Keynote Speaker: Merton

Observations on Financial Education and Consumer Financial Protection (corrected January 2013)

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In developing the next generation of consumer financial and retirement plan services, we must develop truly effective ways to make consumers "smarter" about their retirement. In addition, however, we must ensure that the protections we put in place elicit, indeed encourage, the right behavior and do not thwart the ultimate goal of providing secure financial futures for consumers.

In my mind, five questions should be addressed regarding financial education and consumer financial protection:

1. Are financial innovations and the tools from financial science and engineering essential to effectively address the consumer finance challenges of the future?
2. If "keep it simple" is, in fact, "keep it simple for the consumer," what does the phrase mean for regulators and service providers?
3. Is the behavioral dysfunction associated with choice in consumer finance "too many choices" or "too many nonmeaningful choices"?
4. Is intelligent product design and oversight an effective substitute for consumer financial education?
5. What should be the priority: educating financial consumers or educating fiduciaries and other gatekeepers?

What follows is an attempt to examine these questions through the lens of a single consumer product of some significance. The product, which is one I've been working on, is a retirement solution for employer-provided plans.

Design Requirements for a Next-Generation Employer-Provided Pension Solution

The first thing to do when designing a new retirement solution for employer plans is to establish the goal. I propose that, in retirement, people want an income for life that will allow them a standard of living of the kind they enjoyed in the latter part of their work lives. The key is that the outcome needs to be a *standard of living*, which is best expressed as a financial goal by a stream of income for life, protected against inflation. Both Social Security benefits and defined-benefit pensions are expressed in terms of an income flow per year and not as an amount of wealth. Those familiar with Jane Austen know that in 18th century England, an important characteristic of a man in terms of his attractiveness to women was the standard of living he could provide. When Mr. Darcy—who is a catch in Austen's *Pride and Prejudice*—is described, he is not referred to as "worth £200,000." Rather, he's "worth £10,000 a year." A standard of living is a flow of income, not a single amount of money; the accumulation of wealth is simply a means to the goal of annual income adequate to support a designated standard of living. Wealth is not sufficient information to determine a sustainable standard of living. For example, $1 million at 4% supports a lifestyle of $40,000 a year, but in the current environment of a 0.60% real interest rate, it only supports a lifestyle of $6,000 a year!

Once the goal is established, the plan should satisfy other essential design characteristics. For example, it should be integrated—incorporating all current and future sources of retirement income. Additionally, if we accept the goal of income (rather than portfolio value), the measurement and management of the risk–return trade-off should be in terms of retirement income that is hedged for inflation, longevity, real interest rates, and of course, market risk.

Furthermore, and this aspect is important, the plan must be robust enough to work effectively without the luxury of a financial planner or even the inclination to participate in the plan. It is well-documented behavior that people tend not to engage in the investment process in their plan and, indeed, won't answer the questions needed for good decisions to be made for them. It was this common behavior of no engagement that motivated the adoption of "opt-out" versus traditional "opt-in" rules for joining a defined-contribution pension plan as part of the Pension Protection Act of 2006. In such plans, we cannot educate consumers directly because they're not even interacting with us!

This issue brings me to the next point: A common mantra is "Get the consumer engaged" when it comes to defined-contribution pensions. I would qualify that with "provided engagement improves the chances of achieving the goal." Participants who are induced to open a brokerage account in their IRA accounts may become quite engaged, trading stocks around the world on their computer after work, but it is almost a sure thing that this type of engagement will not

improve, but actually diminish, the likelihood of success in reaching their goals. The best way to engage participants is with meaningful feedback and choice. You let them know candidly and clearly how they're doing. It's very much like a report from a medical checkup. I'm always hoping my doctor will say to me, "Oh! You're not only in great shape, but if I didn't know better, I'd think you were 10 years younger!" But if that statement isn't true, I want her to tell me. Otherwise, what's the point of getting a checkup? If she tells me I have a bad cholesterol level of 300—clearly not good—she also lets me know there's something I can do about it: Take statins, change my diet, exercise. Even if I don't want to hear her report of bad news that I have a serious problem, an honest assessment along with the steps that can be taken to fix it give me a way to address the problem.

In this framework, meaningful feedback and choices are given to people—the statins, the exercise, the diet—so that they can do something about the problem. What can people do to increase the likelihood of achieving the target retirement goal, their desired standard of living? You give them an easy way to implement those decisions—ideally, a way to "learn by doing," which in terms of providing education works infinitely better than a handbook or sending people to school.

In regard to consumer protection, the idea of giving participants prospectuses or even educational materials is not effective. What makes more sense is to direct resources to the fiduciaries—the plan sponsor and the sponsor's consultant—to ensure that *they* are capable, willing, and able to fulfill their duties. The sponsor does not guarantee successful outcomes but instead serves as the informed "gatekeeper" who ensures that the retirement products offered to participants deliver the promised services. Of course, the regulator is essential too, but I see the regulator more as setting the tone for the industry and monitoring the fiduciaries than as interacting directly with the end-consumer.

Finally, for a plan to be both effective and feasible, we need to make efficient use of all available assets, have low-cost fees and services, engage in continuing innovation, and ensure that the plan (1) has a defined-contribution (DC) legal structure to control cost and limit balance sheet risk to the plan sponsor and (2) is portable.

Simple for the Consumer: A Learning-by-Doing User Interface That Never Changes

In a "keep it simple for the consumer" system, all the consumer might see is a single page on a screen with choices and the necessary information to make those choices. That page has the person's target income per year (think Jane Austen), which is the amount that allows him to achieve the goal of a proper retirement. He is also given some measure of the chance of reaching that goal, which is conveyed in a simple, intuitive fashion—for example, as a speedometer or dial representing a single probability number for success in

achieving the goal. The screen shows a minimum income (a floor) that is very, very close to certain but not guaranteed. The only other pieces of information on the consumer's page are the contribution rate, how much is being saved, and the consumer's retirement date. That's it. What's obviously missing is any type of return (historical or projected) and the consumer's asset allocation. Rates of return available in the market and asset allocation are *important* factors in achieving success but are not *meaningful* information for consumer choice. The presentation really is, or should be, that simple.

Suppose an individual is looking at this simplified "dashboard" and sees his target income with a 60% chance of success. Like the high cholesterol number, that chance of success is not good news in terms of reaching his goal. So, what can he do about it? Only three actions can improve his lot—save more, work longer, or take more risk. Those are thus the only three decisions the consumer needs to think about in the context of retirement. And they are meaningful choices because if he increases his savings, his paycheck is going to be smaller. If he decides to work longer, he is going to have to keep carrying "those bricks" longer than he had planned and explain that decision to his significant others. Asking him highly technical questions such as "How much debt versus equity do you want?" or "How much exposure to large-cap European stocks do you want?" is a little bit like his going to buy a car and having the car salesman ask him what compression ratio in the engine he wants. He might know that a high compression ratio must be good, but how many people can convert a compression ratio into miles per gallon, into how much faster they'll get from 0 to 60 miles per hour, or into how much more reliable the car will be than some other car with a lower ratio? Miles per gallon, speed, reliability—these are the factors that the car buyer really cares about.

However, whereas provision of simple answers to these important questions may be what the consumer wants, providing those answers is not simple for either the producer or the regulator. As with your car, not all of the engineering is transparent to the consumer. If you were to drive a 1955 car, the accelerator would feel exactly the same to your foot as it does in a new car today. Of course, in 1955, the accelerator was connected to pieces of metal that then made the carburetor open. Today, all the connections are electronic, and you *could* activate them with your finger. Car manufacturers kept the pedal to make us comfortable because we know how to drive a car when we push the accelerator with our foot. How would you like it if you bought your next car and the accelerator was a button? Suppose you got in and were looking for a steering wheel and found it was a joystick instead. Think about that when you drive home tonight. The design for the consumer should be not only simple but also something that consumers are comfortable with using to minimize the learning effort. At the other extreme would be to expect the consumer to

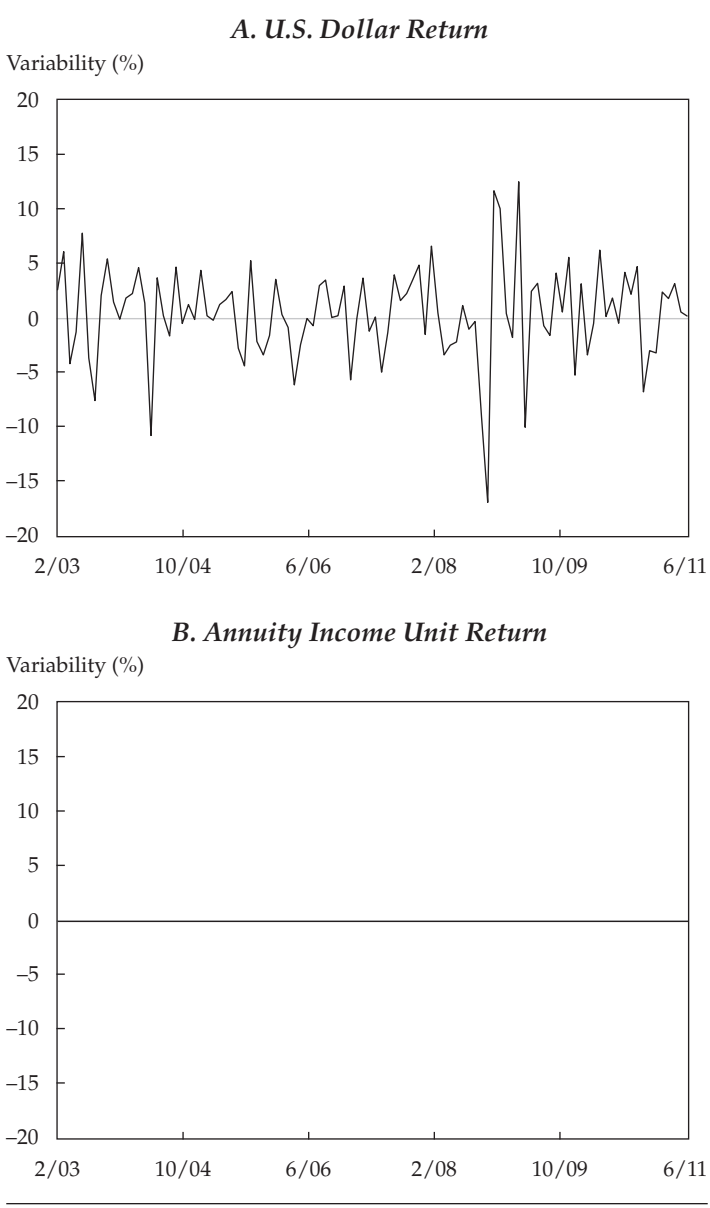
understand and make decisions about all the investment steps needed to get to his goal. In effect, it would be like dumping all of the car parts in the driveway and leaving them with a handbook for assembly that says, "After you put the car together, if it doesn't work, it's your problem."

These perspectives lead us to the complex part that relates to the issue of consumer protection and consumer education. The traditional way most people are told to look at their investments is in terms of accumulated wealth at retirement; sometimes there is a specific wealth goal called "The Number." Your 401(k) statements, for example, are required to show you how much your account went up or down in value. And when this wealth is reported in terms of the potential income it can generate, the reporting is almost always done by mechanically applying an annuity formula with an assumed fixed interest rate and a known life expectancy, as if there were no uncertainty about future interest rates. This simple transformation does not take into account the difference in risk between wealth and income, which is affected by real interest rates, inflation, and longevity—all factors that are, in fact, subject to considerable uncertainty.

To demonstrate the considerable difference between wealth and income goals, consider a hypothetical 45-year-old individual whose goal is a specific level of retirement income for life that starts at age 65. To simplify the analysis, let's assume for the illustration that we know for certain she will live to age 85. The safe, risk-free asset today in terms of this objective function is an inflation-protected deferred annuity that makes no payouts for 20 years and then pays the same amount (adjusted for inflation) each year for 20 years. Suppose she has enough money in her retirement account to buy that deferred annuity today. We would send her a note: "Congratulations, you've made it to Nirvana. We bought this security today to lock in your goal income, to avoid any risk of not getting the income you need for a good retirement. You have the risk-free asset." Next, we send her monthly or quarterly statements showing her retirement portfolio holdings and other standard information. **Figure 1** plots the monthly returns from 2003 to 2011 for the deferred annuity—created from a long-dated, U.S. TIPS (Treasury Inflation-Protected Securities) portfolio—measured in terms of both its market value in wealth units (dollars) and its value in income units.

In the traditional ways of measuring risk and return in terms of change in value, Panel A of Figure 1 shows what she sees as the returns on her risk-free asset. Upon inspection, the value of the deferred annuity fluctuates enormously, looking not at all like a risk-free asset, even though the income it will provide in retirement does not change at all. Thus, we have a huge communication problem about what is risky and what is safe arising from the standard reporting practice—a problem that is further compounded because we can't talk to the mass of people covered in these plans and they do not have financial

Figure 1. Measuring Risk Properly: Wealth vs. Income—Deferred Annuity Monthly Returns, February 2003–June 2011



advisers. If we report the returns in income units, then the annuity does not fluctuate at all because its payments are exactly matched to the goal, as we see in Panel B. But the difficulty doesn't stop there.

A second challenge is regulators, who, with all good intent for consumer protection, feel the need to require minimum or guaranteed returns on the portfolio value. They want to make such investments safer for people because these accounts are core to funding their retirement income. Regulators have expressed interest in providing consumer protection by establishing a rule that consumers can at least be assured of getting their principal back—a floor, in other words. Some suggest not only a floor but also a minimum return—2 or 3%, for example—which, of course, can't even be achieved if the risk-free rate is lower—for instance, 1%. Remember, however, Jane Austen. The goal is income for life, protected from inflation, starting at retirement age—and not a goal of a target amount of wealth. So, it is retirement income uncertainty, not portfolio value, that is the true risk for consumers, and thus if such regulatory floors were to be established, they would need to be specified in terms of the safety of the income stream, not in terms of the market value of that stream. Volatility as risk should be measured in income units and not in value units.

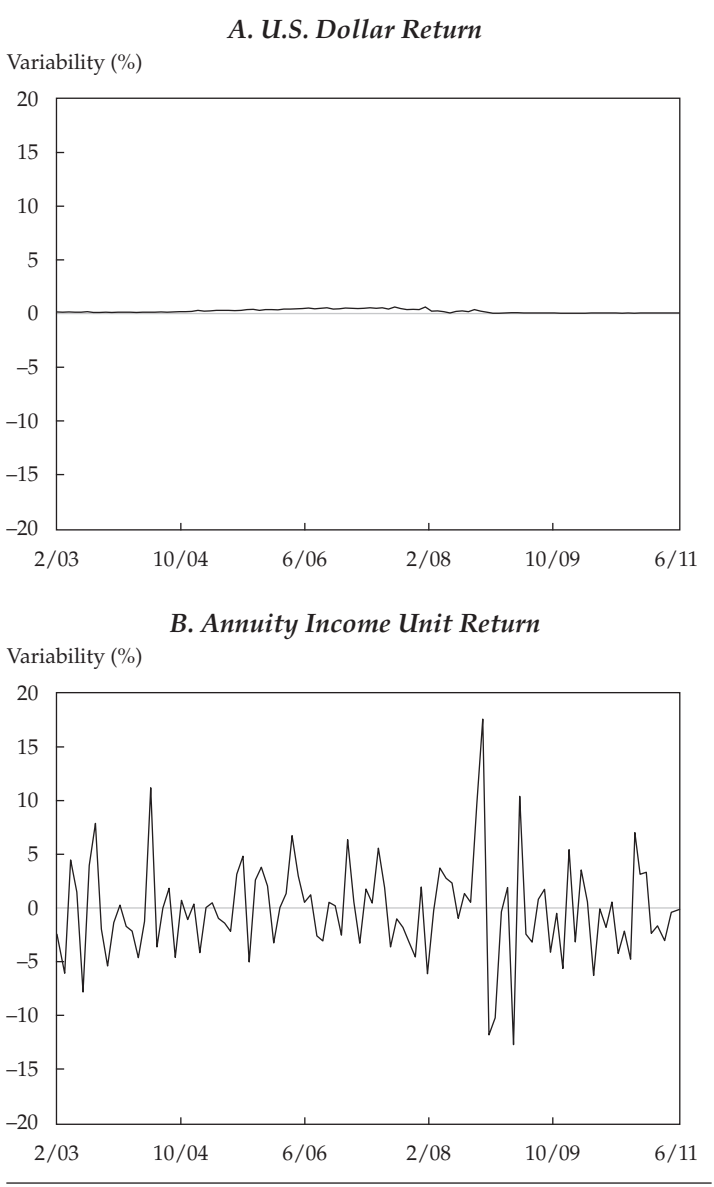
As we see in Figure 1, Panel B, the deferred annuity is the safe asset, but under a proposed law with a floor on value of the portfolio, we could not provide this safe asset to consumers because if interest rates go up high enough, the price of the annuity could fall below the principal amount invested in the portfolio and would thus violate the proposed law. Ironically, legislation, or rules, intended to provide consumer protection and safety would have the clearly unintended consequence of not permitting the consumer to hold the risk-free asset. With all good intent, if consumer protection and safety is framed in the wrong units, unintended consequences can occur—regulations created that are actually counter to the public interest—and we might not know it until it is too late.

A third related challenge is deciding on the appropriate measure of risk and return to use for the goal selected. As shown in Panel B of Figure 1, if we measure returns in income units, which are the relevant units for our consumer, the variability we report each month will be flat. The point is that if we assess the investment in the right risk dimension, we get the right answer—namely, the annuity investment is very low risk in terms of the income goal.

As a further illustration to underscore this point, imagine a Japanese individual investing in the United States. Would we report U.S. dollar returns to this investor, or would he prefer to have yen returns reported? Does anybody over the last year doubt whether it would have made a difference?

Let's look at a more familiar asset, U.S. Treasury bills (T-bills), which are commonly treated as the risk-free asset. Panel A of **Figure 2** shows that, over eight years, the dollar returns to T-bills have been stable and principal has been

Figure 2. Measuring Risk Properly: Wealth vs. Income—U.S. Three-Month T-Bill Monthly Returns, February 2003–June 2011



fully protected. But if we convert returns to the unit of measure that matters to our consumer, the annuity income unit, which Panel B of Figure 2 shows, then, T-bills are shown to be very risky and indeed nearly as volatile as the stock market.

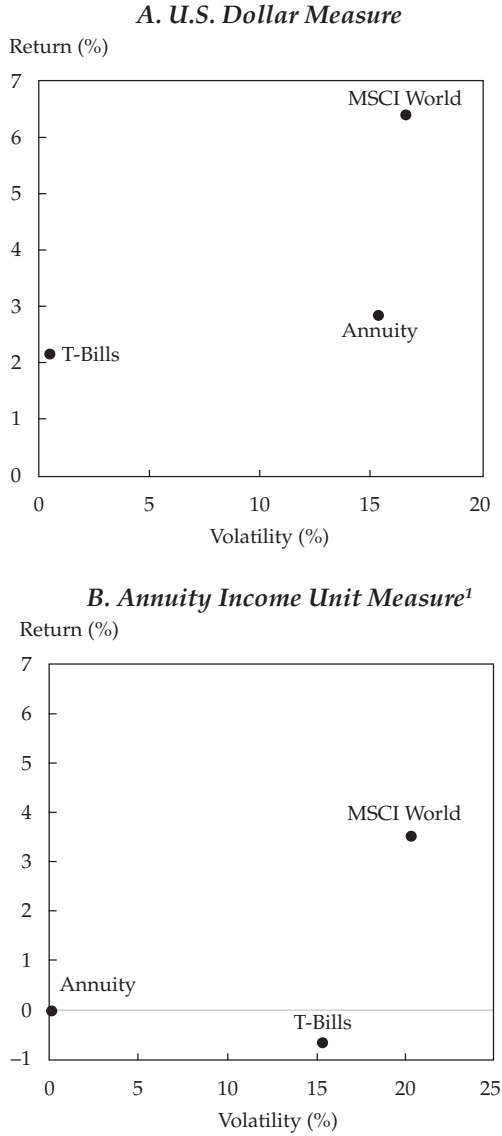
To see what that volatility means in commonsense terms, consider a person who lives off his income from bank certificate of deposits and who has $1 million. At one time, not too long ago, he received 4%–5%, around $40,000–$50,000 a year in income, but now he is lucky to get 0.50%, $5,000 a year. Yes, the $1 million principal amount was fully insured and protected, but you can see he cannot remotely live on the amount received now. Furthermore, there is no reason to believe that these low interest rates are "temporary." Indeed, the U.S. Treasury term structure would seem to indicate otherwise. The CDs and U.S. Treasury bills preserve principal at all times but at the cost that the income received on them can vary enormously. Had he bought instead a long-maturity U.S. Treasury bond, his spendable income would be secure for the life of the bond, but the price of that bond would fluctuate substantially from day to day.

Figures 1 and 2 serve to demonstrate that when measuring risk and what is risk free, one must choose between a value frame of reference and an income frame. U.S. Treasury bills are indeed the risk-free asset if wealth preservation is the objective; in this scenario, annuities and long-duration U.S. Treasury bonds are very risky. If, however, preserving a secure stream of income over long periods of time, as in retirement, is the objective, then annuities and long-duration U.S. Treasury bonds become the risk-free asset and U.S. Treasury bills are very risky. It is not feasible to have both income preservation and capital preservation be risk free, although, of course, a mixed goal of both income and wealth preservation can lead to trade-offs between the risk of income versus wealth.

On this same point, **Figure 3**, with the familiar risk–return properties, shows the average return and volatility of three assets, U.S. Treasury bills, the inflation-protected lifetime annuity, and the MSCI World stock portfolio—measured in Panel A in the standard format in terms of wealth ($) and measured in Panel B in terms of income units. The risk and return information is based on data from February 2003 through June 2011. As Figure 3 shows, whether we measure and report the risk–return character of assets in wealth versus annuity income units gives quite different pictures, especially with respect to U.S. Treasury bills and the annuity. This implies that allocation among various asset classes can be materially affected. Presenting the information in the wrong format for the chosen goal can be incredibly misleading. In fact, if combined with regulations and rules that are also imposed on the wrong measures, the result can be dysfunctional.

Even a simple change, such as showing annuity values in units of the annuity, can be complex. How do we codify it properly in regulations? How do we educate the gatekeepers and producers? This industry is huge; billions of

Figure 3. Managing the Risk–Return Trade-Off Properly: Wealth vs. Income



Note: Based on data for February 2003–June 2011.

[1]In Panel B, the value of the T-bill portfolio is expressed in terms of the number of dollars of annuitized income that the T-bill portfolio could buy. Thus, the return on the T-bill portfolio is the period-to-period change in this number of dollars. Because annuities became more expensive (due to falling long-term rates and increasing longevity) at a rate faster than the roughly 1.8% annualized growth of the T-bill portfolio, the value of the T-bill in annuity income units actually fell by 0.5% per year, so the return on T-bills expressed in annuity income units is approximately –0.5%, as shown by the *y*-axis position of the T-bill portfolio.

The *x*-axis position of the T-bill portfolio shows the volatility of the number of dollars of annualized income that the T-bill portfolio can buy, which is shown as roughly 15%.

dollars are invested in various computer models of risk and return and optimal asset allocation. The bad news is that the users and producers of these models have invested huge resources, financial and training, in creating and purchasing them, and they are not likely to want to scrap them for something completely different. But the good news is that they do not need to change their models. They only have to change the units in which they measure the return characteristics of the various asset classes from one of $ to one of income units. This is no more challenging than making a change of currency in which returns are denominated and then applying the same models as before.

Earlier, I mentioned the importance of *integration* of all the assets dedicated to funding retirement, and not just the DC account, when determining optimal asset allocation for the DC account. What's relevant to the retirement problem is not just the assets the individual is investing today, or even her Social Security or other plan assets. The individual's future contributions are an integral part of retirement planning, particularly when individuals are young and most of their retirement assets are in the form of future contributions. Future contributions are not only a large retirement asset in amount but also a rather low-risk asset, more like a bond than stocks. Indeed, the goal of retirement is not a fixed amount of income but, instead, a replacement ratio. That is, to sustain a standard of living based on a high income requires a higher amount of income in retirement than it does for a low income. So, if one lives on a $50,000 income while working, perhaps 70% of the income is needed in retirement to sustain that standard of living because there is no longer a need to save. Then, the goal becomes $35,000. However, if the person's income while working increases to $70,000, the new target income goal for retirement becomes $49,000. If, instead, income declines to $40,000, the income in retirement also falls to $28,000. Thus, contributions that are typically proportional to income get larger when more is needed and get smaller when less is needed instead of remaining rigid, as would be the case for a bond. In that sense, the future contributions may be more of a hedge and less risky relative to the goal than a U.S. Treasury bond.

Optimal asset allocation is not only age related but also based on level of income and amount of accumulation and current market conditions for both equities and real interest rates. To illustrate this point, **Table 1** looks at three people, most likely of different ages, with the same total value of retirement assets, the same overall asset allocation between equities and fixed income, but different distributions of that total asset value between the DC account and future contributions. Table 1 also shows the meaningful measures of the riskiness of their future contribution assets. Considering all the assets of each individual, including the future contributions, the total value for each of them is $1,000. All three individuals' investments are allocated 70% in fixed income and 30% in equities. Individual A is obviously much younger than the other

Table 1. An Integrated Retirement Investment Approach to Asset Allocation

			DC Pension	
Individual	Total Assets	FC/SS/DB	Amount	Ratio
Individual A				
Total	$1,000	$700	$300	
Fixed income	700	700	0	0%
Equity	300	0	300	100
Individual B				
Total	$1,000	$500	$500	
Fixed income	700	500	200	33%
Equity	300	0	300	67
Individual C				
Total	$1,000	$100	$900	
Fixed income	700	100	600	67%
Equity	300	0	300	33

Note: FC is future contributions, SS is Social Security benefits, DB is defined-benefit plan income, and DC is defined-contribution pension.

two (or hasn't had such good results in the market) because 70% of the value of that person's retirement assets is in future contributions and only 30% is in financial assets. If this person wants to get a 30/70 equity/fixed allocation for all his retirement assets, he would need to invest 100% of his DC account in equities, which is a risky position. If this individual had been 100% in equities in September 2008, by March 2009, he would have had between a 35% and 40% loss in his account. Pretty bad. But remember that this investment is only 30%, not 100%, of his total retirement assets. In this case, the individual's total retirement assets are not down 40%; they are down 40% on 30% or 12% overall, which is not great but is certainly better than down 40%.

Individual B is probably older, closer to mid-career, than Individual A and, as shown in the second and third columns of Table 1, has relatively more financial assets: $500 versus $700 for FC/SS/DB and $500 versus $300 for DC pension. To achieve the same overall asset allocation of 30/70, this person would need to be invested one-third in fixed income and two-thirds in equities in his DC account.

Individual C, who is (depending on her experience) probably five to eight years from retirement, has 90% of her retirement assets in the market and only 10% in expected future contributions. She optimally holds only one-third of her DC assets in equities.

This example shows that apparent systemically increasing investment conservatism with age need not reflect changes in risk aversion. Rather, with increasing age, the relatively safer future-contribution retirement asset is becoming a smaller portion of overall retirement assets as the person moves forward toward retirement.

Table 1 demonstrates how different the optimal asset allocations between equities and fixed income are for the DC account, even though the total asset portfolio risk is identical for all three. As we see, trying to achieve an optimal asset allocation for the DC account without taking these other assets into account may be unrealistic. These distinctions lead us, again, to consumer protection.

Regulations and oversight are appropriate—particularly given that DC plans are now going to be the core, not the supplementary, retirement vehicle globally for great masses of people. But we must educate our gatekeepers—the plan producers, plan sponsors, consultants, and regulators—not only about the appropriate measures of risk and return but also about the integrated view of consumers' sources of retirement income. In this way, we can set the appropriate rules and regulations right from the outset, rather than having to correct or reverse them later on, which is always more difficult.

Future Innovations: Education and Financial Instruments

In terms of consumer financial education, we have to be realistic about what we can expect people to understand (or what they should have to understand). I believe we should not try to force financial education on plan participants, whether brain surgeons, professors, or auto assembly line workers. For one thing, they don't want to learn it. People generally do not enjoy doing personal finance. For example, a family member of mine is a brilliant woman, a successful professional, and at retirement age. She hates having to deal with all this financial business; for her, it's like going to the dentist and having her teeth fixed without Novocain. And it's not that she doesn't understand money; she just doesn't like doing personal finance.

We can make smart consumers, however, by creating products that make them smart rather than by literally educating them. Intelligent product design and oversight can be an effective substitute for consumer financial education. Such products can also be designed to offset, rather than change, financially dysfunctional behavior, which is well-documented. Of course, this approach is not easy for the developers of financial products, regulators, and plan sponsors. But they have to take on the complex job of making investing for retirement income simple for the consumer. Not only are developments in user-interface design required, but also innovation is a key component in solving these consumer problems and financial education challenges.

The technology and the mathematical tools needed to carry out much of the innovation in plan design are already available and have been market-tested in other applications. Insurance companies and pension funds already conduct dynamic immunization trading to replicate the payoffs to a fixed-income instrument that hedges the risks of their liability exposures—often referred to as "liability-driven investing." This kind of immunization strategy needs to be employed in each individual's account, where the "liability" is the individual's specific income goal needed to sustain her standard of living. It cannot, however, be done with a simple mutual fund or with a static mix of stocks and bonds in a portfolio. It has to be done, if it's going to be done seriously and professionally, by people with the skills to do it at low cost and with the appropriate degree of precision. It requires that each individual not have segregated ownership of the account but that the account be managed for her as an individual and not in a pooled fund in which everyone of the same age has the same investments and thus implicitly the same income goal in retirement, independent of gender or income level.

As an illustration, most people would not want to buy an actual life annuity during the accumulation period prior to retirement as a means to insure against interest rate and longevity risks. Instead, the typical individual would prefer to buy tradable assets, such as TIPS and longevity bonds, that hedge the cost of buying an annuity when retirement is reached. If the individual buys an annuity on his life, it's reversible only at a high cost, which means if he dies two years from now, he loses everything. If his life circumstances change—get married, get divorced, start a second family—the lack of flexibility can be costly. The right time for him to determine the detail of post-retirement investment choices (including either immediate or deferred life annuity to protect against the risk of outliving his assets, income ladders, working for five years and allowing Social Security benefits to grow before drawing on them, and so forth) is as close to retirement as possible when he has the most information about his health, his responsibilities, his opportunities, and his preferences.

But to make sure that the individual has the necessary resources to implement that post-retirement plan, the investment strategy during accumulation should hedge the risk that he will have enough money to buy that insurance when he retires. That can be done with TIPS for interest rate risk and a generic longevity bond on the cohort in which he will be placed by insurance companies in determining the price they will charge for the annuity—an instrument based on broad characteristics, such as age, birth date, gender, geography, or whatever is useful. The point is to have a tradable, reversible instrument not linked to a specific individual's mortality but to the cohort in which that individual belongs. That product can be created in many ways, but unfortunately, the markets have not yet developed as much as they will have to. Innovation is needed.

Which brings me to securitization. Did that go awry during the Great Financial Crisis of 2008–2009? Absolutely. But we will need a revitalization of securitization if we are to tackle the retirement challenge in the right way. In particular, a well-designed and efficiently priced reverse mortgage is likely to be an important means for working- and middle-class retirees to achieve a good retirement. Placing the risk of these mortgages with the best holders of that risk will require securitization. To demonize or regulate away the ability to innovate new financial products that will be instrumental in addressing our key retirement challenges would be bad policy that we cannot afford.

Some further innovations that I think should be considered for individual employees' retirement plans are listed below:

- integration to include other retirement-dedicated assets, including rollover IRAs from previous employment, after-tax dedicated personal savings, and house as both a prepaid consumption and a retirement-funding asset;
- bequest and housing asset-use efficiency: well-designed reverse mortgage;
- longevity bonds, swaps, and other cohort-based, tradable, longevity-hedging instruments;
- product efficiency: combine long-term care and life annuity to reduce the distortion of selection bias in both products' pricing;
- age-, means-, and interest-rate-dependent employer contribution rates to reduce participant duration-mismatch risk;
- products to address standard-of-living risk: consumption-linked income units;
- tail insurance on longevity: >85 life annuities.

Question and Answer Session

Question: I'm not sure the *riskless* asset exists as you've described it. I think we can talk about the *lowest-risk* asset, but an insurance company still has credit risk. And what about liquidity? Annuities exist in the market, but no one buys them because they want liquidity to deal with any eventualities.

Merton: When I said the "risk-free asset," I meant we should think of it as the lowest-risk asset—that's the spirit I mean it in. I'm trying to convey that real interest rate risk, inflation risk, and longevity risk exist. And the norm, if you look at some of the so-called glide paths on target date funds, is to glide people into T-bills when they turn 65, which I have shown is actually very risky if retirement income is the goal. Not every plan producer does that anymore, but some still do.

With regard to credit risk, we should be aware of potential default risk for insurance companies. Having said that, as far as I know, there have not been any defaults on insurance company annuities or situations in which state insurance guarantee funds have had to step in to prevent a default. It could, of course, happen, but a whole bunch of other risks are out there to which there is no precise solution.

There is an answer to the risks, however, and it is a quantitative answer. In the simplest terms, cutting out all of the expenses, a person reaches 65 and is willing to buy an annuity at the best cost out there. To get rid of as many frictions as we can, we would want a real annuity. And we have them; real annuities exist. If, for example, real interest rates are 2%, then a life annuity will offer you a payout of about 6% for the rest of your life—even if you live to 120. That 6 – 2 = 4% additional "mortality credit," a greater than market interest rate payout while alive in return for giving up your investment principal at death when you no longer need it, is an enormous difference in payout that most people will not have the luxury of forgoing. That's why addressing the credit risk of annuities is a big policy issue.

Question: You talked about designing financial products in a way that makes it less necessary for the consumer to understand the product. I think there's a big assumption underneath that idea, which is that the financial business has integrity. Without a savvy consumer base, how do you take care of the situation in which producers mislead people intentionally?

Merton: That's a good question because it gives me a chance to clarify what I thought I said. I'd like to make two points. First, a lot is going on that consumers won't be able to understand. You can give them all the data and information in the world, but they're not going to be able to make an informed

decision any more than if you were to show them x-ray films and ask them to make a judgment about some complex surgery. There are, however, choices that consumers should be the ones to make.

On the one hand, if they're wheeling me into surgery, I don't want the surgeon to say, "Mr. Merton, do you want 12 or 17 sutures?" He's being completely transparent with me, but he's scared the heck out of me. His question makes me think that he doesn't know and that he expects me to give him an expert technical answer.

On the other hand, if I'm getting a hip or knee replacement and the doctor says, "Look, you can get the standard one; it's very safe, not too expensive, and not too painful. But you will not be able to jog. Or you can get the sports one that's much more expensive; it's painful, and there are more risks involved, but you'll be able to jog when you're 90." That is a meaningful choice for me, the consumer, because the consumer knows whether the expensive one is worth it or not, depending on whether his life revolves around running.

The second point relates to oversight. The consumer can learn some basics, but a more plausible approach is a governance or oversight structure in which the gatekeeper is not the individual but the plan sponsor. The plan sponsor has the resources, has a shared responsibility as a fiduciary with the consumer, and can do the oversight on behalf of its employees. I have a lot of commercial evidence—I don't do academic research on this issue—that, believe it or not, people trust their employers. They trust their employers more than they trust banks, more than they trust the government, more than they trust a whole bunch of other people.

So, let's put that responsibility—and have complete transparency—on the one who can evaluate plans and understand them and has fiduciary responsibility and good rapport with the consumers. If the plan sponsor does not have the oversight, then perhaps the plan should be carried out by another, similarly trusted and more capable, entity.

What is unreasonable is expecting that even highly educated people with very high IQs can evaluate these complex financial choices. There are, of course, good rules of thumb to help the consumer—for example, "markets are efficient." You may say, "Oh, that's a bad one," because it is not entirely empirically valid. Where do efficient markets come from? What's the concept basically? "No free lunch," right? That's the kind of rule of thumb we can teach people: Namely, when something's too good to be true, it likely is not true. We have to be realistic about what is useful and meaningful to teach people for this important activity.

Question: If we take your descriptors of the choices that we want consumers to make—target income, contribution rate, and so on—it sounds as if one of the things you're asking the regulator to do is to translate fairly or accurately the characteristics of the product into the choices we're asking the

consumers to make. So, to go back to your hip replacement example, when the surgeon is offering the choice "you can have this one that's inexpensive and moderately painful, and then there's another one that's more expensive but you'll be able to run when you're 90," don't you want the regulator to be able to, in effect, vet that description to be sure that it is accurate? So, when we're comparing products in terms of the five or six characteristics that we identify, does the regulator have to enforce the translation from the complex product attributes to the simple descriptors from which the consumer would be choosing, to be sure that the characterizations are accurate?

Merton: That's correct, but I want to clarify that, as in my example, it doesn't literally mean that the regulator must always examine for suitability and reliability each particular element, product, or strategy. The regulator may instead impose that the plan sponsor, as a fiduciary, and its consultant perform that role. And if the plan sponsor fails at this role, then the plan sponsor will be held accountable for that failure.

Question: You're putting a lot of responsibility on the plan sponsor, who's not necessarily an expert because plan sponsors vary in size.

Merton: We have an answer that fits each situation, but it's not necessarily the same answer. For example, for large plan sponsors who have consultants—who are now fiduciaries, in my understanding of the rule—the regulator need not go door to door and examine every element directly. In other situations, that task may be the right answer. For smaller plan sponsors, who do not have the resources, there can be regular approved "safe-harbor" strategies that are not costly to comply with. What doesn't make sense to me is handing people a handbook and saying, "You solve it."

Either the plan sponsor or someone else for whom we set requirements should be responsible. It's similar to the case of risk bearing. Individuals are bearing risks, such as inherent, structural interest rate risk (like a bank bears), that they should not have to bear.

I'll give you a simple example. When you participate in a DC plan, one of the first risks you have, even in the simplest world, is enormous interest rate risk. Suppose you are just starting your work life and you're going to earn a sure income (wouldn't that be nice!) for the rest of your life. You have no money accumulated, but you're going to save, say, 8% of your income each year. You put in 8% this year, 8% next year, 8%, 8%, and so on. Then what? You start taking it out. Do you see the timing? The first amount out comes after the last amount in. Inherently and structurally, you have a huge duration mismatch—that is, your payouts and your pay-ins are not matched in time. Therefore, if interest rates change, you're at risk. Every single person who participates in a DC plan faces that risk.

We could say, "Well, that's life. Let them bear it." But that doesn't make sense. A better solution would be to change the contributions. No one ordained that it had to be 8%. Why not make the contributions a function of interest rates? When you're short duration, you come out ahead when interest rates go up, and you come out behind when interest rates go down. Employer contributions would go down when interest rates go up—instead of 8%, let's say 7.9%, for example—and contributions would go up when interest rates go down. We've now shifted at least some of that inherent structural interest rate risk away from every individual in the plan.

That's the spirit of what I'm calling for. I don't pretend that I can prescribe how exactly to do it with regulators, but there's always going to be a better way to do this sort of thing.

Question: If I buy an investment from my plan sponsor that is supposed to provide a certain probability of achieving a given level of real income, or if I buy it from some consultant that he's hired, how do I verify that they're actually doing the right thing? Here I am at 40, it's supposed to pay off at 65, and I have to trust this provider for 25 years?

Merton: We can't get around this problem. Defined-benefit plans are held out as an example of a guaranteed return, but they aren't really, not just because the corporation can fail but because the plans are so back-loaded. When you're a young person with 25 or 30 years until retirement, the DB promise is small, but if you're still there in 25–30 years, the promise is big. People ask, "Why can't you guarantee it to me?" But nobody can guarantee an income *replacement ratio*. No insurance company can, and nobody else can. In addition, if I quoted you a price, you wouldn't like it. When they consider interest rates, most people find that they've got to take some risk rather than save 70% of their income, or whatever big number they would have to save, to get absolute security.

Who should be evaluating that need for risk taking? The individual? Or the three parties I mentioned earlier: the plan sponsor, the regulator, and the provider—all of whom have some responsibility? Yes, the individual can cross-insure to mitigate credit risk, but credit risk isn't the only risk. As I mentioned in my remarks, is anybody actually getting a meaningful part of her income from certificates of deposit today? People for years were getting 4% or 5%, but today, they are getting 0.3% if they're lucky. They have their principal absolutely protected; we did a perfect job of providing capital preservation with deposit insurance. But we insured them against the wrong risk. They were protected against credit risk, but they ended up with something that did much more damage to them, income risk from changing interest rates.

Question: The three factors that people need to make decisions about are how much risk they are willing to take, how long they plan to keep working, and how much money they have to put away. Have you done any experimental work to see how people make decisions about those three things? I'm concerned about people thinking that they can work forever, whereas physically maybe they can't, or choosing large amounts of risk that they may come to regret later.

Merton: I haven't done formal, large-sample research on this issue because it's not my area of expertise. What I have done is a lot of work with focus groups, with real clients, to try to figure out how people react to various pieces of information and questions, to see what works. Anecdotally, with the proper framing of choices and easy-to-use tools to execute them, for the most part, people end up doing the right thing. (As an aside, it's most important that people make the right decisions, but sometimes, we get too focused on the process.) They understand the issues, even if not all the underlying finance. Furthermore, what's important is not that they get the decisions precisely right, because the world changes all the time, but that they have the right mindset. With that and the right tools, people can get into the habit of checking if they are on track and if not, taking steps to get back on track. They play with the tools to see if things get better if they save a little bit more or work a bit longer, and they get to know the process and the impact of changing the inputs. They do all this without a handbook. It can become a routine. If people never get involved, however, you, the professional, have to manage their money the best you can for them, setting sensible goals for retirement and executing dynamic asset management to do the best you can to get them there.

ERRATA

This material provides corrections to the figures in the article "Observations on Financial Education and Consumer Financial Protection" by Robert C. Merton in *Life-Cycle Investing: Financial Education and Consumer Protection*.

The following figures replace the respective figures on pages 6, 8, and 10 to correctly show the results for the period February 2003–June 2011.