investments through the current and future market environments.

To best describe the difference between Risk and Scenario analytics we must first understand the difference between *risk* and *uncertainty*[1]. *Risk* addresses the variability of outcomes within a well known state of the market, ideally a state for which we have plenty of information that helps us model the current and near term. *Uncertainty* aims to address the variability of outcomes across different

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[1] Knight, Frank H., Risk, Uncertainty and Profit (1921). https://ssrn.com/abstract=1496192

possible states of the market – a surprising outcome under the current state would not appear as surprising in a different state. Scenario analysis needs to consider in as much as possible both *risk* and *uncertainty* in order to offer realistic and insightful answers to allocators most important questions.

Different Outcome, same Scenario

Risk modeling: Different outcomes, drawn from same distribbuton

Same Outcome, different Scenarios

Scenario analysis: Same outcome, drawn from different distributions

Why Scenario Analysis is Crucial

The most important problem in investment has always been to construct a portfolio of assets which takes both return and risk into proper consideration. We need to choose a set of holdings designed to conform to the investment objectives[2] and the risk appetite. Crucially this risk appetite is not just expressed in terms of volatility or value-at-risk, but rather in terms of the portfolio's performance in *all* foreseeable future states of the markets.

This last point, which can be expressed as a downside or maximum drawdown requirement over *multiple* future scenarios, is one of the most difficult and essential exercises of investment risk management. If we combine this exercise with the aim of reaching outperformance wherever feasible over multiple time horizons, then we are truly doing the job for which the ultimate investors are willing to reward us.

During the 20th century, "Modern Portfolio Theory" (MPT[3]) only partially addressed this problem. Risk models were developed which focussed on market (price) risk measured as a volatility were designed for specific investment horizons - typically short- and medium-term models.

There are many deficiencies to these widely-used approaches to portfolio construction:

- The original formulation of MPT is not suitable for the allocation problem over multiple periods.

- There is no systematic way to combine multiple differing forecasts (future scenarios).

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[2] Which may involve a number of objectives, such as matching a series of liabilities, outperforming a given benchmark, or generating a specific target return.
[3] Markowitz, Harry. "Portfolio Selection." The Journal of Finance, Vol. 7, No. 1. (Mar., 1952)

- The uncertainties in both risk and return expectations, even in one period, need to be taken into account.

- The approach does not take into account a "maximum drawdown" description of the risk appetite.

- It is difficult to incorporate other data which may inform the market price forecasts (for example, macro forecasts).

- The market risk model is frequently based on a single regime approach which cannot capture the differing dynamics at work in markets over different timescales and business cycles.

- It is difficult to analyse the risk associated with "tail events" which are often associated with large losses.

A useful scenario analysis tool for asset allocation must address the deficiencies listed above – this has been the aim of much theoretical and practical effort for the last thirty years of investment management thinking.

The SAPIAT Scenario™ Approach

SAPIAT Scenario™ offers a suite of sophisticated tools to make investment decisions based on information and analysis that what was previously inaccessible to most asset owners and managers.

The crucial practical problem for an investor is to select plausible and useful scenarios in the first place – there are so many possible sources for the underlying information, and it is difficult to evaluate the accuracy of the sources. We may have our favourite sources, clairvoyants and crystal balls that we trust... but the empirical evidence is not in favor of putting too much trust in any particular forecast or forecaster.

To build more resilient investment strategies, SAPIAT Scenario™ allows you to take advantage of the information contained within market models, combine it with various forecasts, and quickly assess how the portfolio is likely to be affected. By examining the many outcomes corresponding to the potential futures discussed by different forecasters – and by creating your own forecasts as well – you can build better allocations, more relevant fund products, and winning strategies across multiple asset classes.

With the older generation of tools, it is not possible to create high-confidence portfolio scenarios from the mass of differing forecasts available to the investor. Instead, it is typically a laborious and slow research process to assemble forecasts over differing time horizons and to apply them to your portfolio. Existing models of market dynamics and risk are complex to use and hard to reconcile with many forecast scenarios, because they are too short term and do not capture the different market regimes which we have observed over the last years.

Using SAPIAT Scenario™, allocators can assess downside forecasts in order to examine the likely drawdowns which will be experienced under the scenarios investors care about.

Investment managers who have specific skills and competence in certain areas can develop outperformance scenarios, which are then applied consistently and with varying degrees of confidence, to the current allocation in order to ensure that it is positioned to take advantage of their views while meeting all the other investment constraints.

Scenario Analysis in the Current Crisis

As we think about the fundamental problems of asset allocation in 2020, the vital question for investors now is: how long will the various phases of this crisis last?

We have seen a number of predictions on possible paths for the current crisis from a variety of sources, including the following.

- Government-imposed shutdowns: big announcements about stimulus, news of global pandemic effects, recession headlines and high volatility in markets.

- Easing of government restrictions on businesses: sure to be a gradual process, with directionless markets.

- Possible surprises such as: announcements of likely medical treatments or vaccines, which will improve market sentiment.

- Eventual new normal: a re-balanced global economy with some sectors and regions significantly smaller than previously.

With SAPIAT Scenario™ investors can access and combine research to create forecasts for constructing scenarios over varying time horizons, they can assess the best return-risk trade-offs at each stage, and consider the potential for adjusting their strategic asset allocations.

For a complex, never-as-yet-seen type of scenario, it is especially difficult to predict its evolution–particularly as forecasters tend to be vague, and their assumptions are not explicit. Ultimately, we view this not only as a *modeling* problem (as modeling can only take us so far in the realm of the "unknown unknowns"), but rather as a *decisional* problem – something which we will cover in later articles.