

# The Case for Stochastic Present Values

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## Reply to Mr. Friedman's Comments on my Paper

I would like to thank Mr. Friedman for his attention to the paper. Clearly, Mr. Friedman has strong views on the subject and prefers "riskless" measurements to risk measurements (consistent with so-called "financial economics" perspective on pension management). This preference may have led him to certain misinterpretations of the paper.

The paper does not call for an overhaul of conventional actuarial methodologies. It advocates the need for the cost-risk analysis of retirement programs *in addition* to the conventional methodologies. Such analysis is necessary precisely because, as Mr. Friedman indicated, "pension risk is ignored rather than measured, analyzed and managed" in conventional reports.

I agree with Mr. Friedman that "stochastic forecasting is a valuable tool for quantifying risk." This point, however, is somewhat out of place as the paper has little to do with stochastic forecasting. "*Forecasting*" by definition is the assessment of *future* events, and pension forecasting is usually an exercise in Monte-Carlo simulations. In contrast, the paper makes the case for the analysis of stochastic *present* values that does not require simulation analysis. Besides, the case for stochastic forecasting was made a long time ago - pension plans have utilized stochastic forecasting since the mid-1970s.

It is not clear to me why Mr. Friedman believes that "the paper diminishes the significance of pricing." First, the paper does not discuss pricing at all. Second, the approach the paper advocates is perfectly "marked-to-market." More importantly, "the significance of pricing" must be established before anyone can diminish it. Mr. Friedman clearly understands that "the significance of pricing" is a debatable proposition. Therefore, quite appropriately, he presents two "examples of why pricing is important."

The first example correctly states that "employers need to know the cost of labor in order to make well-informed management decisions." The cost of funding pension commitments – an important part of the labor cost – is inherently uncertain for those plans that endeavor to fund their commitments by virtue of investing in risky assets. This "difficulty" cannot be overcome by presenting an artificial deterministic value that uses unreasonable simplifying assumptions. Pretending that the cost of funding can be transparently depicted "on a deterministic basis" would not make the stochastic nature of the cost easier to understand.

The primary advantage of stochastic present values is not to present "a likely range of outcomes," but to take care of the best interests of plan participants (the safety of benefits) and taxpayers/shareholders (the manageability of cost). One of the main points of the paper is that stochastic present values are instrumental in generating optimal contribution and asset allocation policies – the policies that maximize the safety of benefits and minimize the cost of providing those benefits. Stochastic present values represent the key analytical tool in the separation of systematic and non-systematic risks in funding pension commitments (consistent with classic financial economics).

As far as the second example is concerned, I agree with Mr. Friedman that “it is important to make government entity finances easily understandable.” It is hard for me to grasp, however, the usefulness of an artificial “price” that a) will never be paid, b) depends largely on certain factors that are only remotely related to day-to-day pension plan management (e.g. the volatility of interest rates), and c) published several months after this figure might have been meaningful. To the contrary, I believe that the likely outcome of “pricing” pension commitments would be increased confusion and diminished transparency of the financial health of pension plans.

I agree with Mr. Friedman that stochastic modeling and asset pricing are useful “for different reasons and neither to the exclusion of the other.” This observation, however, is already implemented in the paper in section “Matching Assets.” This section demonstrates that the approach proposed in the paper is a natural generalization of the “financial economics” approach (which has more restrictive assumptions).

Finally, Mr. Friedman uses the term “risk-adjusted price,” which, to me, is a semantic redundancy. Assets have just prices, not “risk-adjusted prices.” I am not sure what this term means, but I am sure that if Mr. Friedman attempted to come up with a formal definition of the term, he would quickly realize that it would be a major challenge.

I would like to thank Mr. Friedman for his thought-provoking comments.

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