

IN SUPPORT OF THE WEATHERMAN

By Dmitry Mindlin

As they strive for transparency, financial economists seem to be turning their backs on the future and all of its potential risks and rewards.

THE INSANITY OF WEATHER PREDICTIONS MUST STOP. We must find the courage to tell the truth, clearly and unequivocally: *Neither today's well-being nor today's net worth (collectively or individually) has anything to do with tomorrow's weather.* Our society devotes too much time and resources to the analysis of tomorrow's weather. If you need to know the weather, just walk outside—the weather is right there for everyone to see. The weatherman is essentially irrelevant.

Dear reader, I know exactly what you are thinking. But please, bear with me for a moment. We'll get back to the weatherman shortly.

The Advent of Financial Economics

Over the past several years, criticism of defined benefit (DB) pension plan management in general and the methodologies employed by investment and actuarial consultants in particular has steadily increased. While some lonely voices were expressing concern about actuarial and accounting reports in the 1990s and before, the clamor intensified at the time of falling equity prices and interest rates early in this century, a period that's frequently (and misguidedly) called "the perfect storm."

What started as the subject of a handful of papers written by several economists and actuaries has become a common theme in numerous articles written by asset managers, public officials, academic researchers, and others. They assert that the decline of the DB system is due, to some extent, to the failure of investment and actuarial consultants to incorporate the developments of modern "financial economics." Many also claim that a broad acceptance of the principles and recommendations of financial economics among DB plan managers would provide a universal remedy for the problems in the system.

Throughout this article, when I refer to financial econom-

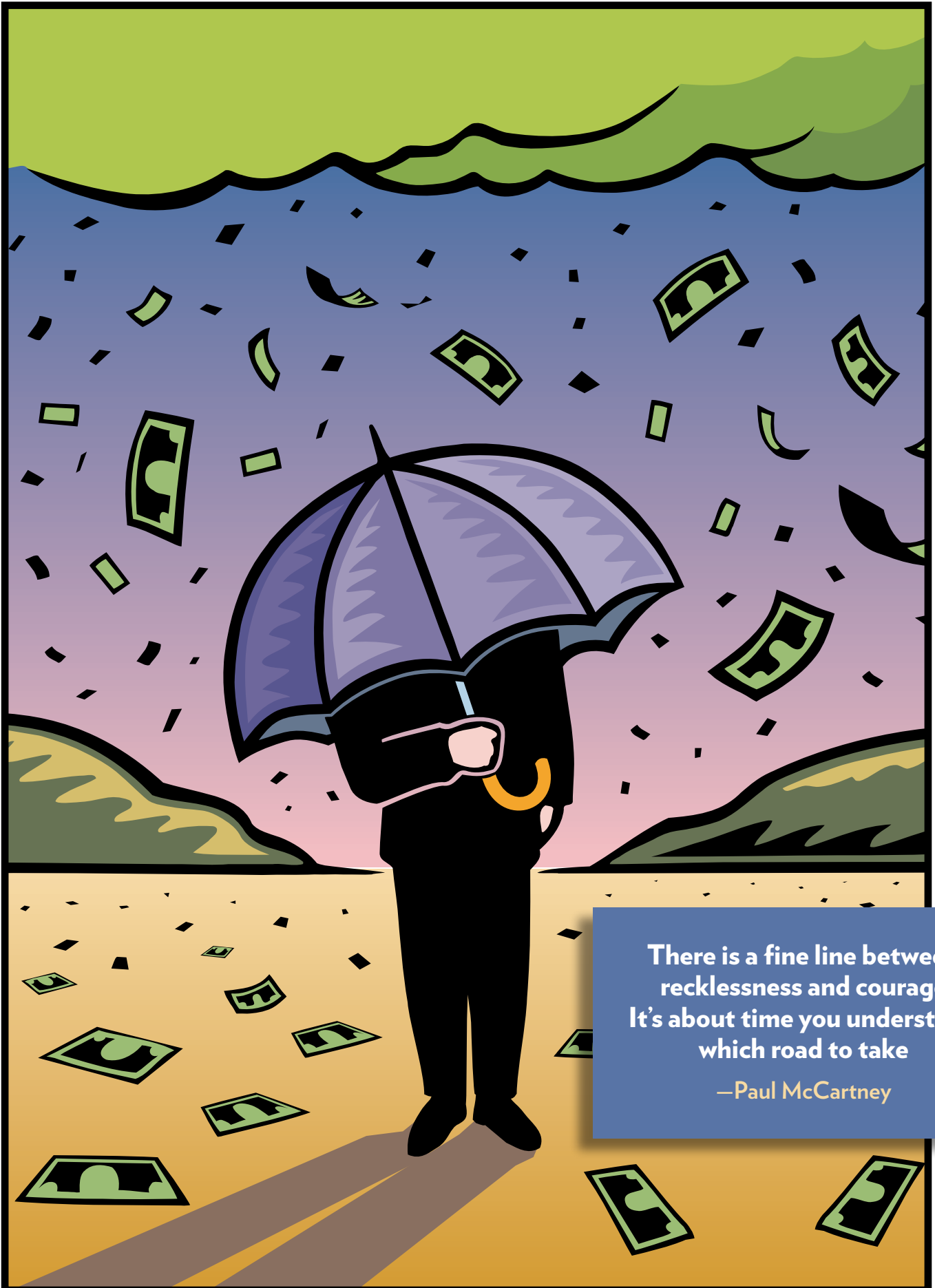
ics, I am speaking of it as it's defined in these publications, and not according to my understanding of the term. Similarly, when referring to financial economists, I mean the proponents of this narrowly ascribed definition, not financial economists in a broader sense.

The basics of financial economics were developed in the 1970s and 1980s. At the time, it was known as corporate pension finance. Later, the subject somehow turned into financial economics. Despite numerous attempts to promote this approach to pension investing, it so far has largely failed to impress pension plan managers. Even as the accounting measurements of numerous DB plans have deteriorated and managers search for better ways to run their plans, the response remains unenthusiastic.

The financial economics approach leads to stunning conclusions. Financial economists have declared that pension assets should be invested exclusively in bonds, that equity investments should be illegal (in the presence of government guarantees), and that pension surpluses are as undesirable as pension deficits. Most important, financial economists assert that the role of asset allocation is very limited: "In the absence of tax effects, pension investment policy is irrelevant" (A. Turner, 2004); "The driving force for investing pension assets is corporate finance, not portfolio selection" (Joint Academy and Society of Actuaries Task Force on Financial Economics and the Actuarial Model, 2006).

The message to investment professionals and actuaries (including me) who work in the area of policy portfolio selection for DB plans is brutally clear: Ladies and gentlemen, you should find other lines of work. In your current capacity, you are essentially irrelevant.

Ouch.



**There is a fine line between
recklessness and courage
It's about time you understood
which road to take**

—Paul McCartney



The Difference Between Weathermen and Financial Economists

There are fundamental reasons behind financial economists' rejection of investment policies. All major policy portfolio optimization methodologies rely on forward-looking capital market assumptions that include returns, volatilities, and correlations for all asset classes under consideration. These assumptions represent today's expectations of future asset returns. Financial economists believe that these expectations, and the results of any analysis based on these expectations, are irrelevant. In that respect, financial economists are very similar to accountants.

Financial economists appear to be particularly troubled by the fact that equities have higher expected returns than bonds (the difference between the expected returns for equities and bonds is sometimes called the equity risk premium). While financial economists usually acknowledge that the equity risk premium should exist, some, including members of the joint task force, claim that "pension investing seen through the financial economics lens has nothing to do with the size or even the existence of an equity risk premium." Similar assessments should apply to expect-

ed volatilities and correlations, as well. "Pension investing seen through the financial economics lens" should have nothing to do with any forward-looking capital market assumptions.

The threat that forward-looking assumptions present to the foundations of financial economics is quite understandable. Accepting that these assumptions are a relevant part of financial economics makes the separation of systematic and non-systematic risks also relevant. Efficient policy portfolios (the ones that carry the systematic risk only) would be superior to other portfolios, thus giving legitimacy to portfolio selection methodologies and contradicting one of the main tenets of financial economics—that policy portfolios are irrelevant. A pension plan manager could use his expectations to conclude that portfolio A delivers a 60 percent chance that existing pension assets plus 10 percent of payroll contributed in the future are sufficient to fund the promised benefits. If the similar chance is 70 percent for portfolio B, the manager may be in favor of adopting portfolio B. It would be hard to convince the manager that there's no difference between 60 percent and 70 percent.

A weatherman's assessment of tomorrow's weather is based

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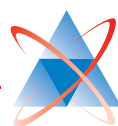
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on the simulations of numerous meteorological factors utilizing forward-looking assumptions. The weatherman's prediction of a 60 percent chance of rain and the policy portfolio manager's estimate that there is a 60 percent chance that existing pension assets plus 10 percent of future payroll are sufficient to fund promised benefits are both using today's expectations of future uncertain events.

So, what's the difference between the weatherman and a financial economist? The weatherman uses today's expectations of future uncertain events to help us behave prudently today. In contrast, the financial economist won't use any expectations other than the ones built into today's bond prices.

Why Financial Economists Prefer Bonds

Financial economists are well-known for preferring bonds when investing pension assets. They assert that investing pension assets

in bonds maximizes shareholder/taxpayer value, minimizes the volatility of accounting statements and required contributions, and provides transparency and accountability. I believe that there's another reason, as well.

To understand it, we have to recognize the ways we measure objects. Generally, there are two major types of measurements. The first is *known-value measurement*, used to gauge objects and events that are reasonably certain. Known-value measurements require no assumptions. The price of a water cooler purchased last year is a known-value measurement. The second is *risk measurement*, which necessitates forward-looking assumptions and is used to gauge uncertain objects and events. The probability of rain tomorrow is a quintessential risk measurement—it's a number assigned to a future uncertain event. The pension plan manager's estimate of the probability that existing pension assets plus future payroll contributions are sufficient to fund promised

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Under the banner of financial economics, those who favor a transparent future wish to outlaw all expectations of uncertain future events.

benefits is a risk measurement, as well.

I believe financial economists prefer bonds because they prefer known-value measurements over risk measurements. They want to invest pension assets in bonds because that's the only way to measure pension commitments as known values.

Here's the proof of my statement. For prudent pension plan management, it's necessary to measure the stream of benefit payments promised to the plan participants (the pension commitment) at the present. If a present value of the pension commitment is required to be a known-value measurement, the following assumptions must hold:

› **The pension commitment is a series of perfectly known payments.** In reality, that's rarely the case.

› **The investment returns are certain.** For the present value of a perfectly known cash flow to be certain, the returns utilized in the discounting procedure must be certain as well. The only asset class that delivers relatively certain returns is high-quality bonds. (It should also be mentioned that these first two assumptions are realistic for terminated plans only.)

› **Pension assets are invested in a matching high-quality bond portfolio.** It's tempting to discount certain benefit payments by the certain interest rates used in the first two assumptions, but that can't be done without actually investing the assets in the matching bond portfolio. In order to use a discounting procedure, the assets must be physically invested in a portfolio that delivers returns utilized in the discounting procedure. As a result, financial economists insist that plan managers invest pension assets exclusively in bonds.

Financial economists have identified two areas that require known-value measurements. The first area is conventional accounting. By their nature, accounting principles require known figures to be reported. When financial economists bring up the balance sheet of a particular corporation, they essentially make a hidden assumption that pension commitments should be measured as known values. Predictably, this leads to a recommendation to invest pension assets exclusively in bonds.

The second area is asset pricing. The current price of a tradable asset contains little uncertainty. When financial economists bring up liability pricing, they essentially make a hidden assumption that pension commitments should be treated as tradable assets and measured as known values. Once again, this inevitably leads to the recommendation to invest pension assets in bonds.

The proponents of known-value measurements concentrate on these two areas and denounce "opaque" actuarial and accounting reports that deviate from "market values" of pension commitments. Under the banner of financial economics, those who favor a transparent future wish to outlaw all expectations of

uncertain future events. As collateral damage, an innocent bystander—the weatherman—is in danger of losing his job.

The Dismal Science and Its Attributes

Appropriately, some publications have questioned the scientific standards utilized in this debate.

"Economics is a science; a 'dismal' science per Scotsman Thomas Carlyle, but a science nonetheless," writes the joint task force in its guide to financial economics. I don't believe that a particular field of study is necessarily dismal solely because of the inferiority of the field. A given area of science becomes dismal only if it operates in violation of common scientific principles.

And that's a regrettable attribute of more than a few articles on the subject of pension plan management in general and financial economics in particular. Here's a partial list of common scientific conventions that are violated in those publications:

1. Concepts under consideration must be properly defined or reference must be made to existing definitions. The most egregious violation of this rule is the mistreatment that the term "liability" suffers because so few authors define it. Some authors assign multiple meanings to this term, sometimes in the same sentence.

2. All assumptions must be disclosed and their viability must be discussed. Many authors assume the existence of matching bond portfolios for pension commitments without doubt or comment while, in reality, matching bond portfolios rarely exist. Although some authors acknowledge that serious "complications make it difficult to find a matching cash flow," they still insist that "the debt market should be a starting place for a market liability calculation." (Similarly, although serious complications make it difficult to create a perpetual motion machine, Leonardo da Vinci's centrifugal pump should be the starting place in building it.) Other examples of hidden assumptions that have profound consequences include statements that the "present value of a pension commitment is a known-value measurement," that "a pension commitment is a financial instrument," and that "the role of the policy portfolio is to match assets and accounting liabilities."

3. Existing results, their applicability, and their limitations must be presented accurately. Financial economists often invoke the law of one price and Miller-Modigliani theorems. The law of one price states that two tradable assets that generate identical cash flows must have identical market values. Those who wish to apply the law to non-tradable assets and cash flows (e.g., non-tradable non-transferable pension benefits) must explain why the requirement of tradability can be relaxed, as the law doesn't necessarily apply to non-tradable cash flows. Those who wish to apply Modigliani-Miller theorems in support of their contention that "in the absence

of tax effects, pension investment policy is irrelevant” should make clear that the claim of “irrelevancy” applies to today’s share price only. As far as tomorrow’s share price is concerned, pension investment policy may be highly relevant.

4. If a particular discipline is in conflict with other fields of study, the nature of the conflict must be explored and explained. If financial economists doubt the value of various portfolio-selection methodologies, the reasons for the doubt must be presented clearly. To the best of my knowledge, there’s no publication that explains satisfactorily why financial economics rejects such a broadly accepted methodology as mean-variance optimization.

5. The existence of alternative views on the subject must be acknowledged. Financial economists have so far completely ignored Fischer Black circa 1995, even though almost all of them quote his views of 1980. In what was arguably his last paper, Black concluded in 1995 that the plan sponsor’s goal should be to minimize the present value of future contributions (a quintessential forward-looking concept). Other alternative perspectives that aren’t represented in financial economics publications include Peter Bernstein’s views that “... the policy portfolio and risk management are one and the same thing” and “... the policy is to provide

the investor with the highest probability of being able to pay for the groceries when the time comes”; Bernstein’s and R. Arnott’s warning of “a slavish devotion to the short run”; and a number of other published criticisms of the main principles of financial economics in various journals.

Capital markets have proven to be remarkably receptive to good ideas. Yet, the ideas of financial economics have hardly found their way into common practice. Is it inconceivable that unrealistic assumptions, questionable reasoning, and poor terminology may have played a role in this lack of success?

The Essence of Financial Economics

Despite several credible attempts to justify its fundamentals, financial economics as a scientific discipline contains serious problems. Consequently, there’s a tremendous amount of confusion surrounding the subject. In the pursuit of clarity, here’s my understanding of one of its cornerstones that few financial economists dare to spell out.

I believe that the core principle of financial economics is “don’t look into the future.” With one notable exception—the expectations built into today’s bond prices—financial economics doesn’t

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allow any forward-looking expectations. Virtually all the issues financial economists discuss—the irrelevancy of investment policies, opaque accounting, liability pricing, tax arbitrage, etc.—stem from this principle.

“Don’t look into the future” is neither a scientific principle nor a reflection of some underlying esoteric knowledge. It’s just a viewpoint that we are at liberty to accept under certain conditions and reject under others. In practical terms, this principle imposes an ultra-short-term view on pension investing whose ultimate manifestation is the statement that \$100 of stocks is the same as \$100 of bonds. All auditors love it.

The acceptance of financial economics largely depends on the acceptance of the principle of not looking into the future by a majority of DB plan stakeholders. I’m cautiously optimistic that financial economics will once again become corporate pension finance—an obscure segment of the equity valuation theory that’s inapplicable to most DB plans. Here’s the basis for my optimism. Most people understand that risk-taking is an indispensable part of life. Most people understand that risk-taking requires looking into the future and setting expectations. Most people understand the necessity of dealing with statements like “There’s a 60 percent chance of rain

tomorrow.” Most importantly, most people understand that this is the best the weatherman can do for them *today*.

The Choice

The DB pension system is obviously in decline. Among other reasons, there is a sentiment out there that plan sponsors aren’t well-equipped to manage the cost and riskiness of DB plans. It’s clear that the information pension plan managers get from existing reports is insufficient for prudent pension plan management in general and for investing pension assets in particular. If we want to have a healthy retirement system, we must have better tools for the cost-risk management of pension commitments.

Virtually every DB plan involves a certain level of risk. The question is what kind of risk and how much risk to take. Risk can be measured and managed regardless of the existence of a perfect hedge. Countless institutions and individuals take calculated (or imprudent) risks and enjoy (or regret) the results. Some risks are fully or partially hedged, and some aren’t hedged at all. In all cases, taking on risk requires expectations of the future. Based on uncertain information about tomorrow, risk-takers act today.

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making tools for pension plan management. First, like financial economists, we can choose not to look into the future, expecting instead that the cost of running a pension plan can be measured as transparently as last year's electricity bill and attempting to squeeze pensions into the Procrustean bed of conventional accounting concepts. Or we can recognize that the cost of running a pension plan is uncertain and deal with it as we deal with many other uncertainties—by looking into the future, developing expectations, and measuring and managing the uncertainties. In a nutshell, the choice is between known-value measurements and risk measurements. Financial economists condemn the lack of transparency in risk measurements, but the *future isn't transparent*. There's nothing we can do about it.

Financial economists condemn the lack of transparency in risk measurements, but the future isn't transparent. There's nothing we can do about it.

Where is the right place for risk measurements? Who should become the leader in providing risk measurements for pension plans? These are good questions that don't allow easy answers. Certainly, conventional accounting reports aren't terribly friendly to risk measurements. But investment and actuarial consultants, rating agencies, academic researchers, and everyone else are at liberty to utilize risk measurements to manage the uncertainties of providing pension benefits and create innovative reporting methodologies.

Pension plan managers may want to know the probability that existing assets and currently budgeted contributions are sufficient to pay promised benefits. They may also want to find investment products that potentially maximize this probability and/or minimize the size and volatility of the shortfall. If the highest probability is still inadequate, managers may want to know the lowest amount of additional contributions required to achieve an acceptable risk profile. Equity analysts, rating agencies, and lenders may favor sponsors who manage the riskiness of their DB plans prudently. Plan sponsors may discover that DB plans are not that costly and risky given the level of benefits they provide. Ultimately, reports of the death of the DB system may turn out to be premature. Or so I hope.

As to weathermen, I would like to take back my reckless statements about the relevancy of their jobs. I appreciate the usefulness of the information that they provide. In particular, their prediction of tomorrow's rain may significantly affect my car-washing activities today. We need weathermen. Their information about tomorrow's weather is greatly appreciated today. We'll take it from there, thank you very much. ●

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