

Valuing and Funding Public Pension Liabilities

Why Plan Sponsors Should Listen to Economists

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There are two very distinct schools of thought on how to value and fund public pension liabilities. The long-established, dominant perspective among US public plans sponsors, pension actuaries, and government accounting standards setters derives primarily from the actuarial profession. A newer perspective, deriving from the field of financial economics, asserts that accepted actuarial methods both obfuscate and underestimate the value of public pension liabilities, and calls for an overhaul of the conceptual framework actuaries, plan sponsors, and accountants use to understand and make decisions about funded status.²

Actuaries and plan sponsors are understandably less than welcoming to economists who arrive on the scene claiming to know better how to do things actuaries and plan sponsors have done for decades. Skirmishes between the economic and actuarial perspectives can be seen playing out on the websites of the Society of Actuaries (www.soa.org), the American Academy of Actuaries (www.actuary.org), and the National Association of State Retirement Administrators (www.nasra.org). It appears from commentary posted on these websites that the actuarial profession is open to debate with the economists, but still comes down mostly on the side of traditional methods, while plan sponsors appear to reject the economics perspective summarily and with unanimity.

The Government Accounting Standards Board (GASB), which historically has favored the actuarial perspective,³ recently issued an Invitation to Comment on Pension Accounting and Financial Reporting, indicating some openness to reconsider the topic. The CFA Institute, which has not taken any official position on the debate, appears to favor the economists implicitly in its choices about what to publish.⁴

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² The financial economics perspective, while a relative newcomer to public pension liability valuation, has been around at least since Modigliani and Miller (1958). Early applications of the perspective to pensions include Sharpe (1976), and Treynor, Regan, and Priest (1976). The perspective strongly influenced the view Financial Accounting Standards Board (FASB) took regarding corporate pension liabilities in FAS 87 in 1987. Recent articulations of the perspective in a public pension context include Novy-Marx and Rauh (2009), Waring (2009), British North American Committee (2009), Ennis (2007), Day (2004), and Bader and Gold (2003).

³ See Government Accounting Standards Board (2006).

⁴ See Waring (2004, 2009), Ennis (2007)), and Bader (2004), for example.

My perspective is that of a trained financial economist with extensive experience as an asset-side pension consultant. As an economist, I believe that economic analysis is useful for understanding economic activities, including management of public pension funds. As a pension consultant, I am struck by the resistance I have encountered when I have attempted to frame a decision or an analysis from the economic perspective. Principles of valuation which are widely accepted among economists and financial analysts are firmly rejected by a seeming majority of public plan sponsors and actuaries. Furthermore, those who advocate for the usefulness of the economic perspective are sometimes received with suspicion if not hostility.⁵

If economics is useful, yet isn't used by public plan sponsors, then something is wrong. The "debate" between actuaries and economists⁶ looks, from an economist's perspective, like the actuaries have simply missed the point. It appears the debate has been sidetracked by several misunderstandings of the economics perspective on the part of those who hold the actuarial perspective.⁷ My primary purpose in this paper is to disentangle some of these misunderstandings and, in doing so, to make the case to plan sponsors and their advisors that financial economics is a useful analysis and decision support framework for managing pension funds. And just in case plan sponsors find this case unconvincing, I argue a second case for plan sponsors to learn about the economics perspective based on principles of risk management. Finally, I discuss the question, what is the professional responsibility of an investment advisor with respect to this topic, and argue that investment advisers have a responsibility to foster their clients' understanding of the economics perspective. I begin however, by considering how economists look from the perspective of actuaries.

I. Framing the Discussion: Windmill Fighters and Potemkin Accounting

Dimitry Mindlin has written an absolutely delightful article titled *Windmill Fighters in Potemkin Villages*.⁸ As you may recall, "Potemkin villages were purportedly fake settlements erected at the direction of Russian minister Grigory Potyomkin to fool Empress Catherine II during her visit to Crimea in 1787. According to this story, Potyomkin, who led the Crimean military campaign, had hollow facades of villages constructed along the desolate banks of the Dnieper River in order to impress the

⁵ See, for example, a letter to the Board of Directors of American Academy of Actuaries which suggests that adherents of financial economics are engaged in an ideological battle to eliminate defined benefit plans. It is posted on www.nasra.org under the "What's New" banner: "Joint Letter and Statement to AAA re disclosures and MVL," especially paragraphs 2-4 on page 3 of the accompanying statement. The letter is signed by representatives of nine unions and other associations. See also Findlay (2008).

⁶ For ease of exposition, I use the words "actuary" and "economist" to refer to those who hold the actuarial and economic perspectives, respectively. Many of the holders of these perspectives are indeed actuaries and economists, but a few holders of the economics perspective are actuaries, many holders of the economics perspective are investment professionals, and many holders of the actuarial perspective are plan sponsors. See Table I for a list of contrasts between economists and actuaries.

⁷ It is probably also true that economists misunderstand the actuarial perspective. I will leave it to those who feel misunderstood to argue this point.

⁸ See Mindlin (2007).

monarch and her travel party with the value of her new conquests, thus enhancing his standing in the empress' eyes.” (Wikipedia.)

Mindlin suggests that even if economists are correct that pension accounting is an artifice which overstates the financial health of public pension funds – and he seems to waffle on whether he thinks the economists are right on this point – the reform of deficient accounting practices is not a very important matter in the broader scheme of pension reform. Better accounting won't magically turn a poorly funded plan into a well-funded one. Economists that get all worked up about reforming pension accounting are like Don Quixote attacking windmills thinking they were giant monsters, he suggests.

Mindlin's article raises two questions: (1) does pension accounting provide a clear picture of the financial health of pension funds and (2) does it matter? I address these questions in sections II and III below, although in reverse order, since there is no point belaboring (1) unless the answer to (2) is affirmative. In section IV I discuss and attempt to dispense with various red herrings in the debate. Section V discusses the debate from the perspective of risk management, and Section VI discusses the professional responsibilities of investment advisors. Section VII makes concluding remarks.

II. Why Pension Accounting Matters

There is a *sense* in which accounting doesn't matter: if accounting introduces known distortions of financial measures, those distortions can be corrected by users of the measures. Bad accounting, so long as the rules are transparent, does not force bad analysis or bad decisions. This is a central point of financial economics and a critical one in a pension context, yet I have found that in actual decision making settings, many decision makers and analysts seem to be unaware that they are not forced to take accounting numbers at face value. They suffer, as economists put it, from “accounting illusion.” I will illustrate with some examples.

1. Accounting illusion can make decision makers blind to good theory.

When I was a new consultant (circa 1993), I participated in a client meeting at which my firm was recommending changes in the manager line-up to the board of trustees. The plan's actuary was concerned that the turnover associated with implementing our recommendations would trigger recognition of losses. I felt compelled to explain to him something a financial economist considers basic: whether or not losses have been “realized” – i.e. whether or not accounting has caught up with reality – was not something which should govern investment decisions, except perhaps for tax reasons, which were not an issue in this case. I stumbled through trying to explain to the actuary and the trustees that when accounting failed to reflect economic reality, one should still strive to make decisions based on reality, as best one can discern it. The actuary explained to

me, with stretched patience, that realization of losses would result in a deterioration in funded status, which would in turn trigger higher contributions, something the plan sponsor would like to avoid.

I wanted to tell the actuary and trustees that what the actuary was referring to as “higher contributions” could be more correctly referred to as a redistribution of contributions from the more distant future to the near future, with no change in the present value of the total stream of contributions,⁹ and that this was therefore not of consequence so long as the fund was not facing an immediate liquidity crisis, which it was not. But the meeting moved on, seeming to have no more time for educating a neophyte on how the “real world” works. Over the next few years I had several more experiences like this and also discussed these situations with colleagues. I have been told repeatedly by both colleagues and clients that the economics’ perspective was “just theory.”¹⁰

2. Accounting illusion can restrict the information and perspectives decision makers are willing to consider.

Sometimes when I attempt to explain the economics perspective to plan sponsors they respond that the perspective doesn’t apply to them because of the specific accounting and/or funding rules to which they are subject. For example, while making a presentation to a Taft-Hartley board of trustees, I included an analysis of the fund from the economic perspective. This was shortly after the Pension Protection Act (PPA) went into effect, and my analysis, being from the economic perspective, was not the same as would be done under the PPA rules. One of the trustees challenged me, saying, “This is completely irrelevant for us. We live under the PPA whether we like it or not. We can’t make up our own rules just because we don’t like the law.” This trustee seemed to fail to understand that, whatever the accounting and funding requirements, from a managerial perspective plan sponsors are allowed to use whatever information and analysis helps them to best understand the economics of the decisions they are considering.

I have had similar experiences with corporate plan sponsors who think, because both the PPA and FASB require that they discount their liabilities with a corporate bond rate, that this is the correct thing to do when analyzing decisions for management purposes. This became apparent recently during the financial crisis when the spreads between Treasuries and corporates were very volatile. Clients who had hedged their liabilities using Treasuries or swaps became concerned about the “basis risk” between the hedge and their “exposure”, which they understood to be determined by a corporate rate. When I would try to

⁹ This follows from what one might consider the Modigliani-Miller theorem of pension finance: the idea that the present value of benefits must equal the present value of contributions, so the only way you can change the present value of contributions is to change the present value of benefits.

¹⁰ As an aside, this example illustrates an irony: economists are often criticized by actuaries and plan sponsors for (purportedly) having a short-term perspective, something economists find very puzzling since they see themselves as considering the entire life of a fund. In this example it is clearly the actuary who has the focus on short-term financial measures.

explain to them that the Treasury or swap rates were the right rates to be using in the first place, and that the basis risk they were seeing was an illusion created by accounting rules, they would usually respond by saying that what mattered to them is how they appear in the accounting measures.

3. “You have no choice.”

I often hear it said that plan sponsors “have no choice” about investing in equities or other risky assets because that is the only way they can “hit their bogey”, that is, get their expected return up to their actuarial return assumption. While it is understandable that some plan sponsors feel that their options are limited, the idea that they have no choice but to crank up risk until they meet an arbitrary actuarial return assumption is an accounting illusion taken to an extreme.

Sometimes I am able to have a longer discussion with a plan sponsor, actuary, or asset-side colleague during which the colleague or client will admit that *they* understand that the economic view has merit, but so long as the accounting rules are what they are, the rest of the world is going to treat the current rules as if they reflect reality, and that is not something they think they can change. So, while it is technically correct to say that the accounting rules don’t matter because bad rules can always be corrected for by an individual analyst, to get actual organizations to see through accounting illusion may be a bigger task than reforming accounting. Frankly, I think working on both fronts – reforming pension accounting and attempting to improve pension management decision processes – is called for.

III. Contrasting the Economic and Actuarial Perspectives: an Economist’s View

A central principle of the economic perspective on valuation is that, when valuing an asset (or liability) which is not regularly traded, one should look to similar assets which have traded recently and use transactions on those assets as a reference point in estimating the value of the non-traded asset (or liability.) The application of this principle to the valuation of pension liabilities is a straightforward discounted cash flow (DCF) exercise. It works as follows:

- Forecast the relevant cash flows.
- Discount the cash flows at rate(s) commensurate with the risk and term of those cash flows to get present value.

In a pension context, the cash flows to be valued are projected *benefit payments* (not contributions.¹¹) Different projections of benefit payments may be appropriate depending on the questions one is attempting to answer with the analysis. For example, one could ask, what are the liabilities to which the plan sponsor has *already* committed? Alternatively, one might ask, what *will be* the liabilities under some assumptions about the path of *future* commitments? Both are worthwhile questions.

¹¹ Contributions are a derivative of commitments. To understand the economics of contributions, one must first understand the economics of commitments to pay pensions.

However, if one wishes to measure *current* funded status, one should compare the liabilities to which one has already committed to the assets one has already set aside to fund those commitments. Future commitments and future contributions are relevant for some analyses, but not for measuring the extent to which existing commitments have been funded by existing assets, which is what funded status should measure, from an economist's perspective.

Whatever cash flows are deemed to be relevant for a given analysis, there are three distinct valuation-related questions one can ask of the stream of cash flows (please see appendix I for a numerical example illustrating the distinctions among these questions):

1. What are the cash flows worth? That is, what would they sell for in a well-functioning market?¹² If pensions are credibly intended to be risk free, then estimating their market price involves calculating their present value using a risk-free discount rate – or as close to risk-free as can be found.
2. What would it cost to fully fund the cash flows? That is, how much collateral is necessary to insure that payment of the cash flows is not dependent on the solvency of the plan sponsor? Note that this question could, in principle, have the same answer as question 1 if asset cash flows are perfectly matched with liability cash flows. Without perfect matching, the cost of full funding is higher than the value of the cash flows because a cushion is required to absorb the potential realization of mismatch risk.
3. What is a sensible plan for funding the cash flows over time? Note that this question can in principle have the same answer as question 2, that is the funding plan could call for fully funding the cash flows at all times; however, because plan sponsors usually have other objectives when developing a funding plan in addition to funding itself – for example having contributions which don't change very much year to year – the optimal funding plan may not involve always being exactly 100% funded. It may even involve use of non-market discount rates such as an “expected return on assets assumption” to discount cash flow. However, the resulting funding plan should not be confused with the answers to question 1 or 2.

When valuing pension liabilities, economists are primarily concerned with question 1 while actuaries are primarily concern with question 3. Interestingly, question 2 has not played a significant role in the debate between economists and actuaries, even though the idea that funding requirements go up when collateral is invested in riskier assets is a key principle of annuity funding. Since a pension is a type of annuity, it is odd that this question 2 doesn't get more attention in a pension context. It is also worth noting that that “more collateral risk implies higher funding requirements” is consistent with the economic perspective but is something I learned from actuaries when I worked for a large insurance company. I am going to claim this idea for the economics perspective, but I believe any economist would be happy to yield credit for the idea to any actuary who wishes to embrace the idea.

¹² As with all things, an individual's or organization's private valuation of a stream of cash flows may be different than the market price (the concepts of consumer surplus and producer surplus come to mind); nonetheless the market-clearing price for the cash flows is relevant reference point for economic analysis.

Because actuaries and plan sponsors are primarily focused on question 3, it appears to me that they sometimes misinterpret economists' focus on question 1 as an assertion that short-term, interest rate-driven fluctuations in the market value of liabilities should directly drive contribution volatility, or force investment in a cash flow matched portfolio if the plan sponsor wishes to avoid contribution volatility.¹³ Even when actuaries and plan sponsors understand that valuing cash flows is a separate issue from funding them, they seem to think that the mere acts of valuing public employee pensions and making that information publicly available would be detrimental to the health of pension funds. Calculating the market value of liabilities fails the test of "decision usefulness" they say, and would confuse users of financial statements and the public.¹⁴

To an economist the suggestion that knowing the value of a major expense item is not "decision useful" and might even be harmful is puzzling. An economist wonders, how can any decision regarding benefits – increases, decreases, funding, structural changes, even just maintaining the status quo – be made in an informed manner if the market value of the benefits isn't known?

Knowledge of the market value of pension liabilities is also "decision useful" for managing a sponsor's overall portfolio of liabilities. Presumably, public entities have limited borrowing capacity, and using that capacity for pension commitments displaces capacity that could be used for other purposes and potentially drives up the cost of borrowing. This issue is particularly important in light of the fact that state pension liabilities are about three times the value of all outstanding state bond issues. (Novy-Marx and Rauh (2009))

Thus far in this section, we have focused on the different ways economists and actuaries see discount rates and the present values one calculates with them. This is the central issue, but it is worth noting that economists have several other beefs with actuarial methods as well.¹⁵

- Smoothing year-to-year volatility of asset and liability values. Plan sponsors are understandably averse to wildly fluctuating changes in funded status. However, smoothing out the year-to-year changes in assets and liabilities merely serves to mask volatility and garble information that would otherwise be useful in managing funded status.
- Amortization of the cost of plan changes. When plan sponsors commit to a higher future benefit level, the present value of future benefits goes up immediately to

¹³ Some financial economists do argue that pension funds should be invested entirely in bonds (Black (1980), Tepper (1981), and Bader and Gold (2007), for example) and there is some merit in this idea. However, there is no necessary link between believing that MVL is a relevant number and believing that pension funds should only invest in bonds. One can reject a bond-only investment policy without rejecting the economics perspective.

¹⁴ There are numerous statements to this effect in letters and articles posted on www.nasra.org and www.soa.org. See Findlay (2008) for example.

¹⁵ This is not an exhaustive list; see Waring (2009) or Bader and Gold (2003) for a more comprehensive treatment.

- fully reflect the new commitments. Yet actuarial rules “amortize” this cost over many years, resulting in unnecessary opacity of liability and cost measures.
- Using different procedures for corporate and public funds. A pension fund is a pension fund. They owe pensions to retirees and they pre-fund those pensions with assets. How much a given pension or pool of pensions is worth is independent of whether the plan sponsor is a public or private entity. The value of liabilities can vary by financial condition of the plan sponsor, but not by whether plan sponsor is a public or private entity.
 - Focusing on contributions rather than benefits. The cost of a plan is determined by the benefit payments, not by contributions. Yet, many plan sponsors seem intensely focused on managing near-future contributions. This only makes sense if the plan sponsor intends to default on its pension obligations (so by putting contributions off they may avoid making them at all), or if the plan sponsor is in a liquidity crisis, and is effectively borrowing from the pension fund on an emergency basis.

IV. Red Herrings

When I read the views of public plan sponsors as expressed on www.nasra.org and also when I interact with them personally, I often encounter arguments against the economics perspective which seem to reflect misunderstandings of the perspective. Some of these misunderstanding are repeated over and over again, and seem to have a life independent their merits. In my view these arguments deflect debate rather than move it forward. They are:

1. Financial economics calculates a termination liability and is therefore irrelevant for a going concern.

In the actuarial view of the world, there is one time when the economists’ view of the world is relevant – when a plan is being terminated. The actuaries are correct: if a plan is being terminated, the correct way to measure the value of the liabilities (“MVL”) is to estimate their market value as of the termination date.

The actuarial view then commits a logical error of the type “all trees are plants; broccoli is not a tree; therefore broccoli is not a plant.” Specifically, I often encounter the following argument: “MVL is a termination liability; public plans are long-term entities with no intent of terminating; therefore, MVL is irrelevant for public funds.”

Yes, MVL is a termination liability in the sense that, it is what the liabilities would be worth if you terminated the plan; however, MVL is also the liability if you don’t terminate the plan, so it is a little misleading to call it the “termination liability” and then suggest that it isn’t relevant unless you are terminating.

The actuarial perspective's association of MVL with a termination liability sometimes gives rise to additional misunderstandings and mischaracterizations of the economics perspective. For example, I have often heard public plan sponsors and actuaries say something like the following: "Public pension funds are perpetual entities with a long-term perspective. The economic perspective, with its focus on the short-term, is not relevant for public funds." This prompts economists to scratch their heads and wonder "How did they ever get the idea our perspective is a short-term one?"

Some commentators take this confusion a step further and suggest that if economists think that the termination liability is an appropriate liability to measure, then it must be that economists think that public pension funds ought to be terminated. We discuss this next.

2. Advocates for financial economics have a political agenda to destroy DB plans.

It is hard to know if anyone really believes that financial economics is merely a weapon in a campaign to disassemble our nation's system of retirement. None of the economists I know have such an agenda. Nonetheless, it is an idea that has been expressed.¹⁶ Whether some economists have this motivation or not I do not know. I do know that this is a separate issue from the technical merits of either side of the argument.

3. Lowering the discount rate should be avoided because it will undermine public support for public DB plans.

The economists' perspective generally calls for lower discount rates than those currently used by plan sponsors. Every once in a while I hear someone say "It wouldn't be in plan members' interest to lower the discount rate because the increase in liabilities would undermine support for the plan." This amounts to a suggestion that accounting methods should deliberately understate the cost of the plan in order to trick plan sponsors into unwittingly making larger commitments than they realize. Somehow this doesn't seem like the way to save pension systems.

4. Lowering the discount rate is not practical because the plan sponsor can't afford the implied contributions.

I was recently at a conference where I raised the issue of how to choose an appropriate discount rate for public pension liabilities and specifically, whether presently used discount rates are too high. The head of a state pension fund said, "I would love to lower my discount rate but the reality is that the state can't afford the increase in contributions that would result from lowering the discount rate." Similarly, I once heard a different head of a state pension fund say, dismissively,

¹⁶ See specific reference in footnote 3.

“Yeah, right, like I’m gonna get up in front of the state legislature and ask for a tax increase so we can lower our discount rate.”

My reaction to these plan sponsors is that there is a correct discount rate independent of whether the state can afford the implied contributions. Practical or political realities may “force” use of an inflated discount rate, but that doesn’t mean it isn’t inflated, and that doesn’t mean that the resulting measure of the liabilities isn’t understated. In effect, choosing an inflated discount rate is a device for under-funding the plan by making it appear more funded than it is.

A more transparent way to respond to the problem would be to recognize that, if the plan sponsor can’t afford the contributions, then it can’t afford the benefits.

5. The economics perspective is driven by a desire to make public rules consistent with corporate rules; since public entities are very different than corporations, this desire is misplaced.

It is true that economists place a high value on the consistent application of a coherent set of principles. From an economist’s perspective it appears that public plan sponsors and actuaries believe that their funds are exempt from what otherwise are general principles of valuation. Economists have no desire to make public fund accounting consistent with corporate fund accounting per se – indeed corporate pension accounting also has its flaws. The desire is to make both corporate and public valuation rules consistent with general principles of valuation. Not that actual practices need to be identical from one plan sponsor to the next, but any departure from general principles should be justified with more specific claims than “public funds are different.”

6. The Law of One Price is not applicable for pensions.

One of the objections economists have to the actuarial model is that it implies that two identical streams of cash flows can have very different values simply because of the nature of the sponsoring organization. Some actuaries¹⁷ have responded that the Law of One Price does not apply to pensions because they are not tradable. They note that the Law of One Price requires that any price discrepancies be arbitragable. In a very narrow technical sense this claim is correct: if pensions are not arbitragable, then they can have different prices. But they can’t be *very* different, just as two nearly identical houses in the same neighborhood are unlikely to sell for radically different prices. So for all practical purposes, the Law of One Price is applicable: two nearly identical pensions, one offered by corporation and one by a government, *should* have more or less the same value.

¹⁷ See Moore (2008), for example.

V. What Does Good Risk Management Call For?

I hope that by this point I have convinced the skeptical reader that the financial economics perspective, including calculation of the market value of liabilities, is very relevant for the management of public pension funds. But I recognize I may have failed. In this section I will take another tack: I will argue that, even if you think the economics perspective is misguided, good risk management requires that you understand how your fund looks through an economics lens.

In the investment world, risk management is often confused with risk measurement, so let's start with a definition: Risk management is the process of identifying what can go wrong with contemplated and chosen courses of action, and taking steps to keep the likelihood and magnitude of unacceptable outcomes within tolerable limits. Much of risk management can occur without attempting to measure risks precisely. Measurement certainly helps in some contexts, but the crux of risk management is (1) awareness of the possibility of bad outcomes, (2) an ability to see the potential consequences of one's actions, and (3) well-functioning decision processes.

Identifying in advance what can go wrong with contemplated courses of actions can be a challenge for many reasons. Nonetheless, for high stakes decisions, it is worth "thinking twice," as Michael Mauboussin puts it. Mauboussin (2009) offers many suggestions for improving decision making, including considering the point of view of other people. I would add that it is especially valuable to consider the point of view of people who have given a lot of thought to the issue at hand, particularly if that thought has been vetted and refined over years of debate and research, and has unfolded on an independent track from the primary frame of reference of the decision maker. Economists offer this to plan sponsors and actuaries.

So why don't actuaries and plan sponsors take advantage of the economics point of view as an independent frame of reference? It can't be because the stakes are too low to make the effort worth it. The difference between economic and actuarial valuations of state pension liabilities has been estimated as high as \$2 trillion – \$5 trillion for the economists versus \$3 trillion for the actuaries.¹⁸ With \$2 trillion in assets, this is the difference between being 67% funded (bad enough) and 40% funded (a possible disaster.) This is a problem of the same order of magnitude as the sub-prime crisis. The pensions of tens of millions of fire fighters, police officers, teachers, and other public employees are at risk, and yet an entire profession which has thought a lot about the issues is dismissed out of hand.

One possible explanation for plan sponsors' dismissal of the economics perspective is the tendency of groups and organizations, when faced with a risk which threatens their existence or even their self-image, to suppress points of view that challenge the status quo. Such groupthink is well documented by social psychologists, and was recently illustrated extensively by Marc Gerstein in *Flirting with Disaster* (2008).

¹⁸ Novy-Marx and Rauh; Ennis

Gerstein analyzed numerous disasters¹⁹ and found a common pattern: Someone saw the disaster coming but was ignored by those who might have done something to avoid the disaster. Based on his analysis of these disasters, he offers four risk management recommendations:

- Understand the risks you face.
- Avoid being in denial. Be aware of the tendency of groupthink-like processes to suppress “deviant” points of view, and balance this tendency by encouraging the expression of alternative points of view.
- Pay attention to weak signals and early warnings. When a mistake would be disastrous, it is important to pay attention to all risks that can be identified, even those that seem remote.
- Do not subordinate the chance to avoid disaster to other considerations.

Let’s discuss the implication of Gerstein’s recommendations for pension management:

1. *Understand the risks you face.*

I’m sure some plan sponsors know only too well the risks faced by the pension funds for which they are responsible. Yet it also seems that many plan sponsors accept actuarial assessments of their funded status at face value without seeming to be aware that economists believe that these assessments are overly optimistic. The actuarial model, like any model, is a *representation* of reality, and is therefore subject to “model risk” – the possibility that reality is different from the model in some important way. A good risk management process recognizes this possibility, and welcomes out-of-model thinking as a reality check, even when (especially when?) that thinking comes from outsiders such as economists.

2. *Avoid being in denial.*

Good risk management calls for plan sponsors to explore and evaluate economists’ claims that (1) their plans are much less funded than official statistics show, and (2) the official processes for valuing liabilities are seriously flawed. These are big issues. Summarily dismissing them feeds at least a perception of denial, as does the near-unanimity of the views found on the NASRA website.

3. *Pay attention to weak signals and early warnings.*

If you believe what economists say, then their viewpoint is a *strong* signal that public pension funds are disasters waiting to happen. But plan sponsors don’t yet seem to be convinced of the economics perspective, so to them, economists’ warnings are *weak* signals. Weak signals are easy to ignore, especially if they have gone unheeded in the past without apparent consequences. However, the stakes are too big here not to take Gerstein’s advice and seriously consider the *possibility* that economists’ are on to something.

¹⁹ Chernobyl, Katrina, Vioxx, Enron, Arthur Andersen, wars, space shuttles, and others.

4. *Do not subordinate the chance to avoid disaster to other considerations.*

I believe there is a strong status quo bias in the way public plan sponsors conduct their affairs. To take a page from Jeremy Grantham's playbook,²⁰ is it possible that some plan sponsor staff, trustees, and advisors (including pension consultants) are sufficiently influenced by career risk that they can't even acknowledge, never mind act upon, a point of view that challenges the status quo? Moreover, could there be a tendency for plan sponsors and actuaries to close professional ranks in the face of what appears to be an invasion of their turf by economists? In short, is the chance to avoid disaster being subordinated to agency problems and professional territoriality? I am sure different professionals will see these questions differently, but we should be discussing them. Don't our obligations to our ultimate clients – participants in pension funds – require it?

In sum, good risk management calls for plan sponsors to *listen* to economists, and to be open to learning from what they hear.

V. **What Is the Professional Responsibility of an Investment Advisor?**

In one sense investment advisors are bystanders with respect to the debate between economists and actuaries, since we don't "own" the issue of measuring funded status. Yet, we need to know funded status in order to give total portfolio advice which is informed of a client's circumstances. And the funded status we need to know is the real funded status, not a Potemkin one.

I believe our responsibilities to clients are broader than giving well-informed investment advice, however. I believe we have a responsibility to foster our clients' overall financial health, and that this includes drawing to our clients' attention circumstances which we find to be detrimental to their health, even if such things fall out of the narrow bounds of the mandate we have been hired for.

I believe investment advisors face a dilemma, however, that may give them pause about acknowledging the legitimacy of the economics perspective. Most plan sponsors want to minimize contributions, and this makes them predisposed to points of view that justify higher discount rates. Furthermore, investment committees and staffs consider their mandate to be to earn, at least, the discount rate assumed by actuaries. The social pressure to embrace overly optimistic return expectations and to share in an illusion of success can be enormous. Given this context, clients don't want to hear the news that they are less well funded than previously believed, and may blame the messenger.

Nonetheless, I believe an investment advisor has a professional responsibility to help clients understand their financial health, and to facilitate investment decisions which are informed of that health. This may require telling clients things they don't want to

²⁰ Jeremy Grantham, one of the founders of investment management firm GMO, is well known for interpreting behaviors in the investment management industry in terms of career risk.

hear. If we don't do this, we become enablers of our clients' denial, and of the poor decisions that may result from that denial.

VI. Summary and Conclusions

There is a school of thought – financial economics – that asserts that the actuarial methods for calculating the value of public pension liabilities are flawed and result in the official measures of these liabilities which are materially understated and unnecessarily opaque. State-wide funds, which are under-funded by about \$1 trillion according to official actuarial estimates, are in fact under-funded by \$3 trillion, some economists claim. Even in the wake of the credit crisis of 2008/09, these are big numbers. It remains an open question as to whether states will default on these liabilities, make up the difference with increased contributions (and taxes), or be saved by outstanding investment results.

The procedures used in practice to value pension liabilities have been in use for longer than the field of financial economics has existed. Economists are new arrivals on the scene, and the actuaries, accountants, and plan sponsors whose professional lives are intertwined with the practices criticized by economists understandably display little interest in what economists have to say. Nonetheless, for the sake of sound risk management and better insight into the economics of their plans, plan sponsors should pay attention to the economic point of view. While it can be tempting to dismiss the economic critique as “just theory” or as reflecting a failure to understand the unique circumstances of public pension funds, good risk management requires that such a rejection occur only after seriously considering the critique.

The potential impact of the financial economics perspective on accounting and funding for public pension funds is enormous, and the implied action items for plan sponsors are many and all-encompassing. As a start, plan sponsors should treat the economics perspective as a “second opinion” on the financial health of their fund and discuss among themselves and with their advisors what this opinion implies for the management of their funds.

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Appendix I

Numerical Example Illustrating the Differences among Valuation, Full Funding, and Optimal Funding

Suppose you have a very simple pension: your employer has promised to pay you \$100 in one year and to “pre-fund” that promise. How much should your employer put aside to fund the promise? A lay person might answer “\$100”, but actuaries and economists agree that your employer should get “credit” for the fact that the money set aside can earn a rate of return during the year. The debate is over just how much credit, or in professional jargon, how much the \$100 should be “discounted”.

If the plan sponsor invests in a risk-free investment option, then everyone agrees on the answer. For example, if the plan sponsor can invest at 5% risk-free, then he/she must set aside \$95.24, the amount that, if increased by 5%, will equal \$100. All also agree that it is appropriate to refer to \$95.24 as the “present value” of \$100.

The debate starts when the plan sponsor invests in risky assets. Suppose two options now exist: 5% risk free, as before, and a risky option that will (for simplicity) depend on the flip of coin: heads and the option earns 8%; tails and the option will earn 4%. The

question is, does either the present value of the \$100 or the amount required to fund it change if collateral is invested in the risky option rather than risk free one?

An economist, who is primarily concerned with valuation, would say no. The economist would say that, so long as the \$100 pension continues to be perceived as a risk-free promise, its present value should be determined at a risk-free discount rate. In other words, how the collateral is invested does not change the value of the promise.²¹

The actuary, claiming a concern with funding rather than valuation, would say over the long-term, the risky asset will average a 6% return, so that is the right discount rate as long as we have a long-term perspective²². If we invest in the risky asset we only need to set aside \$94.34, the actuary claims, the amount that will grow to \$100 if it earns 6%.

The economist says, “Hold on. Let’s be careful. If we are going to talk about funding, let’s be specific what we mean by that.” Let’s define “fully funded” as follows: *a pension fund will be considered fully funded if sufficient assets exist in the fund, and sufficient restrictions exist on the investment of those assets, that beneficiaries are not exposed to the credit risk of the plan sponsor.*²³

By this definition, the amount of funding necessary to be fully funded *goes up* when the plan sponsor invests in risky assets. In our simple example, the economist would note that there is a 50/50 chance that the risky asset will earn only 4%. To ensure that the pensioner is not exposed to plan sponsor credit risk in this scenario, the amount of required funding is \$96.15, the amount that, if it earns 4%, will grow to \$100 in one year.

While the amount of funding required to be fully funded goes up when the plan sponsor invests in risky assets, this does not change the value of the pension promise. If the promise is risk free then one should use the risk free rate to value it, in the economists’ view.

²¹ I am running fast over some nuance here. If the collateral is invested in a way that compromises the plan sponsor’s ability to honor the pension obligation, then how the collateral is invested does indeed affect the value of the pension.

²² We can imagine the \$100 being an annual obligation and the coin being tossed each year for many years.

²³ This definition is an adaptation of annuity funding principles I learned at MetLife. It also demonstrates some of the nuance in attempting to describe the economist and actuary views, as this particular view on funding is consistent with the economics perspective but is something I learned from actuaries.

Table I

Differences between Pension Actuaries and Financial Economists

These portraits of actuaries and economists should be thought of as idealized types. Real economists and actuaries are more nuanced. See footnote 14 on page 11 for an example.

	Pension Actuaries	Financial Economists
Relationship to plan sponsors	Work closely with plan sponsors; official measurers of funded status.	Don't usually work directly with plan sponsors; indirect contact through a variety of channels.
Professional domain	Pension liabilities	Valuation; consider the topic to be governed by general principles independent of the special case under consideration
The role of discounted cash flow analysis	Mathematical framework for linking values of different-dated variables; not necessarily tied to economic principles	The central valuation framework; highly integrated with economic principles such as ignoring sunk costs and considering opportunity costs.
The role of accounting	Believe that accounting measures are the reality we live within.	Believe that accounting measures are imperfect representations of reality. Good financial analysis involves incorporating additional information and measures.
Reference point for choosing a discount rate	Expected return on assets	Intended risk of benefit payments
Effect of smoothing	Reduces volatility of funded status and contributions	Masks volatility; distorts measures of funded status
Relationship between asset risk and funding requirements	Funding requirements <i>decline</i> when collateral is invested in risky assets	Funding requirements <i>increase</i> when collateral is invested in risky assets
What is the focus of analysis?	Contributions	Benefits
View on funded status of public funds as of 12/31/08	Average funded status is about 67%	Average funded status is about 40%.