

Scenario Analysis of Outside Forces

By Carlos Fuentes

Forecasting is the process of estimating the value of certain financial metrics using data from prior periods. Forecasting techniques almost always rely on input from executives and some form of regression. Although regression methods are easy to understand, they can be large, and they may incorporate variables that are problematic to quantify even if they don't appear to be so.

The popularity of forecasting techniques is well deserved because there are few substitutes (but there are substitutes such as System Dynamics), and because they narrowly focus on what seems to matter. However, when the purpose is to inform about the behavior of complex systems, regression models can become “black boxes” that ignore (or incorrectly assign) causal relationships and produce misleading results.

Scenario analysis (not to be confused with scenario testing¹) is more appropriate in situations with convoluted dynamics such as the evolution of the economy over the next 20 years. Sure, it is possible to assume—and it is often done—a certain level of productivity growth, certain increase in the population, etc. These assumptions are important but others such as policy orientation (left or right), war, mass migration, draughts and epidemics, typically are more so in the long run. “Forces,” that is, external influences that can shape outcomes, are naturally ignored in regression models because the latter are not designed to capture the effects of unquantifiable variables.

Although there were warnings² about the inevitability of pandemics and other catastrophes, the coronavirus crisis caught public policy makers and the business community by surprise. The ensuing lack of preparation is remarkable given what is at stake. True, having engaged in scenario analysis wouldn't have allowed policy makers to predict the date and specific nature of the outbreak but it would have encouraged them to take precautionary measures or, at worst, to consider how they would act if a crisis emerged.

Thoughtful, useful scenarios are not easy to develop. They require the input of experts, the ability to distinguish between what matters and what may seem important but is not, the faculty to theorize meaningful relationships between variables, and the ability to communicate in precise, clear prose.

The concept of scenario analysis has been known for millennia. It has been widely used in military operations by strategists—not by tacticians who work out the minutia but lack the global perspective that maximizes the probability of success—but less frequently by business managers. Here is how Machiavelli described the thinking process of the Greek general Philopoemen (253 to 183 BCE) in “The Prince”:

“[W]hen he was in the country with his friends, he would sometimes stop and ask them: ‘suppose there were enemies up in those hills and we were here with our army, who would have the advantage? How could we get at them without breaking ranks? If we wanted to get away, how would we do it? If they tried to get away, how could we cut them off?’ ... As a result of this constant practice, no unexpected difficulty could ever arise when he was at the head of his army, for which he did not have a ready remedy.”

The current crisis, with its consequences that could have been mitigated with foresight, may encourage actuaries and actuarial organizations to incorporate scenario analysis in their tool kit. Having the ability to inform about relevant potential futures could open doors—granted, not in the short-term— for actuaries interested in strategic analysis.

Carlos Fuentes, FSA, FCA, MAAA, MBA, MS, is president of Axiom Actuarial Consulting. He can be reached at carlos-fuentes@axiom-actuarial.com.

Editor’s Note: If you have an idea for an article, or thoughts to share about innovation or new ventures or lines of business, please take a few minutes to jot them down, and send them to me at mthomson@charter.net. You can also start a conversation on our section’s LinkedIn page at <https://www.linkedin.com/groups/2932342/>.

¹ In scenario testing the expected values of certain parameters (e.g., interest rates, mortality) are increased and decreased to assess their effect on the metric under consideration (e.g., life reserves). Scenario testing in the actuarial realm is the specialized version of scenario analysis.

² See “Fact check: Did Bill Gates predict the coronavirus in 2015?” in *US Today*, March 22, 2020. See also “The Futures of the US Health Care System” in the Mar/Apr 2016 issue of *Contingencies*.