

# RETIREMENT MANAGEMENT JOURNAL

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## **THE VISIONARIES SERIES**

Robert C. Merton, PhD:  
Designing the Best Solution  
for Retirement



**INVESTMENTS & WEALTH INSTITUTE®**

## ROBERT C. MERTON, PHD

# Designing the Best Solution for Retirement

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Robert C. Merton, PhD

*Merton received the Alfred Nobel Memorial Prize in Economic Sciences in 1997 for a new method to determine the value of derivatives. He is past president of the American Finance Association, a member of the National Academy of Sciences, and a Fellow of the American Academy of Arts and Sciences.*

*Merton is the author of Continuous-Time Finance and a co-author of Cases in Financial Engineering: Applied Studies of Financial Innovation; The Global Financial System: A Functional Perspective; Finance; and Financial Economics. He also has been recognized for translating finance science into practice.*

*His current research focuses on three areas: (1) lifecycle investing and retirement funding solutions, (2) measuring and monitoring macrofinancial (systemic) risk, and (3) financial innovation and the dynamics of financial institutional change.*

*Merton earned a BS in engineering mathematics from Columbia University, an MS in applied mathematics from California Institute of Technology, and a PhD in economics from MIT; he holds honorary degrees from nineteen universities.*

*In March 2020, Robert Powell, Retirement Management Journal editor-in-chief; Zvi Bodie, PhD, president of Bodie Associates and the Norman and Adele Barron Professor Emeritus of Management at Boston University; and Stacy Schaus, founder and chief executive officer of Schaus Group LLC, spoke with Merton about retirement solutions for the twenty-first century working and middle classes, fintech, and solving for the right problems.*

**Zvi Bodie:** When did your interest in retirement systems as a research area start and what drew you to it?

**Robert Merton:** My first paper on lifecycle investing was published in 1969. You could say I've been doing it since then. The watershed for me was the decision to go into implementing solutions in practice versus just doing the research or writing about it or lecturing about it. I've been doing innovation implementation

for nearly a half century now. With improvements in finance science, we understand things better, whether it's the capital asset pricing model or the option pricing model. As a consequence, it allows us to design financial solutions and innovate in ways that we couldn't have done before.

The number-one driver of innovation implementation is need. Between 2000 and 2002, with the dot-com crash and 9/11, world stock markets fell and interest rates secularly declined, which was a disaster for DB [defined benefit] pension plans on both the asset and liability sides. Plan sponsors began to reconsider whether they would be prepared to continue bearing the cost and risk of DB. That's when I decided to get involved in actually designing and building an alternative solution. The challenge is to provide a good retirement for working- and middle-class people.

**Stacy Schaus:** Why focus on the working and middle class in your research? So much of financial services focuses on the high-net-worth and ultra-high-net-worth.

**Robert Merton:** People who are much above middle class—upper middle class and mass affluent—of course have to provide for retirement, but they generally do not face a retirement funding challenge. They can benefit from better financial products and technology, but they aren't the source of the retirement funding crisis. It's a mistake to look at it as a monolith. Solving retirement for the truly poor is not the same as for the working class or for the ultra rich. You're dealing with that part of the life cycle where you're living, but you can't work again. For people who are ultra

rich, whether they work or not is irrelevant. In that sense, they're economically in permanent retirement.

In all my innovation work, not just retirement, I've always taken the view that constraints from regulations, tax laws, and even technology are not the same as fixed laws of nature that cannot be changed. If you start to build something from scratch but you put in all those constraints, you're going to end up far away from a really good solution and you're going to have to redo it later. I say, "Why not design this thing without institutional constraints?" No tax constraints, nothing, and then bring in the constraints as limitations, which one should work to change as part of the long-term implementation of the solution.

If you determine the unconstrained best way to do it now, others can find ways to eliminate the constraints—technological or regulatory—on achieving it. For any one entity or group, the first step is to design the best solution they know how to do without constraints. I call that nirvana. That becomes basically the solution goal toward which to aspire—the North Star for guidance on the path to a long-term solution. At each moment along the way, we implement that best solution, subject to the constraints of the day, and then work to eliminate those constraints for tomorrow.

Whenever you're trying to think about design, ask: "Does that move us closer to nirvana or not? If so, by how much? And what resources are we using?" The design is always there for guidance. This approach works even better in practice than it does in theory.

Another important principle is that designs based on finance principles are superior to designs that are institutionally based. An institutional approach asks: "How is it done in Germany? How is it done in the United States? Who and which parts should we copy?" Design based on legacy best practice alone is not good enough. Design based on finance principles includes not only what has been done but what can be done.

Finance principles work everywhere in the world independently of culture, independently of financial wealth, and so forth. If you design a solution based on principles, you've instantly designed a global solution. That's the production model for twenty-first century financial products and services.

**Zvi Bodie:** You and Arun Muralidhar have worked on a model for delivering retirement income that is designed based on finance principles. Can you explain the thinking behind your model?

**Robert Merton:** Yes—Standard-of-Living indexed, Forward-starting, Income-only Securities (SeLFIES).<sup>1</sup> SeLFIES exemplify the principles-based way financial products should be designed.

A fundamental requirement for a well-designed product or service is that the customer already has the knowledge

necessary to use it. Without that, customers have to get educated. Just imagine if, before putting a financial product out there, it must work based on what people already know. It should be like driving. Drivers know how to use the accelerator, the steering wheel, and other essential components, and where they are located, because the driver-interface design has been kept unchanged, even though the under-the-hood actions are completely new. As a result, ordinary drivers can buy or rent a car that they have never driven before and drive comfortably without lessons, reading a manual, or consulting the internet.

If one has a driver, then of course there is no need to understand how to drive the car. The same thing applies for financial advice. A product designed to be used *only* by professional advisors can provide powerful features that direct-use consumers are not equipped to use, because the initial knowledge base is different. The difference goes beyond skill to include greater consistency, dedication, and focus of professionals because that's their full-time job. That is one of my biggest points—design products for the knowledge base of the user.

But we currently design products requiring users to have knowledge of finance concepts such as risk-return frontiers and compound interest, as if they are common knowledge. When that turns out not to be the case, we react, "The customers need to get educated," instead of designing the product so there is no need to get educated. My question is, "Why?" For example, two big consumer industries, automobiles and mobile phones, are focused clearly on what I'm talking about. Instead of spending resources trying to educate people, they start with product design that does not require further education. You have to start with where you want to end up, and you have to figure out the big things that people can agree to. A well-designed product should not require people to get educated. Every bit of education you have to do is a design failure of the product. Make it easy for the consumer to use, not easy for the producer to create. If I can design a way in which consumers don't have to learn, I'm going to clean my competitors' clocks in terms of product and service success.

**Stacy Schaus:** How do you apply these principles to the SeLFIES model that you and Arun Muralidhar have proposed?

**Robert Merton:** In many countries in the world, the bulk of people don't have any kind of pension, but they have the functional need to fund themselves in retirement. We asked, "How can we come up with something that anybody can use on their own to help them get to a good place in retirement when it's DC [defined contribution]?" DC has always been my design constraint. DB doesn't work as the total solution. I wish it did, but it doesn't, and the trend is moving away from or capping DB.

SeLFIES are designed to do that with no education required beyond what people already know, even with a very modest formal education and at minimal cost, even for small transactions. We said if people want a pension, then we're going to design a bond that has payouts like a pension. Just as with contributing to a pension plan, you put your money in when you buy it. You get paid nothing at all, and therefore make no decisions at all, until you retire, and then you get a stream of income. It's just a bond with a pension-payout pattern. Now, how can you get people to be able to make decisions and do it? SeLFIES, in their full-design form, are not indexed to inflation, they're indexed to per capita consumption. The question you start with when you design is, "What are you trying to achieve?" The answer is, "A good retirement." What's a good retirement? I posit that if I can provide a standard of living in retirement that's the same as you enjoyed in the latter part of your work life for the rest of your life, that's a good retirement—the latter part of your work life, not the average from the time you were a student and all that stuff.

**Zvi Bodie:** Couldn't you do something similar with a tool like TIPS [Treasury-Inflation Protected Securities]?

**Robert Merton:** TIPS do not have the retirement-income timing match needed and so they require multiple transactions and have reinvestment risk. TIPS pay semi-annual coupons that require many decisions and transaction costs to reinvest. SeLFIES address both of those issues with no reinvestment risk and a one-time transaction cost, just like investing in a pension fund. TIPS lock in the standard of living assuming you consume the Consumer Price Index. Would you really like the standard of living that you had thirty years ago today? I don't think so. We're designing for working- and middle-class people, which is where the so-called retirement funding crisis in the world is. It's not with the poor because that's the least of their worries. Let's be real. When you think of working- and middle-class people economically, what is the pattern of their lifetime earnings? They live on what they earn. They don't have properties, other than their houses. They don't have stocks and bonds. If I know what they're earning, I have a pretty good idea of their standard of living. That's important information.

Consider a person who has an income of \$50,000 a year. I'm promising them, in terms of a good retirement, their standard of living in the latter part of their work life. This is to protect them from inflation *and* to cover their standard of living as it goes up. If you don't do that, they'll not save enough. The better they do, the more they have to do to catch up.

If I'm really trying to make it simple, I'll index it to per capita consumption. That way, I'm covering inflation. Standard of living measured by the aggregate per capita consumption is standard of living plus inflation. With that covered, you don't need a whole bunch of forecast information. All you need is the sum of the two and it gets you to the right place. When you retire, you

may continue standard-of-living coverage or lock in standard of living and just protect against inflation. That's a choice that people can make.

You don't have to go through any forecasting. Why? It's indexed to both inflation and standard-of-living change. Covered for both those, what I'm earning now is a darn good estimate of what I'm going to need in retirement. How many SeLFIES do you need? What's your goal? What are you earning, \$50,000? Okay, you need 5,000 SeLFIES, if each pays \$10 a year. You don't have to do any projections. You don't have to do simulations. You don't have to do anything. You just look at what you're making and do it.

Now let's look at how this works. Fifteen years down the road, you say to yourself, how am I doing? Let's say you have 3,000 SeLFIES. What do you know? If you stop now, you have a \$30,000 lifestyle. But you're living on \$50,000 now. You understand many things already with no help. You can imagine what it'll be like to live on \$30,000 when you're living on \$50,000. We all can do that. How would we cut back? Some people say, "That means I have to save more." Not necessarily. My point is not to prejudge. At any point in time, people know where they are and they have a way of thinking about it that they understand.

Think of the decision about how many SeLFIES to buy this year. People know how many they need. How do they decide what to buy? The same way we do for all purchases. SeLFIES have a price. Everything has prices, and the prices move up and down. People are used to that. They never have to know anything other than the price. The key is they have the tools to think about it and make those kinds of real-world decisions based on what they already know and understand. This does not guarantee good decisions, but this is how we make decisions all the time. It's a very natural thing.

**Zvi Bodie:** Your approach makes sense in matching a product design to the retirement-income need, but what about features to make SeLFIES more customized to individual circumstances and able to cover longevity risk? Should they also buy an annuity?

**Robert Merton:** I don't think there's a revealed preference for annuitizing earlier than retirement and earning a mortality dividend. Things like your health are going to affect your decisions. My view is: Hedge the price risk, because that's a risk-free asset, but don't actually buy the annuity. SeLFIES provide that. An annuity may not be what is needed, and you want to have the best information possible when you make the decision. That means you want to be as close to retirement as possible when you decide and maybe even delay some decisions into retirement depending on what they are.

The focus should be on retirement income. This isn't a savings account. It's a retirement account. You can't have both stable

value and stable retirement income [Merton 2014]. They didn't understand compound interest or anything when they had a DB plan, they just knew their benefit. Just show people the benefit at the moment with SeLFIES they own. Then you add Social Security and planned future contributions to buy more SeLFIES. You show them income.

If we did that, we would get away from some of the big negatives in behavior and in investing. You see it in target-date funds. The only way you can get rid of this AUM [assets under management] volatility is to go into short-term Treasuries—thirty days, ninety days, two years, whatever. People said: "We don't want the volatility. We just can't deal with this."

What do you end up with? Think of this: The worst asset you can invest in, especially coming into retirement, is a Treasury bill. You want to use Treasuries, that's fine, but I'm trying to minimize things you have to change. I really do believe deep down that if we started showing people income first all the time, they'll learn that's what they need to look at. When they see green with income up and red for income down, they're going to get the right answer. Directionally at least they'll get it right.

**Stacy Schaus:** Your father was a sociologist. With all the work being done in behavioral economics, to what extent has that drawn you into the retirement-income space?

**Robert Merton:** If your father's a plumber, like it or not, you're going to learn about plumbing. Kahneman and Tversky sent drafts of their famous paper to my father. I saw their drafts in the 1970s before they were published. I grew up with this. But I find sociology far more fascinating behaviorally than typical individual psychology. Why? Sociology is about the whole or the group, over which the individual—rational or not—has no control.

For example, the four of us are sitting here knowing that bank assets are just fine and we're totally rational. Then there's a public-proclaimed rumor that the bank is insolvent. We know that's garbage. Where are we tomorrow morning when the bank opens? We're all in line. Why? Precisely because we're rational. We do the 2x2 prisoner's dilemma table and we say because there's no penalty to put our money back in the bank, the rational thing to do is take our money out. For me, the behavioral process that leads to dysfunctional outcomes even with full individual rationality is more interesting.

**Stacy Schaus:** What I'm hearing from you is that defined benefit programs are in the past. Worldwide employers are focused on delivering defined contribution plans such as the 401(k). It's here to stay. To make DC better, plans leverage behavioral realities such as inertia and increasingly are automatically enrolling and increasing contribution rates. That's keeping it simple and doing the work for the participant rather than relying on education and encouraging participants to take action.

**Robert Merton:** It's keeping it simple for the user, but in doing so, the products aren't simple. It sounds paradoxical. It was much harder for us to run individual managed accounts where we matched duration to retirement date and adjusted risk allocation according to the individual's funded ratio.

You know the story of why target-date funds were designed—it's not because they were optimal but because they were a solution to a different problem. Providers knew they had to give advice, but no one wanted to be a fiduciary. So someone designed target-date funds and said here's a rule for investing that we can take to the powers-that-be and get a ruling that this isn't advice. If you look at the prospectuses of target-date funds, they have no goal. They have a process. Do this for five years, this for the next five years, and this for the five years after that. And when you get to the target date, they don't even close the account or invest in an annuity. That's just the last date at which you change the risk allocation. If it's 50/50 equities, then they keep that allocation. They don't liquidate them. It's a process.

Think about what new information is used in a target-date fund allocation over time. None. If you tell me how old you are now, I know for sure how old you'll be a year from now or twenty years from now. You say maybe I won't be around. I already answered that. If you're not around, I don't have to worry about you. You don't need retirement. I know precisely today how old you will be every year in the future. Therefore, what new information do I get about you? Nothing. We're trying to solve a problem involving a series of future contributions for ten, twenty, thirty, forty years going in one end. What has to come out the other end is a stream of income to match what you need. That's an incredibly complex intertemporal optimization under extraordinary uncertainty. I don't even know what you're doing for a living or how much you are earning. Imagine—as an advisor, would you dare say to a client: "I know enough about you now that I'm going to set this course. And whatever else happens to you between now and forty years from now, I'm not going to change the course." How many clients would you get?

That's what the target-date fund does. It's one of these narratives, these narratives all over the place, telling stories that just aren't true.

**Zvi Bodie:** The worst thing is this glide path. They call it a glide path. What glide path in the real world doesn't adjust the destination?

**Robert Merton:** Of course. I always mention, as an example, twins born five minutes apart. They grow up. They go to the same school. They go to the same college. They go to work in the same company and have the same kind of job. They buy townhouses next door to each other. They're as identical as you can imagine until one of them gets called in and is told her salary is doubled. Now they're completely different. You would certainly

not claim two people of the same age, one with an income of \$50,000 and the other one with \$100,000, should follow the same rules. No one would say that.

If I ask my students, and even several of my faculty colleagues, what they want for retirement, they say: “I want a good retirement.” But what do you want? Tell me more about your goal. “I have no idea. I’m twenty-seven-years old. I’m not thinking about retirement.” They look at me and say: “Professor, you’re the expert. What should be a good retirement for me?” That’s the way it really works. If I get you to a place where you have a choice to sustain the standard of living that you have at retirement, that’s the best I can do and that’s pretty good. I can say to you, “I’m going to manage this to try to get you as close as I can to a good retirement.”

And I say that to the plan sponsor. We all understand that the default is important to everybody economically. When we were studying people in focus groups, we showed them a design of a product not unlike the one we ended up doing. We asked, “What do you think of this?” We showed them something really cool and then the interviewer would say, “Would you buy this?” They’d say, “No, we wouldn’t buy it.” The interviewer then asks, “What’s wrong with it?” “There’s nothing wrong. It’s fantastic. It’s just too good to be true.” “What if this was offered in your 403(b) or 401(k) plan?” “Oh, absolutely. Our employers have legal experts and financial experts. They scrub these things.” They may complain about their employers, but employees trust their employers more than they do insurance companies, asset managers, or banks. That is the explanation.

### KEY DESIGN PRINCIPLES TO ACHIEVE A GOOD RETIREMENT

1. Set replacement income as the goal for retirement.
2. Address risks relevant to the goal: income shortfall, not return volatility.
3. Deliver an asset allocation strategy to manage retirement-income risk.
4. Make efficient use of all dedicated retirement assets.
5. Offer personalization based on one’s retirement account characteristics.
6. Take account of changes in both market and personal circumstances.
7. Be effective even for those who are completely unengaged.
8. Supply only meaningful information and offer only actionable choices to improve outlook.
9. Offer robust, scalable, and low-cost investment strategies.
10. Offer seamless transition and payout flexibility at retirement.

Because the design is focused on working- and middle-class people and not complex people like advisors have, if I know their compensation, I know pretty much what their standard of living is. If they’re in a default investment, I can back out what they’re making from their contributions. Most companies change salaries once a year. You can almost predict when it is going to happen for a given company. I know they’ve got a change in income, so now we change their goals in response to the new information. We never have to ask them anything (and you know that even when people volunteer something, it’s often not accurate). Never any discussion of a rate of return. In fact, we showed no rates of return at all, not even the interest rate. We take your real information and compute things like your funded ratio and how much of it is from human capital, aka future contributions. Why? If a lot is from human capital, it’s much less risky than stocks. That means I should take more risks for you. We use age, but we’re not using it as a surrogate for how many more contributions you can make. We’re looking at the profile of the funded ratio.

**Stacy Schaus:** How would you tailor the asset allocation to the individual?

**Robert Merton:** The client is matched dynamically to both personal information changes and market information changes, which are the reasons to change asset allocation. That’s what an advisor does. Market conditions change. The value of your account changes and interest rates change, and then you have your personal circumstances. You get a raise. You get a demotion. Asset allocation should be dynamic in response to new information. You’re trying to get to nirvana. Then you have the constraints, either regulatory constraints or custodian or platform constraints. Do you quit? No. My rule is nirvana—I’ll do the best I can to get you to nirvana, subject to the constraints today, and I try to change the constraints so that tomorrow I can do a better job. That’s an operationally practical rule.

Decide what you’re trying to solve first before you try to optimize. Target-date funds really don’t address that. They put in a solution. Once we’ve decided on what we’re trying to solve, then put in what I call the principle design components [see sidebar]. All ten have to be satisfied before you’ll have what could be considered as the solution. These are necessary conditions, not a wish list.

If you don’t impose these design standards, you’ll likely end up doing what you’re doing now. We love to keep doing what we’re doing. We all will rationalize why we don’t want change. What we’re really saying is I don’t know how I’m going to sell this or maybe when I try to sell this, it won’t go well. There are all kinds of reasons.

**Robert Powell:** Are there other things you wanted to talk about that we haven’t yet touched on?

**Robert Merton:** I'm a big believer in advisors and their function, particularly in the world of fintech and so forth. I believe that many advisors are very nervous that their businesses are going to be vastly downsized or less profitable or they're going to lose their jobs to robo or to technology. That's pretty scary. The Silicon Valley model seems to have a core belief that finance in general is headed to a technology-to-the-consumer business model, and everything in between is going to more or less disappear. That model comes from a deeper assumption that technology is trusted by itself. I, however, believe that technology by itself is not trusted.

I like to use medical examples with my audiences. I say, "I've had this terrible knee pain." I take out my phone and say, "Okay Google, what should I do about my bad knee?" In twelve seconds, it comes back and says, "Cut it off." I say, "I wouldn't do that." Then I look at the audience and I say: "But tell me, how many of you would? Put your hand up." No one anywhere in the world, from students to elderly, no one has put up a hand. We are often told technology is trusted by millennials. But a lot of millennials are in the audience, and none of them raised a hand. There is a confusion between millennials being facile with technology and trusting it. Those aren't the same. That gets their attention. Then I can explain why it makes sense not to trust it. It has to do with models. How do you know what advice model is inside the technology? Did it come out of a Cracker Jack box? Or was it done under the supervision and commitment of Nobel laureates in medicine?

One is the model. How good is it? Two is the data to populate the model. Is it clean, unbiased, and complete data? Three, what's the motivation for the model? If it's a body-parts company, they may just be trying to generate a lot of supply. That's good for the company, but not for me. Then we come back to trust—most times when you say trust, you think trustworthy. I use this to point out that trust is more than trustworthy. It's trustworthy and competent. I would trust my grown children with my life to make decisions about me if I can't. They're trustworthy. I wouldn't let any of my grown children near me with a scalpel because they don't have the competency. That's very important. People think trustworthy is what we need. Trustworthy is necessary, but not sufficient. An incompetent person can burn you as badly as a bad person. They may love you, but they can still do the wrong thing.

There are substitutes for trust—I know of two. One is transparency. If two things are literally transparent, meaning identical, I don't need to trust anything—I can see they're exactly the same. I'll take the one with the lowest price. If I can make something completely transparent, that's a substitute for trust. The other is verification. Something could be opaque, but if I can verify what I need to know about it, then I don't need to trust it. It's not because it's transparent. If, however, you can't verify and if you can't make it transparent, you have no choice but trust.

**Stacy Schaus:** Can investment advice be transparent?

**Robert Merton:** Investment advice is inherently opaque; you can't make it transparent. It's not that you're hiding anything. Medicine is that way, too. When they give you a pill, you have no idea what's inside. You can't see what it is and you can't compare it with another pill. It's inherently opaque. I say investment advice with one exception can't be made transparent—the exception is indexing. I can observe the portfolio, I can see it's transparent. If I can't observe it all the time, I can create a model portfolio using prices if I can get those. That's verification.

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*Once you accept that technology by itself is not trusted and advice that advisors provide cannot be made transparent and can't be verified, then the only way you can perform the function of providing financial advice is with trust.*

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I'll give you an example of where fintech has been very big and successful: Alipay and WeChat Pay. Hundreds of millions of Chinese use them. Is that transparent? Absolutely not. No one knows what is going on, certainly not the people using them. Why are they willing to use it? They can verify. What do they verify? They try payment on it and instantly it works. Their friends try it and it works. That's why they can use it, they can have instant verification. If you're an advisor, can you give me instant verification that you have superior performance? No. You can show me some data, but of course we all know the problems with data. You're not going to show me bad-results data. Even if your *t*-stats computed as if this was random and are highly significant, that doesn't impress me. You have no way to verify. But with SeLFIEs, I give you the calculation you can do or an AI [artificial intelligence] machine can do.

Investment advice is very hard. It can't be made transparent and as a practical matter is not verifiable.

**Zvi Bodie:** What do advisors bring to the table relative to technology?

**Robert Merton:** Once you accept that technology by itself is not trusted and advice that advisors provide cannot be made transparent and can't be verified, then the only way you can perform the function of providing financial advice is with trust. Therefore, for technology to be used for financial advice to your clients or to anyone, another asset is required. It's like labor and land to produce things, or labor and capital. You need at least two factors of production: technology and trust. Almost by definition, you

wouldn't be an advisor to me if I didn't trust you. Now maybe I shouldn't, but I do, at least at the moment. Therefore, by your very role, you have the trust asset, at least with me and your other clients at the moment. Of course, you can lose it, but you have the trust element or you wouldn't be an advisor. You have the trust; however, you acquire it. Business models such as fee-only independent advisors are designed to make them look more trust-worthy. They have fewer conflicts. Therefore, the question is, what happens to advisors in the world of fintech? I don't know, but I can tell you that trust is essential, and technology by itself doesn't produce trust. For technology to get solely delivered to the consumer, you have to bring in a trust asset. It could come from various places, but one of them could be advisors.

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*Now with that as a statement, then a follow-up question is: "Would your characterization of finance in the world today be that it's not changing? The finances of the past and the finances of the future are the same?"*

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Designing financial products with the condition that, ideally, they should be useable with what customers already know—that's harder to do than to design products based on what the professionals know. We all know that, in fact, by putting the risk in the right place, you have profound effects, real effects on the economy, efficiency, profitability, all kinds of things. It's not that simplicity isn't desired. Recall that oft-quoted statement, supposedly from Einstein, about how things should be as simple as possible. But Einstein himself added, "but not simpler than is needed." In other words, not missing something. It's the qualifier that matters.

**Stacy Schaus:** How can plan sponsors and advisors leverage best practices as they design retirement programs or deliver advice to clients?

**Robert Merton:** The norm for governments and large institutions and corporations is to go out and find best practice. Bring it all into a room, put it on the table, and then sift through and find what works best. I say, "What is best practice?" Because it's practice, it's being done. If it's being done, it's a legacy. Maybe a one-minute legacy or maybe a five-year legacy, but it's a legacy. It's the past.

Best practice is like driving looking in the rearview mirror: It works as long as what lies before you is the same as what you have passed. Now with that as a statement, then a follow-up question is: "Would your characterization of finance practice today be that it's not changing? The finances of the past and the finances of the future are the same?" I don't think so. I have a

chart that traces financial innovation, which starts with double-entry bookkeeping going back to the twelfth century, and as you go through time, the only way you can see all the big innovations of the past half century is if you use a microscope. Think of what's happened in just the past thirty years.

Financial innovation has been going on for centuries and not only is it dynamic, it's accelerating. The length of time for things to change in the past is not your best forecast for the future. It's shorter. Big changes are happening, but the pace of change itself is accelerating. That's my way of saying that best practices are not good enough. When I designed my retirement solutions, I didn't say, "What's out there around the world?" and go and do surveys. Not that it isn't useful to look at past data.

I took all we know from finance science and practice, even if it hasn't been applied in this particular place, retirement. Knowing all we know, finance theory, finance principles, design the best solution you know how. Invariably it's going to have lots of things in it that have never been done, at least in this context. Ideally, it's been done somewhere else and so is already market-proven.

**Robert Powell:** How do we improve an individual's chance of meeting their retirement-income goal?

**Robert Merton:** By giving people only meaningful information and choices. For the individual who has a given goal, there are only three ways to get more assets to improve your chance of reaching the goal: save more, work longer, take more risks. You don't have to give people anything else to think about, and they're all relevant because people can experience each one of them and understand the costs in using them. We have ways to show people the possible penalty for taking risks, so they can relate.

But notice that nothing else gets mentioned. You don't even have to mention returns. You just say, "If you do these three things, is there a better chance of getting to your goal, and what are you giving up that matters to you to do them?"

**Robert Powell:** How else can we improve benefits at retirement?

**Robert Merton:** In general, there are only two ways I see for working- and middle-class people that are practical, that will really move the needle in impact. One of them is the annuity. You have so many dollars when you retire. If you buy a bond and you get 2-percent interest or whatever, you live on your 2 percent and that's it. You don't know how long you're going to live, and so that's what you live on.

Now the annuity, of course, works to provide more because you agree that when you no longer need money, you give up the annuity. That sounds to me like a pretty cool deal. You receive money for as long as you ever need it, even if you live to 120. You can never

run out of money, and when you go someplace better where you don't need money, you give it up. So it's hard to understand why there is the annuity puzzle.

It's even more of a puzzle when we realize that pensions are exactly the same as annuities. You get a pension for as long as you live, and then, it's gone. People tend to love their pensions, so there's something awry here. That's big. And just as pensions have been a savior historically for working- and middle-class people, so can annuities in the future. So that's one.

The other is a reverse mortgage. The salient feature about the reverse mortgage is that you make no payments on the mortgage as long as you live in the house. No principal or interest payments, and they are nonrecourse. So if you don't pay, all you can lose is the house—and that is only after you do not need a house, and what's more, it is preferable for your beneficiaries not to keep the house. All the other details can change, but that's the fundamental one.

In retirement, your house represents probably somewhere around 30 percent of your consumption, give or take. If you own the house, you don't have to worry about the rent going higher than you can afford, or being evicted. Importantly, it's the house you want to live in, but you don't know how long you need it. That's a fabulous hedge.

It is also essentially the only source of savings for working- and middle-class people. This is true around the world. In every country in the world, by and large, middle-class and working-class people don't hold stocks and bonds or properties. They have a bank account, and they have a house or an apartment. It is typically the largest asset they own in value, often bigger than a whole pension.

It's an enormous asset, and importantly it's the way people have saved through the generations. And so when we talk about that people have to save more, they do not have to change their saving behavior to increase their benefits.

**Robert Powell:** Are we getting close to so-called good retirements?

**Robert Merton:** It takes such a long time to get this to change. The thing I feel better about when I start feeling badly about how slowly it's going is that fifteen years ago, the industry thought talking about retirement income was really bizarre and would never catch on. And now, the industry is doing almost nothing else in product development but talk about income. If you look at it that way, we've made progress.

An important milestone is the SECURE [Setting Every Community Up for Retirement Enhancement] Act signed into law in 2019 and being implemented now. It requires that, in addition to account

balance, every DC plan must show the amount of retirement income that can be purchased with that balance, based on actual market interest rates. As already noted, people can immediately relate to income numbers, in current dollars, in terms of standard of living in retirement, in a way they cannot relate to an account balance. People will quickly learn to look at the volatility of their income benefit as the relevant risk. This number will allow them to combine the DC income number with their Social Security and any defined-benefit employer plan to arrive at a total income in retirement number.

It's important to distinguish between a product as an idea and a product as it's being delivered. People say they don't like annuities. And people say they're hard to sell. But people love their pensions—they're the same thing.

You have an uncountable number of people for decades all around the world who love pensions. That's pretty strong evidence that people really do like annuities. They like the idea that no matter how long they live, they will not outlive their assets and they don't have to think about it. That means the problem is not, "Get rid of annuities." The problem is, "Get rid of poorly designed annuities," and there's an opportunity to create a good one. We can do that. So, it's like diagnosis and treatment. If your diagnosis is wrong, you're probably going to get the wrong treatment and you're going to be penalized for it. That's my evidence for saying let's think about annuities.

**Robert Powell:** What about bequests?

**Robert Merton:** People hide behind—and I use that word with thought—bequests. It's like it explains all the annuity puzzle. "We don't need annuities because people have bequests." To me, a bequest is a consumption good. It's a luxury good for those people who are fortunate enough to have enough resources to actually give a bequest. Desire to leave a bequest is not the source of the global retirement funding challenge. I say: "Let's start where you have no bequests. All right? And my job is to get you a good retirement." We already defined a good retirement. But if you choose, when you retire, to give up some of that standard of living to others, great. You could have taken a trip or otherwise had a higher standard of living, but you prefer to give it to your children. That's fine. That's a consumption good.

Here's what I wanted to get on record: I believe the long-term and not-so-long-term solution for working- and middle-class people around the world will involve—on top of all the asset management—that we create well-designed cost-efficient annuities and reverse mortgages. This will work because it doesn't have to change saving behavior. It's a huge asset that we need to manage much better by having it be a foundation of retirement planning. Not that everybody does a reverse mortgage, but everybody should consider it as an important retirement funding resource.

**Robert Powell:** How can advisors engender trust with prospects and new clients?

**Robert Merton:** You can have a business strategy that's designed to create trust or improve the chances for trust, and that's a way of saying that you don't have any conflicts. I say: "Think about it. If you think I'm competent, then you're wondering whether I have your interest at heart. Unless I'm a masochist, why wouldn't I do whatever I could to get the best for you, when you are the only one paying me?"

I don't say, "The only way to get trust is having a fee-only individual financial advisor." Similarly, Google by itself, I know, is not going to engender trust in finance. There's good regulation, there's bad regulation, but developing and accepting well-designed regulation is one of the paths Google or an advisor can use to engender trust.

Think of it another way regarding whether technology, including AI, is the whole answer—that the human brain is simply a CPU and a hard drive is a model. And it's a useful model for some things. But that's not all the brain is. I mean, you know Boston Red Sox baseball legend Ted Williams.

**Robert Powell:** He was the last professional baseball player to hit over .400 in a season.

**Robert Merton:** Yes, in 1941. A long, long time ago. So that's a tough one, right? He failed six out of ten times. I always point that out. Every time he went up to bat, he nevertheless went up to bat expecting to get a hit. He didn't go up and say, "Gee, I'm going to fail six out of ten times, so I'm probably going to fail." No, he went up there saying: "I can't wait to get into this. I'm going to get a hit."

High-performers are kind of all that way; they expect to get a hit every time they go up. So how do you justify in some rational sense the guy going up with absolute confidence he's going to get a hit? I mean, really believing it. Not one time, hundreds of times, season after season.

But when he fails, he says to himself, "Look, the nature of the beast is that you're going to fail six out of ten times." No one has ever done better than that in the past eighty years, no one out of

thousands of the best players. By anybody's objective standards, Ted Williams was the best of the best. And he failed six out of ten times.

Look at venture capital people. You know it's a 40/60. Yet they say, "Oh, this deal's going to work." So somehow, the brain is doing something more than a CPU and a hard drive. It's got something in it that says, "To be really good at this, you have to think this way when you're here." You say: "Look, of course, no one can do better than four out of ten. I have to accept that." And yet, I'm saying it's clearly rational in the sense it is a very successful process. So, if the brain's figured out what's needed to get the job done, how can you call that irrational? It's just saying the CPU-hard drive model is incomplete. That model is not good enough to explain that behavior. It looks irrational. It's not irrational for the person, it's irrational only for the model, because the person's succeeding. Please don't tell them, "You're doing the wrong thing." 🟡

## ENDNOTE

1. See, for example, Kobor and Muralidhar (2018), Merton and Muralidhar (2020a,b), Muralidhar (2019), and Muralidhar et al. (2016).

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