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Zvi Bodie, PhD

RETIREMENT PLANNING IN A LIFECYCLE FRAMEWORK

INVESTMENTS & WEALTH INSTITUTE®

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Zvi Bodie is professor emeritus at Boston University, where he taught from 1972 to 2013. He has served on the finance faculty at Harvard Business School (1992–1994) and MIT Sloan School of Management (2008–2009). In 2007, the Retirement Income Industry Association gave Bodie its Lifetime Achievement Award for applied research; in 2019, the Plan Sponsors Council of America selected him for its lifetime achievement award.

Bodie has published widely on pension finance and investment strategy. He is best known for applying modern financial theory to lifecycle saving and investing. He popularized the idea of hedging against inflation using Series I savings bonds, Treasury Inflation-Protected Securities (TIPS), and Consumer Price Index-linked annuities in defined contribution pension and saving plans. He also has advocated for strategies that guarantee a minimum life-long retirement income regardless of the performance of the stock market.

With Nobel laureate Robert C. Merton, Bodie developed a framework for the analysis of financial system design that they call functional and structural finance. This framework synthesizes neoclassical, transaction-cost, and behavioral theories of finance and posits that a financial system performs six basic functions that change very slowly over time and across borders. The institutions that perform these functions change much more quickly and differ across borders.

Bodie has directed major research projects for the National Bureau of Economic Research and the Pension Research Council. With support of the CFA Institute Research Foundation, he organized a series of three conferences on the future of lifecycle saving and investing (2006, 2008, 2010) and edited the resultant conference volumes. Bodie has published papers in academic journals, authored many books about pensions, co-authored three textbooks, and written two books for the mass market, Worry-Free Investing *and* Risk Less and Prosper. *Among his books about pensions are* Foundations of Pension Finance, Pensions in the U.S. Economy, Issues in Pension Economics, *and* Financial Aspects of the U.S. Pension System. *His textbook,* Investments, *co-authored with Alex Kane and Alan Marcus, is used in major business schools around the world and has been translated into 10 languages in addition to English. With Robert Merton, Bodie co-authored an introductory textbook,* Financial Economics, *which has been translated into nine languages. His latest textbook,* Principles of Finance, *was published in 2025 by Cambridge University Press.*

Bodie earned a PhD in economics from the Massachusetts Institute of Technology, an MA in economics from the Hebrew University, and a BA with honors in philosophy from Brooklyn College.

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In June 2025, Bodie spoke with Robert Powell, CFP®, RMA®, Retirement Management Journal *editor-in chief; and Margaret M. Towle, PhD, principal at Yakima River Partners, LLC, about the evolution of finance as a science, retirement planning in a lifecycle framework, the importance of distinguishing between real and nominal cash flows, the distinction between outcome and wealth, and other topics.*

MARGARET TOWLE: You offer a unique vantage point since you've been in the business world and education for so long. What significant shifts or evolutions have you observed in business school curriculum, especially in finance? What are the critical challenges for business education in preparing students for this complex financial world, including intangible assets such as crypto, especially in light of the risk management principles you advocate?

ZVI BODIE: That's a great question, and I have some answers for you. I started teaching as a visiting assistant professor at MIT in 1975, and when I went across the river to Boston University, I taught at the business school. It was still the early days of finance as a science. In other words, the big transition was from teaching finance as essentially an extension of accounting, where you started from a company's financial statements, you analyzed them, you maybe did a present value analysis, but that was the most mathematical, most scientific part of the curriculum in finance. Gradually things like portfolio theory, the Markowitz model, and the analysis of the effects of diversification on risk crept into the syllabus and started taking a bigger and bigger slice.

The option-pricing model was a major transition into how one could use quantitative methods to price all sorts of securities.[1] I was a very good friend at that point of Bob Merton, who was at the center of those developments.[2] He later shared a Nobel Prize in economics for his contribution to option pricing and other quantitative models in finance. Since then, the field has become more and more about mathematical models as the core curriculum and what I would call financial engineering—using the underlying models and the scientific method to create new products and to understand and analyze existing securities. In fact, the term that was developed was "contingent claim," and we talked not about option pricing theory but contingent claims analysis. Every type of security, every asset is some form of contingent claim.

For example, in the late 1970s to the early 1980s, Bob Merton applied option theory to the pricing of corporate debt, risky debt. He says, "Basically we can decompose any debt instrument into a risk-free debt instrument less a put option on the value of the underlying assets of the firm,"

MARGARET TOWLE: But you do have an application of contingent claim analysis that's derived from option theory. It's very powerful for understanding financial decisions, for corporations as well as for individuals. Would you elaborate on how a retiree or someone nearing retirement can leverage insights from contingent claim analysis? If there's increasing market volatility and uncertain longevity, how would they view their retirement plan and whether to work longer or draw on savings? How could we apply contingent claim analysis to your big conceptual framework of worry-free choices?

ZVI BODIE: Two things are involved here. One is the lifecycle finance framework, in which for most people human capital is one of the most important assets, and it can be valued as a contingent claim. That's point number one.

If you view the process of retirement planning in a lifecycle framework, it's optimization under constraints. You're trying to maximize something. In the lifecycle framework, it's utility or happiness, if you will, satisfaction from consumption over your entire lifecycle. Included in that is leisure. That's one of the important things that you're consuming, and you could view that as using up some of your human capital.

One thing that makes the problem complicated from a mathematical point of view is risk. There's uncertainty all along the path. If you're trying to maximize utility from consumption of goods and leisure, then there's a trade-off between leisure and other goods. If your wealth or labor income goes down, one way you adjust is by reducing leisure—that would be working more. So, the terminology gets confusing here because you're trading off consumption of leisure against other goods. How does that happen? Through your salary.

Another aspect of this problem that becomes fairly complicated is how you define risk. In the lifecycle framework, risk is defined relative to your stream of lifetime leisure and consumption of goods. It's a flow variable, so anything that disrupts that flow is risky. But the conventional way that many analysts and advisors look at retirement saving and investing is that the risk is the risk to your wealth, which is the present value of your future stream of earnings and your other assets. Well, volatility of wealth is not the same as volatility of consumption flow.

To see that, just take the stage of life that I'm in. I've retired. For me, a risk-free flow of goods and leisure is in place because I've got annuities. In fact, my annuities are inflation-protected. So that's safe. It's a stream of inflation-protected income, essentially. If interest rates change that has no effect on the flow, so I'm not worried because I've annuitized my wealth. But changes in interest rates do affect the present value of that flow or, in other words, my wealth. So, I'm not worried about interest rates changing, I've hedged that. Now, I don't think many financial planners or even programs like the CFA® Program even talk about the difference between the risk of consumption flow versus the risk of wealth. Correct me if I'm wrong, but the Retirement Management Advisor® [RMA®] program also probably doesn't emphasize that distinction.

ROBERT POWELL: Well, to a degree it does focus on cash flow and consumption. I think the reason it broke ground was because it was based on the lifecycle finance theory and focused on outcomes measured in terms of cash flows and consumption versus wealth per se.

ZVI BODIE: Well, yes, to the extent that I was involved in advising that curriculum, that was definitely one of the things that I emphasized.

ROBERT POWELL: I've always described it as part of the secret sauce.

You and I have talked a lot about the failings of financial education at all levels, elementary, high school, college, professional designations. What are these failures and what should we be teaching?

ZVI BODIE: First of all is the issue of distinguishing between real and nominal cash flows. I don't think there's any discussion about that distinction at the initial level. When time value of money is taught, it's typically taught in essentially nominal terms because inflation is ignored. The first unit in investing analysis—saving and investing—should be about U.S. Treasury Series I savings bonds or I bonds, because that makes the difference between nominal and real quite explicit.[3] When you invest in I bonds, a given real rate of return is fixed for 30 years, but every six months the dollar amount that you get that's added to your accumulation reflects the semi-annual inflation rate. Now, that is, to my knowledge, absent from most financial basics curricula.

A long time ago, we introduced the "I Bond Manifesto."[4] We got a whole bunch of prominent financial gurus to sign on to it. David Enna played a prominent role, but more importantly, he actually started a website called TIPSwatch.com, which he still maintains. It's the first place I go to read about new developments with regard to the TIPS market and I bonds. At a conceptual level, what's so important here is a clear distinction between nominal and real interest rates. In fact, I would tell people that if you go to a financial planner, the first thing you want to ask them is, "What is your opinion of I bonds?" If they say, "What are I bonds?" you don't want that financial planner.

ROBERT POWELL: Let's talk about the work that Annamarie Lusardi[5] and Olivia Mitchell[6] have done around financial literacy, where they talk about the big three and the big five financial literacy questions.[7]

One question about interest rates focuses on the nominal level rather than the real, inflation-adjusted level: "Suppose you had $100 in a savings account and the interest rate was 2 percent per year. After 5 years, how much do you think you would have in the account if you left the money to grow?"

But another question distinguishes between nominal and real rates of return: "Imagine that the interest rate on your savings account was

1 percent per year and inflation was 2 percent per year. After one year, how much would you be able to buy with the money in this account?" That question gets at the real rate of return because you have to make an assumption about whether your money grew faster or slower than the rate of inflation.

To a degree, they're getting at whether an individual understands nominal versus real.

WHAT GOOD IS A NOMINAL GUARANTEE? IT'S OKAY WITH INFLATION OF 2 PERCENT OR 2.5 PERCENT PER YEAR, BUT WHAT IF INFLATION GOES TO DOUBLE DIGITS AND IT'S NOT EVEN OFFERED AS AN OPTION?

ZVI BODIE: Yes, to a degree. But now the question is, do individuals understand the difference in practice? Annamaria and Olivia are two good economists, and Annamaria founded the Global Financial Literacy Excellence Center.[8]

But in the real world of customers coming to financial planners for advice about saving and investing, customers get shown a chart of future value—your retirement income, for example. Is it real or nominal? That's the first question that has to be asked and it very rarely is. I just encountered this yesterday, in fact, when I was on a website. The topic was protected growth investment strategy. Well, that's great. Who doesn't want protected growth, especially in retirement or anything involving annuities, right? The question is, is the annuity piece the part that's being guaranteed? Is it guaranteed in nominal terms or in real terms? I'd be willing to bet that in 99 percent of the cases, it's nominal terms that are being guaranteed, not real terms.

What good is a nominal guarantee? It's okay with inflation of 2 percent or 2.5 percent per year, but what if inflation goes to double digits and it's not even offered as an option?

The other thing that I like to talk about is optionality in the context of guarantees, because that's where it's probably of greatest interest to investors who are concerned about downside risk. We know that concern is very great, and rightly so. But here's the difference between a 30-year U.S. Treasury marketable TIPS bond and a 30-year savings bond: The savings bond has an embedded put option. You never lose any money; it only goes up over time. You could sell it after five years and the interest rate five years later could have gone up. However, the TIPS bond will have lost money in market value terms, right? If real interest rates go up, the price of a TIPS goes down, but not so with a Series I savings bond. It's true you can't sell it in the marketplace, but you can redeem it from the U.S. Treasury. Well, that's a very valuable put option.

ROBERT POWELL: Sadly, I can only buy $10,000 a year though, right?

ZVI BODIE: That is correct. And your wife can buy another $10,000.

ROBERT POWELL: Right. Not enough to retire on yet.

ZVI BODIE: Well, unless you started really early.

ROBERT POWELL: Fair.

ZVI BODIE: What I'm talking about is the part of your portfolio that you want to be guaranteed. That's why "The I Bond Manifesto" talks about using I bonds for your safety net. I'm not saying you shouldn't invest in stocks. By all means you should invest in stocks, but my concern has always been worry-free investing.

MARGARET TOWLE: We touched on this idea of human capital, and my background is in political economy, so I have a special interest in this area. Your lifecycle finance framework emphasizes the importance of human capital, and that would be the present value of an individual's future earning potential. But that concept has a long and varied history in economic thought from the early notions of labor power, for example, in classical economics, or Marx's analysis of labor as a commodity.

There's also human capital theory from people like Theodore Schultz[9] or Gary Becker,[10] who viewed investments in education and skills as generating future returns. How does your conceptualization of human capital, for example, in the implications for optimal portfolio allocation and risk management, intersect or diverge with these other influential perspectives on human capital, especially if we look at individuals' agency in building and leveraging their human capital compared to a more deterministic view like Marx or others?

ZVI BODIE: The only thing I can say, and it's important, is how do you incorporate risk? How do you take the risk of one's human capital into account and layer that onto all the great works that came before that you have cited? The answer is like so many other things when you bring risk in. A major consideration is how volatile the earning stream is and how correlated it is with other assets. Clearly, the safer the human capital, the more risk people are going to be willing to take in other parts of their portfolios. And to the extent that your human capital is correlated with, say, the stock market, then you're going to want to hedge or insure against risks coming from the capital market.

MARGARET TOWLE: So if I take on the role of devil's advocate, do you think that those like Marx and others consider risk as systemic risk and it's more of an exogenous variable and something you can't control?

ZVI BODIE: To my knowledge, it's not complete knowledge, but in my youth, I was a Marxist, so I did read some of *Das Kapital* and other such works.

ROBERT POWELL: Moshe Milevsky popularized this in his book, *Are You a Stock or a Bond?*[11] He talked about if you're a venture capitalist, maybe your portfolio should be more in fixed income; and if you're a school-teacher, you can take more risks and invest more in equities.

ZVI BODIE: That's exactly right.

MARGARET TOWLE: Healthspan—a period of living in good health through proactive steps such as nutritional and lifestyle interventions—has been extending; the 60s are the new 50s. Should we be able to extend what you described as the leisure period of retirement? Does that necessitate a reevaluation of your optimal human capital investments in later life? Because it's obviously going to be a bit different in terms of what you would define as a successful retirement if individuals are now living longer and are thus more productive and active for many more decades.

ZVI BODIE: That's a great set of questions. I don't have too many answers. But I will tell you that I am one of the people going through the stage in life that used to be death. I'm 82 years old, and that's beyond life expectancy.

MARGARET TOWLE: Well, you embody healthspan then.

ZVI BODIE: Yes, exactly. The whole idea of healthspan is a really good one, and the psychology of aging is also terribly important. I don't know to what extent psychological health or brain health is included in the definition of healthspan, but I can tell you they're pretty important. I just finished reading a book about the Harvard Study of Adult Development, an 80-year study. The author is Robert Waldinger, a psychiatrist. He's given lots of YouTube talks. He's all over the internet with his talks about the secret to a long life and, more importantly, a good life. He has a book called *The Good Life*.[12]

He wasn't in charge of the study for 80 years, but he has been for the past 40 years or so. The main finding—and it's a really important one—is socialization, maintaining good family relations, maintaining friendships, community, etc., make a big difference. So, I decided to change my ways and be a nice guy.

ROBERT POWELL: Let's merge this discussion about extended lifespan in retirement with the discussion about nominal versus real. Michael Hurd at the RAND Corp[13] and David Blanchett,[14] when he worked at Morningstar, both found that people's spending over the course of retirement declines 1-2-percent on an annual basis. In other words, it's quite possible that we're saving more than we need to and investing incorrectly to mitigate the effects of inflation that may not be there, given this decline in spending. So, do we have it all wrong if their research is correct?

ZVI BODIE: I'm not sure what the dataset is.

ROBERT POWELL: The Health and Retirement Study for Blanchett.[15]

ZVI BODIE: There's only so much you can learn from these studies, and you try to reduce the uncertainty as much as you can. But it's still subject to considerable error, and there hasn't been all that much inflation over the period that they're looking at. That doesn't mean there won't be. So many uncertainties could affect the rate of inflation dramatically, uncertainties of every sort. Who knows, for example, where cryptocurrencies are going to take us. As their name implies, they're money supply—currency.

If I am to believe monetarists, the quantity of money affects the rate of inflation. That's what I learned when I studied Milton Friedman[16] and the other monetarists. So, should I make a forecast based on that? Maybe. But I'm much better at estimating standard deviations than I am point estimates of the mean. In other words, all I can say about that way of thinking is yes, all these things are subject to error, but that's why we have guarantees. That's why we have insurance. To some extent, that's why we have government.

MARGARET TOWLE: Your philosophy champions securing essential retirement spending with, say, inflation-indexed assets, primarily U.S. TIPS. But often, especially in today's U.S. political environment, some observers have expressed growing concern about the long-term stability and valuation of the domestic bond market due to increasing national debt as well as continued confidence in the U.S. dollar as the world's primary reserve currency.

How do you view these current macroeconomic and political anxieties? How does it impact your core recommendation for U.S. government-backed securities? Are you evaluating what truly constitutes a safe asset for retirees if we're talking about sovereign risk or decline in the dollar confidence with alternative safe havens? And if you are, what should individuals consider?

ZVI BODIE: The only other safe haven that I can think of, at least for young people, is an investment in their own human capital, because that's controllable—the broader your education and the more adept you are at technology, the better. And of course, investing in your own health.

Beyond that, I don't see anything that approaches the safety of dollar-denominated assets issued by the U.S. government. Certainly, the stock market isn't going to do it for you. Usually people who argue that TIPS aren't really safe are trying to sell stocks as an alternative.

MARGARET TOWLE: Right, or international or crypto.

ZVI BODIE: Right. And the volatility of those assets is quite large.

I'm a strong believer in the whole business of irrational or rational behavior; that is, behavioral finance. In fact, when I was a student at the Hebrew University in Jerusalem doing my master's degree in economics, one of the first courses that I took was taught by Daniel Kahneman and Amos Tversky.[17]

They had just come back from studying abroad, they were new PhDs, and they were teaching a course in what they called cognitive processes. I'm a big fan of behavioral finance, but I myself have not contributed to it except insofar as I endorse strategies that involve setting a floor.

MARGARET TOWLE: Considering behavioral finance—and obviously your worry-free investing is central to this entire philosophy—if you look at the data around this boomer generation's ability to have sufficient assets, especially if sufficient means maintaining the standard of living, the vast majority do not. What can financial advisors and others do to help subsequent generations better mitigate this risk? Because if we look at the current generation, even though perhaps the financial advisory community understands and has embraced behavioral finance, the vast majority of people that are going to be retiring soon do not have sufficient assets.

ZVI BODIE: As that generation finds it has much less available than they previously thought, it will have political ramifications. As a political scientist as well as an economist, you would be sympathetic to considering what the political options are. Certainly, this latest tax legislation, which primarily benefits the super wealthy, would not be tolerated, it seems to me, in an environment where you have masses of people who are experiencing a decline in their standard of living. We have to look back to the Great Depression to look for a precedent, and certainly, the government became very active in the economic sphere in the 1930s.

ROBERT POWELL: Someone like Andrew Biggs[18] will say that there is no retirement crisis writ large for the wealthiest, they're fine because they have enough money to support their desired standard of living. For those in the lowest income quintile, Social Security will replace most, if not all, of the income that they had in their working years. But maybe those in the vast middle would be in the crisis segment.

ZVI BODIE: Well, that's right. Let's take the Social Security system. We know that given current projections, it's going to be bankrupt in the conventional sense. Now do you think we're going to cut Social Security benefits that have been earned? I don't think so. That's a political decision, and politicians have to get elected. Of course, in my thinking I always allow for extreme events that nobody anticipates.

ROBERT POWELL: Would you tell advisors to start making projections that benefits would be cut or that a solution will come in the form of higher taxes, maybe lower benefits for younger workers, maybe increased retirement age?

ZVI BODIE: All of those things, yes, unless people are prepared to keep working. That's where I'd start. By the way, I have to say that I think maintaining at least one foot in the labor force is a desirable thing for the individual as well as society.

ROBERT POWELL: It was John Shoven and others who did research on the best way to improve your retirement security, whether to invest more, invest more aggressively, or work longer.[19] Of the three, it was work two years longer to increase your retirement security, which would give you another two years to save and two years less to fund in retirement.

ZVI BODIE: Absolutely. But I'm going for more than that. That's important, but I'm saying it's better to be part of the workforce as opposed to being retired, from a social point of view and a psychological point of view. Incidentally, the Waldinger study on the importance of happiness in later life finds that, for men in particular, at least this past generation, the workplace was where they had most of their social interaction, and social interaction is the secret of happiness. So why would you want to pull out of that?

MARGARET TOWLE: I think it relates to what you were saying about leisure. What I see is pretty much a binary or one-dimensional view of leisure, and maybe it's not such a binary thing in terms of leisure versus working.

ZVI BODIE: Well, there is such a thing as too much leisure.

ROBERT POWELL: There's that story of planners who say that their clients retired to play golf seven days a week and then realized that golfing seven days a week was like work.

ZVI BODIE: Yes, exactly right.

MARGARET TOWLE: In the behavioral finance space, we've seen differences especially in how women tend to be more risk-averse and prioritize capital preservation. But what I discovered as it relates to implementing financial advisory advice is that the assumption is one-size-fits-all. Do you have any recommendations that allow financial advisors to tailor recommendations to both men and women from a behavioral finance perspective?

ZVI BODIE: Make sure they understand the difference between nominal and real. That's not easy; even explaining I bonds to people is not terribly easy. Distinguishing between real and nominal is the best way to explain the implications for saving and investing.

The other thing is the persistence of risk in the long run. There's no such thing as time diversification of risk, that's nonsense. It's hard to see that it doesn't exist because it has a lot of intuitive appeal.

Paul Samuelson[20] once told me that he wrote no fewer than 30 pieces explaining why risk does not go away in the long run. It was one of the hardest things for him to get across. He actually thanked me for showing that the cost of a put option, which protects you against earning less than the risk-free rate of return, increases with T, T being the time to expiration of the option, rather than decreases. It's a mathematical proof using option theory.

But I've had a hard time convincing people even using that argument. So, it's important to understand how to take account of time and risk, and that's the essence of finance. Finance is the allocation of economic resources over time, under risk. That's my definition of finance.

ROBERT POWELL: In the RMA curriculum, we're fond of the floor and upside approach, the floor being the amount of money that you would need to cover your consumption, and the upside would be the surplus for discretionary expenses. How you invest the surplus could be different, even though there's no such thing as time diversification.

ZVI BODIE: But that's a different proposition. That's saying the downside doesn't go away because you're holding for many periods. That's what the time diversification argument is. The downside goes away because you're guaranteeing against it, and that may take almost all your wealth.

ROBERT POWELL: For advisors who use the bucket approach, would you say that they're doing it incorrectly?

ZVI BODIE: Well, I'm sure some of them are doing it fine, and there may be good behavioral reasons to do a bucket approach as well.

ROBERT POWELL: Asset–liability matching.

ZVI BODIE: Exactly.

ROBERT POWELL: I know you love target-date funds.

ZVI BODIE: Oh no. I think target-date funds do not deal with risk properly. In fact, I wrote an article about target-date funds[21] with a former student who later became my son-in-law, Jonathan Treussard.[22] In the article we talked about target-date funds, among other things, and the question is, what do you do with the target date? Is it your retirement date that you're trying to lock in? Supposedly, yes. What is it that you're putting into the fund? How does it affect the asset mix?

Well, it's not at all clear. It doesn't get around the problem of risk tolerance. So, in some sense it's a misnomer because, for example, if an employer decides the default option for employees, is it going to be the date of their retirement or when they reach age 65? If they match that, how does that take account of risk aversion? I don't see how.

ROBERT POWELL: Well, it's just taking one factor out of three, right? If the classic input would be your time horizon, your risk tolerance, and your investment objective, target-date funds just take the time horizon into account.

ZVI BODIE: Right, but that's not enough.

ROBERT POWELL: Not to mention, the asset allocation may not reflect other assets that you own outside the target-date fund.

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MARGARET TOWLE: If we look at the external environment, and especially if you're advocating for TIPS as a worry-free investment strategy, I would love to hear your thoughts on what might happen if we faced a prolonged period of stagflation. In this environment, we could experience both elevated interest-rate risk and inflation risk. How robust do you believe TIPS would be in delivering safety and guaranteed income in that environment? Would you adjust your recommendation?

ZVI BODIE: Good question. Stagflation. So, what do you envision? That there's no growth in the economy or we're in a depression or what?

MARGARET TOWLE: Well, I don't know the exact situation, but yes, very low growth and very high inflation.

ZVI BODIE: Okay, so the very high inflation would not be a problem, it seems to me.

MARGARET TOWLE: Because you're protecting against that. By definition, TIPS would cover essential spending needs, even with very, very high inflation.

ZVI BODIE: Right, so high inflation is not an issue. But with low growth, whatever part of your asset portfolio that is invested in the market is not going to grow as much as you hope.

Israel has many years of experience in its economy with high inflation. In fact, they introduced inflation-linked government bonds back in the early days of the state of Israel, almost when the Bank of Israel was created in the early 1950s. When I was writing my doctoral dissertation at MIT in the early 1970s, I was drawing on that experience. It wasn't until 1998 that the U.S. Treasury started issuing TIPS. As long as there is political stability, that's the key. Because my guess is that if there were hyperinflation, there'd be political pressure to index the tax system. Right now nominal income is taxed whether it's caused by inflation or something else. So, if inflation-indexed income on TIPS were taxed, even though it was not real income, I think there'd be considerable political pressure to change that.

ROBERT POWELL: Right now, the financial advisor compensation model doesn't always accommodate advisors including TIPS in portfolio management because they charge 1 percent of assets under management, and it's hard to charge 1 percent of assets under management on TIPS. I don't envision there'll be a lot of pressure from advisors to get their clients into TIPS and out of much riskier assets.

MARGARET TOWLE: I guess that's a bigger issue in the industry relative to a more holistic approach to providing financial advice. I was speaking with an advisor who has clients who are very interested in philanthropic activity. She works for a very large firm, and the firm said, "Don't even spend your time talking to clients about their philanthropic activity because we don't get paid on it." That model is one that we have to examine and wonder, is there a better way to do it?

ZVI BODIE: Good question. I mean, that's a pervasive issue in other areas as well. How about artificial intelligence and the use of recorded material that's copyrighted? Take the issue of my friend who's got the TIPSwatch.com website, which has free access.

Of course, there are all these nonprofit entities on the internet that ask you to contribute, but my guess is that voluntary contributions are insufficient. So, I think we're in for a lot of lawsuits for copyright infringement with regard to artificial intelligence. I mean, I have a new textbook just published by Cambridge University Press, *Principles of Finance*, co-authored with Bob Merton and Richard Thakor. How do we protect our material? We want royalties to access it, but how do we guarantee or ensure that?

ROBERT POWELL: Speaking of lawsuits, in some firms the advisor isn't allowed to talk about reverse mortgages, for instance. So, in a world where you can't be holistic, I would think that the advisors are at risk of being sued, if not by the client, by the client's heirs who might say, "Well, you didn't do right by my mom and dad, because you never talked about reverse mortgages or philanthropic activities," or whatever the case may be. The advisor will either have to take measures to have people sign away their rights to sue because they can't talk about reverse mortgages or be at risk of being sued.

MARGARET TOWLE: The big difference is the fiduciary responsibility wrapper, whether it's ERISA [the Employee Retirement Income Security Act of 1974] or UPMIFA [Uniform Prudent Management of Institutional Funds Act] or even the prudent man rule.[23] If you're in the business of giving investment advice, you can't just sign away that responsibility. Having worked for a large organization with a huge compliance department, I know that you almost can't write an email without qualifying what you're saying in the email. There has to be some kind of reckoning between the two.

ZVI BODIE: I just got something from one of the fiduciary firms that is holding my assets, this is for estate planning purposes. I asked the firm for a list of everything that I own and what's in my wife's name and what's in my name. Well, that's one page, but the handout I received is seven pages. And it's all legalese.

MARGARET TOWLE: For financial advisors working with clients, what do you think is the most important shift in mindset that they should adopt based on your research and philosophy?

ZVI BODIE: I wrote a piece called "Retirement Investing: A New Approach."[24] It points to three things.

The first is the importance of inflation risk. In other words, the problem of inflation and how to tackle that.

The second is the fallacy of time diversification. Stocks don't become less risky over the long run. There's always risk, and tail risk actually grows the further out you go, right? The more periods there are, the more times stocks can go down again. Now it's not high probability, but there's a difference between the probability of a loss and the maximum potential loss. So that whole business: How to take account of the interaction of time and risk. And that would include the distinction between wealth risk versus consumption risk or income risk.

The third thing would be the importance of thinking about options. I can show you the difference between the payoff structure of holding TIPS with upside leverage derived from a call option. So, it's basically protected growth with any degree of risk that you want, but a level of protection versus committing to just holding a portfolio invested in stocks.

ROBERT POWELL: Zvi, we commonly ask the people we interview when they plan to retire, but that question is null and void in your case.

ZVI BODIE: Well, you could ask me, "Do I regret having retired?"

ROBERT POWELL: Okay. Do you regret having retired?

ZVI BODIE: Well, I have not retired, because I had the flexibility as an academic to continue writing textbooks. Which I did, and Cambridge University Press, God bless them, was willing to publish it.

ENDNOTES

1. Developed in 1973 by Fischer Black, Robert Merton, and Myron Scholes, the Black–Scholes model was the first widely used mathematical method to calculate the theoretical value of an option contract. It uses current stock prices, expected dividends, the option's strike price, expected interest rates, time to expiration, and expected volatility; see https://www.investopedia.com/terms/b/blackscholes.asp.
2. Robert C. Merton is the School of Management Distinguished Professor of Finance at the MIT Sloan School of Management, and the John and Natty McArthur University Professor Emeritus at Harvard University. He received the Nobel Memorial Prize in Economic Sciences in 1997 for a new method to determine the value of derivatives; see https://mitsloan.mit.edu/faculty/directory/robert-c-merton.
3. First introduced in September 1998, I Bonds (the "I" stands for "Inflation") are inflation-protected, issued by the United States Treasury, and provide a guaranteed real rate of return for 30 years. This contrasts with the nominal fixed rate of interest provided by most traditional bonds and certificates of deposit; see Z. Bodie, M. Lindauer, D. Enna, and M. Ashton (2021), "I Bond Manifesto: Why Inflation-Linked Savings Bonds Can Work as Part of Your Emergency Fund," https://tipswatch.com/i-bond-manifesto/.
4. See Z. Bodie et al. (2021), "I Bond Manifesto," cited in endnote 3.
5. Annamaria Lusardi is director of the Stanford University Initiative for Financial Decision-Making, a collaboration between the Graduate School of Business (GSB), the Stanford Institute for Economic Policy Research (SIEPR), and the school's Economics Department. She is also professor of finance (by courtesy) at the GSB and a senior fellow at SIEPR; see https://www.gsb.stanford.edu/faculty-research/faculty/annamaria-lusardi.
6. Olivia S. Mitchell is International Foundation of Employee Benefit Plans Professor, Professor of Business Economics and Public Policy, Professor of Insurance and Risk Management, and executive director of the Pension Research Council at The Wharton School of the University of Pennsylvania; see https://knowledge.wharton.upenn.edu/faculty/olivia-mitchell/.
7. Annamaria Lusardi and Olivia Mitchell have developed and refined questionnaires to determine individuals' financial literacy. The questionnaires have been used worldwide, including in the U.S. National Financial Capability Study; see https://gflec.org/education/questions-that-indicate-financial-literacy/.
8. Lusardi is the founder and academic director for The Global Financial Literacy Excellence Center (GFLEC), which has the mission of "advancing research and solutions that open the door to universal financial literacy;" see https://gflec.org/about/.
9. Theodore W. Schultz (1902–1998) was an American Nobel laureate, an economist, and chair of the economics department at the University of Chicago. He is famous for developing the human capital theory of economic recovery from disaster; see https://www.investopedia.com/terms/t/theodore-w-schultz.asp.
10. Gary S. Becker (1930–2014) was an economist who was recognized in 1992 as a Nobel laureate for his microeconomic analysis of the impact of economic considerations on human behavior and interaction; see https://www.investopedia.com/terms/g/gary-s-becker.asp.
11. See M. Milevsky (2012), *Are You a Stock or a Bond? Identify Your Own Human Capital for a Secure Financial Future* (FT Press).
12. See R. J. Waldinger and M. Schulz (2023), *The Good Life: Lessons from the World's Longest Scientific Study of Happiness* (Simon & Schuster).
13. See M. D. Hurd and S. Rohwedder, "Spending Trajectories after Age 65 Variation by Initial Wealth," *Journal of the Economics of Ageing* 26 (2023): 100,468, https://doi.org/10.1016/j.jeoa.2023.100468; and M. D. Hurd and S. Rohwedder, "The Adequacy of Economic Resources in Retirement," Michigan Retirement Research Center Working Paper 2008-184 (September 2008), https://mrdrc.isr.umich.edu/wp-content/uploads/2024/04/rb184.pdf.
14. D. Blanchett, "Estimating the True Cost of Retirement," Morningstar (2013), https://www.morningstar.com/content/dam/marketing/shared/research/foundational/677785-EstimatingTrueCostRetirement.pdf.
15. The Health and Retirement Study is a longitudinal survey of a representative sample of Americans older than age 50 conducted by the Survey Research Center at the University of Michigan's Institute for Social Research and supported by the National Institute on Aging. The study interviews approximately 20,000 respondents every two years about subjects such as health care, housing, assets, pensions, employment, and disability; see https://en.wikipedia.org/wiki/Health_and_Retirement_Study and https://hrsparticipants.isr.umich.edu/.
16. Milton Friedman (1912–2006) was an influential American economist and educator and a leading proponent of monetarism in the second half of the 20th century. He was awarded the Nobel Memorial Prize in Economic Sciences in 1976 for "his achievements in the fields of consumption analysis, monetary history, and theory and for his demonstration of the complexity of stabilization policy." See https://www.nobelprize.org/prizes/economic-sciences/1976/friedman/facts/.
17. Amos Tversky (1937–1996) was an Israeli-American cognitive and mathematical psychologist. Tversky was a pioneer of cognitive science and a long-time collaborator of Daniel Kahneman (1934–2024), an Israeli-American psychologist best known for his work on the psychology of judgment and decision-making as well as behavioral economics. In 2002 Kahneman was awarded the Nobel Memorial Prize in Economic Sciences with Vernon L. Smith. See https://en.wikipedia.org/wiki/Daniel_Kahneman and https://www.nobelprize.org/prizes/economic-sciences/2002/kahneman/facts/.
18. Andrew G. Biggs is a senior fellow at the American Enterprise Institute, where he studies Social Security reform, state and local government pensions, and public sector pay and benefits; see https://www.aei.org/profile/andrew-g-biggs/.
19. See G. Bronshtein, J. Scott, J. B. Shoven, and S. N. Slavov, "The Power of Working Longer," NBER Working Paper 24226 (January 2018), https://www.nber.org/papers/w24226.
20. Economist Paul A. Samuelson (1915–2009) was the first American to win the Nobel Memorial Prize in Economic Sciences, which cited his "scientific work through which he has developed static and dynamic economic theory and actively contributed to raising the level of analysis in economic science." See https://www.nobelprize.org/prizes/economic-sciences/1970/samuelson/facts/.
21. See Z. Bodie and J. Treussard (2007), "Making Investment Choices as Simple as Possible, but Not Simpler," *Financial Analysts Journal* 63, no. 3 (May/June): 43–47.
22. Jonathan Treussard, PhD, is founder of Treussard Capital Management LLC, a registered investment advisor that operates as a fiduciary for its clients.
23. The prudent-person rule is a legal principle that restricts the advisory choices of financial managers to the types of investments that prudent people seeking reasonable income and preservation of capital might buy for their own portfolios; see https://www.investopedia.com/terms/p/prudentmanrule.asp.
24. See Z. Bodie, "Retirement Investing: A New Approach," Pension Research Council Working Paper 2001-8 (February 2001), https://pensionresearchcouncil.wharton.upenn.edu/wp-content/uploads/2015/09/WP2001-08.pdf.

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