

Uncertainties in the life cycle and how they should be addressed.

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One of the most important economic issues facing all of advanced industrial countries is savings. In this article I would like summarize some thoughts already expressed in a previous paper¹ posted on the Trends in Savings and Wealth website. Moreover, I would like to try further highlight some of the difficulties individuals face in making savings decisions and discuss some of the ways in which investor managers can help guide those decisions and, in particular, the part that defaults play in the framework for decision making.

The decisions individuals make about retirement savings are clearly among the most important ones they face, not least because they determine their well being during a significant fraction of their lifetime. Fifty years ago, most people carried on working almost until the time they died and retirement was a very brief period. Increases in longevity mean that today it is not uncommon for people to be retired for thirty years or more, and this means they have to put away money during their working lives to have consumption to enjoy once they retire.

Savings decisions are fundamentally different from other kinds of decisions that individuals make. The most distinctive feature of the retirement decision is that individuals do not have a second chance. Ordinary consumption decisions are normally based on repeated experience: when people choose between red lettuce or green lettuce they can try one and then the other, find out which they prefer, consider the relative price, and decide how to behave in the future on the basis of the information acquired. But retirement decisions do not allow them to change their minds. If they save too little, they can't say, "Oh I made a mistake I'll go start over again and save more". If they save too much, they might say "Golly when I was young, I really would have enjoyed that extra ski vacation. Now I'm decrepit I can't enjoy that money. I wish I'd spent it."

So the appropriateness of retirement decisions cannot be judged until the end of one's life, when it is too late. And individuals have little foundation on which to base their decisions. They cannot even learn from the experience of previous generations. Continual changes to wages, financial markets, social security programs and life expectancy mean that the choices facing individuals today and the consequences are dramatically different from those of earlier cohorts. Yet this is one of the most important choices that individuals face.

To make matters worse, it is also one of the most complicated choices. For example, although life expectancy is generally getting much longer, as we become more sedentary, obesity is becoming more widespread and this is shortening some people's lives. Therefore, you need a lot of information to know what your life expectancy is.

At a technical level, we can say it involves an inter-temporal maximization problem with risk. It is the kind of problem that, if it is to be solved correctly, requires mastery of complex mathematics, calculus of variations and complex optimizations. And most people in our society still do not have a Ph.D. in finance. However, the point I wish to make here is that even those people who do have Ph.D.s in finance have not understood the problem correctly. Financial theory may provide the tools and techniques, but the problems are so complex that even the experts have been unable to solve them.

Inadequacies of standard theory

In order to solve the problem with current techniques, economists have had to make some very far reaching simplifications that have, in effect, given the wrong answers. And unfortunately, people have followed the advice based on those wrong answers.

Some of the limitations are embedded in the theory. For instance, the CAPM model and Beta models ignore human capital, housing, family structure and entrepreneurship. They do not

¹ Joseph Stiglitz Retirement savings, games that asset managers, distributors and investors play, 2004 <http://www.savingsandwealth.com>

deal adequately with capital market imperfections or a variety of risks including one phenomenon that is intrinsic to risk modeling: probability distributions. Conventionally the models use normal distributions whereas in fact the correct probability distributions have fat tails. The consequence of this is something that we have witnessed repeatedly: events that are supposed to occur once in a hundred years appear to be happening every ten years. The crises of 1987, 1997 and 2007 ought to be once-in-a-century occurrences. The reason we continue to be surprised is that the mathematical models use probability distributions that inappropriately describe the market realities.

The limitations I have mentioned are fundamental to understanding how individuals should make their financial wealth decisions, how much they should be saving, and how they should allocate those savings among a variety of assets.

The most important asset that most individuals have is their human capital. My standard estimate is that human capital represents about two thirds of wealth. But typically in the models and financial analysis this important asset is not included. And human wealth, human capital is different from other kinds of financial assets in several ways. Most importantly, it is uninsurable and non-tradable: you cannot buy and sell human capital, you cannot buy insurance against most of the risk associated with future earnings.

The implication is that the standard CAPM model is inappropriate. For instance, one of the standard results of that model is something called the two-fund theorem. This states that everyone's portfolio ought to be described as a linear combination of a safe asset and a risky portfolio. And there are variations: if there is no safe asset it is a linear combination between a risky portfolio and the minimum variance portfolio. But this model, which has had enormous influence in finance, is inappropriate.

Even under the special assumptions that would validate the CAPM model, such as mean variance or log normal distributions, different individuals will want to have different risky portfolios. There simply is no two-portfolio, two-fund solution. Multiple funds are required to reflect the different characteristics of the non-tradable human capital portion of the individual's overall wealth. A further important implication is the need to tailor portfolios to the particular needs of individuals, unlike the standard CAP M model where everyone buys the same risky portfolio and simply changes the weight.

There is another aspect that must be considered if one wants to structure financial assets as part of an overall portfolio in which human capital is given the greatest weight: the value of human capital changes over time, and most importantly the degree of uncertainty changes over time. Early in one's career there is only limited information about your life prospects: the degree of uncertainty is high. By the time you reach retirement age, around 65 or 70, there is no longer any uncertainty about your human capital: you've had it! So the question involves a considerable amount of risk. If we were to plot a graph of the degree of uncertainty associated with human capital it would begin very high and fall over time.

To see intuitively what this implies, let us take one of the standard maxims that many investor advisors give for portfolio allocation. This is standard advice, which is not based on rigorous economic theory and has been widely criticized, but it continues to be offered. It states that as we get closer to retirement we should increase the share of wealth that is in the safe asset, i.e., decrease the ratio of equity to bonds. In other words the standard wisdom is that we ought to move towards a safer portfolio as we get older. But if we accept that our most important asset, human capital, is already becoming safer because the risk is diminishing over time, then perhaps we ought to be thinking about whether to compensate for this diminishing risk on the human capital portion of our portfolio. It also means that retirement investment should take into account industry or firm specific risks.

The peculiarity of housing

A second limitation of the standard model is that it ignores non-financial assets of which housing is the most important other than human capital. Housing has some distinctive risk characteristics that set it apart from other assets. To begin with, housing is probably one of the most important commodities an individual may need to purchase and house prices are highly correlated with what individuals may have to spend on housing in the future. People are concerned with buying housing services and the value of the property is correlated with

the value of those services. This means that housing has a risk characteristic that is not well reflected in the simple price of houses, ignoring the correlation with the consumption aspects. This illustrates a general proposition that when we want to examine behavior with respect to risk, we need to remember that individuals consume multiple commodities and there are relative risks associated with the prices of each one. Individuals, in their portfolio allocation, can insure themselves in part against these relative price risks and housing is the most dramatic example of that.

I developed the analytic framework for thinking about behavior towards risks with many commodities 38 years ago. Unfortunately, the difficulties of solving these problems are such that few financial theorists have followed this up. Which just reinforces the point made earlier: if those with finance degrees cannot solve these problems correctly, how can we expect ordinary individuals to make sophisticated and reliable decisions?

One of the implications of this analysis is that individuals should hold more housing than a simple portfolio model would have predicted. There are other features of housing that have a bearing on portfolio allocation. For example, the rental market often works badly, for a variety of reasons that are clearly understood—tax distortions, moral hazard—and this favors home ownership. Another distinguishing feature which has become very evident recently is that most housing finance is in debt; there are very few equity loans in housing, and it is one of the most collateralizable instruments for debt finance.

Housing demand is also affected by a variety of other factors that are not normally taken into account by standard portfolio analysis. An example is family size, which has little relevance to other aspects of portfolio allocation.

Finally, the fact that individuals might own more housing than optimal portfolio allocation, has further important implications. In particular, it means we ought to think differently about hedging against inflation. In a sense, home owners are already insured against a large portion of inflation risk, so a more reliable measure might be to look at the CPI with the housing component taken out.

Further uncertainties

So far we have looked at two major aspects that the standard models ignore, human capital and housing. A third, and I have just hinted at it, is family structure. Different family structures have very different implications for risk. Two-earner family households without children are better able to absorb risk: the two earners play an important role in risk diversification. Single earner households with two members may be less able to absorb risk. And there are a whole set of other risks which change over time as social orders evolve. For example, divorce clearly represents a first-order financial risk that should be taken into account in any financial planning, but typically is not contemplated in any of the standard financial models.

A fourth characteristic that is left out is entrepreneurship. If we look at overall savings we find that the entrepreneur has higher levels of savings than others. This observation made long ago, by Milton Friedman, has to do with the imperfections of capital markets. These individuals perceive investments in their small businesses as yielding high returns. They may find it difficult to get credit and these high returns offset the benefits of diversification. So the undiversified nature of their wealth should be taken into account when designing an optimal investment strategy for these particular individuals.

Let us very quickly go through some of the other uncertainties that a full analysis of the retirement savings portfolio decision requires. One of these is the retirement age. In the United States it is now illegal for firms to stipulate a compulsory retirement age. Partial forms of retirement are gaining ground and this implies uncertainty in the age of decumulation, unlike some of the earlier life cycle models in which the age at which people began to decumulate was known.

There are also significant imperfections in capital insurance markets. For instance, borrowing against some forms of collateral is much more limited than against others, a factor which distorts the nature of investment decisions. The lack of insurance means that individuals may have to draw on their own wealth, so that liquidity becomes a more important aspect of some

assets. Individuals may also need to have a higher quality portfolio than they otherwise need, had there been good insurance markets.

Another uncertainty concerns changes to the equity premium. One of the issues that economists have long debated is the size of the equity premium and whether it will persist. Many believe it will not.

Then there are important uncertainties arising from changes in the public pension programs. It is widely held that many of public pension schemes are unsustainable, but no one is sure about the details. For instance, in the United States the questions depends on migration, but decisions about the extent of migration have not yet been made or are themselves the subject of a major public policy debate. Still, it is likely that there will be major changes in the kinds of public retirement programs that those in their 20's and 30's will have available when they reach their 60's and 70's, yet they have to make a decision today based on these uncertainties.

Information asymmetries and bad advice

There are several implications of the complexity of the problem I have just described--the complexity of the retirement savings decision and portfolio allocation. One of these is that not only are individuals ill-equipped to solve the difficult inter-temporal maximization problems, they also have difficulties judging the appropriateness of the advice. This makes them prey to the wrong advice. It gives rise to certain fashionable rules of thumb, which are not based on any correct analytic framework.

Some fads and fashions may be "sociologically" reasonable. For instance, individuals are often encouraged to buy the stock of the company they work for to show their commitment to the firm, but obviously these policies lead to under-diversification and excessive risk taking. Some of the advice is clearly exploitative and there is ample evidence of bad advice and bad allocations.

The fundamental problem, as we mentioned earlier, is that individuals will not really know whether the advice that was given was good or bad until it is too late. It is difficult to learn from their own experience, difficult even to learn from others' experience. And because they will not know whether the advice was good until after a long period of time when it is too late, it is difficult for reputation mechanisms—one of the mechanisms by which incentives to provide good advice are given—to really work well.

These problems are compounded by perverse incentives. Asset managers, distributors and others in the financial markets, have an incentive to increase their profits by exploiting investor ignorance and living mildly off reputation. Certain misperceptions individuals have about a variety of risks are well-known and easy to exploit. One famous example of this is an insurance company that used to offer insurance against specific kinds of cancer, where the probability of getting that particular type is very low.

The insurance salesman would call on a client and say "Would you like your wife to be left without any money if you die of thyroid cancer?" They would describe how miserable death by thyroid cancer is and make it really very realistic. Then they would offer a policy worth \$100,000 for a premium of just \$1 per week. Since it sounds cheap and no-one wants their wife to suffer if they die from thyroid cancer, people would buy that. The point of course is that the insurance company was well aware that the probability of getting thyroid cancer is one in a very small number, much lower than the insurance premium being offered. The individual himself does not know the probability of a thyroid cancer. He just responds to the vision of his family distraught over his death. So the fact that individuals have difficulty in making probability judgements, judging their future lifetime needs, really makes them prey to those who want to take away their money.

It has become very fashionable to talk about the money at the bottom of the pyramid. There are several books about this, about the money that poor people have, and an awful lot of people in the financial markets are working to ensure they do not keep that money. They are working to mine that money out of the bottom of the pyramid by taking advantage of all kinds of lack of understanding of what is going on. The sub-prime mortgage crisis is a perfect example of this, which we will come back to.

The general point is that limited information, imperfect information, asymmetries of information, all give rise to enormous potential for conflicts of interest. And we have seen this repeatedly in the United States. If we have just one set of financial problems, one crisis, we say there is always going to be a rotten apple, there is always going to be something we could not foresee. But when you see company after company, every major auditing and accounting firm in the United States and almost every major bank repeatedly in trouble—the savings and loan debacles in the 1980's, the Enron and MCI-types scandals in the early 2000's, the sub-prime mortgage crisis in the 2007—the third major crisis in the United States in twenty years, you have to conclude that there is something systematically wrong. And these problems arise even in the presence of a reasonably good regulatory structure. In fact, part of the problem here is regulatory arbitrage.

The fall-out goes well beyond those directly involved in the transactions; to use the economist's jargon, there are 'very strong externalities'. The bad lending, the toxic mortgages in the United States have had global consequences.

Global fall-out from the sub-prime crisis

I was in Indonesia last August and their stock market was one of the worst hit in the world. Not because they had gambled on these toxic mortgages, but because credit markets around the world began to seize up, risk premiums started to rise, and when this happens their markets collapse because developing countries are often viewed to be a greater risk. To my mind all of this suggests the need for better and stronger regulation. It is interesting to compare and contrast what happened in the 1997 crisis and in 2007: it is a perfect example of hypocrisy.

In 1997, the IMF and the U.S. Treasury lectured East Asia, telling them they had poor regulation, that they should be more transparent. And they told these countries to raise their interest rates and not to engage in bail outs. In this current crisis what have we seen? The IMF and the U.S. Treasury warning we have to be careful about over reacting and excessive regulatory zeal. Instead of raising interest rates, which was the advice they gave in East Asia, they actually lowered interest rates. There have been gigantic bailouts—\$30 billion to Northern Rock. To put that into perspective, remember the huge bailouts in East Asia were \$20 billion and that was thought to be massive.

What is really underlying the credit squeeze is the problem of transparency. Nobody saw where these toxic mortgages were heading. It should have been obvious that the American economy was facing deep problems. Growth in the past five years has been highly dependent on real estate. Large numbers of individuals have taken out mortgages in excess of 80% of the value of their property and in many cases that value was artificially raised so that the real value ratio was more than 80%. Temporarily low "teaser" rates were offered to entice people which involve negative amortization, not even paying back all the interest that is due within the first two or three years. The mortgage brokers who originate these products would go to unsophisticated home owners and say, "don't worry about that fact that at the end of the year, the end of two years, you will be more in debt, because house prices are going to go up and you can just refinance your debt. It would be stupid not to take out this mortgage because prices are just going up and up and up."

It should have been clear that this is a pyramid scheme: prices cannot go up and up and up faster than the levels of income. People cannot continue to pay more and more of a fraction of their income. At some point there comes a limit, and that limit is 100% of income. Many people had indeed arrived at that 100% ratio. In fact, the problem should have been more evident because in the last seven years, median income in the United States has decreased. Most Americans today are worse off than they were seven years ago. When you see statistics about how well the American economy is doing, it is doing very well for Bill Gates, but it is not doing well for the vast majority of Americans who are seeing their real incomes decline. Forty seven million Americans have no health insurance. In this context, the notion that house prices for those with limited and middle incomes can continue to rise when real incomes are going down is clearly a fiction.

The implication of course is obvious. One of my predecessors as Chairman of the Council of Economic Advisors said: "that which is not sustainable will not be sustained". The question is

not whether the bubble would burst but when it would burst and how deep and long the resulting real estate crisis would be, what form intervention would take, and what would be the implications for the broader macro economy.

The reason I have dealt so long on this point is that the problems in the sub-prime mortgage market are an illustration of imperfections of information that make it so difficult for individuals to make decisions regarding their retirement, portfolio and savings.

The dangers of securitization

Let us look for a moment at the problem of securitization, which is a double-edged sword. In the beginning, people talked about the wonders of securitization and the fact that risk could be spread around the world. The downside of course is that risks *were* spread around the world. France, Australia and others were affected directly, many others were affected indirectly, but the impact on the U.S. was limited. However, diversification may spread risk but it does not solve systemic problems, in fact it gives rise to new systemic problems. In effect there are three problems with securitization, which had been pointed out previously, but which the financial markets in their enthusiasm ignored.

There are new problems of agency or of asymmetry of information. There are new problems of lack of transparency. There are new difficulties in negotiations. All of these have been manifested in the recent crisis. For example, in the past a bank would originate a mortgage and would then keep it. If it originated a bad mortgage, it would bear the consequences. It thus had an incentive to do proper risk analysis beforehand and make sure that there were no issues. If it turned out that the person to whom they had lent had a temporary difficulty, a strike or a recession, they could renegotiate the contract and restructure the loan.

Consider now what happens with securitization. The people who originate the mortgage get a commission on that mortgage, and therefore have an incentive to originate as many as possible and to try and persuade the buyer that the mortgage is better than it really is. In effect there is an incentive towards asymmetry of information, towards distorting information. The seller does not bear the consequences. The way the contracts are restructured means that in many cases when the problem arises the debt has been securitized, the asset is held by hundreds of people and it is virtually impossible to renegotiate. The result is that it is expected in the United States in the coming year that about 1.7 million Americans will lose their home.

In Europe and the rest of the world people see this as a major global financial problem, a credit squeeze. In the United States it is also a major social problem. As people lose their homes, a vicious circle of falling house prices begins that will extend the problem from the sub-prime mortgage market to those who are slightly better off. Another side of the problem is that these complex securities lack transparency and some suspect that that was one of the motivations behind them. They were designed to hide risky bad assets which would not have been allowed in portfolios or banks or pension funds. Through what might be called 'regulator arbitrage', they were hidden inside a more complex instrument, and in this way they could get away with it.

The critical question is, what were the financial institutions doing? Were they really creating products tailored to the needs of their customers? Or were they maximizing their own revenues and engaging in regulator arbitrage? I think the evidence points much more towards the latter.

We need a stronger regulatory framework

As I have said, the implication of all this is the need for stronger, better regulation. My own view is that regulations and laws limiting abuses and conflicts of interest need to be seen as pro-business. They will help restore the confidence of market participants and will help avoid some of the social distress that is occurring at the present time. The benefits of well-designed regulations far outweigh the costs. Among these are disclosure regulations and rules restricting the scope for conflicts of interests, mechanisms that can be implemented at relatively little cost.

In the face of these complexities and information imperfections, it is clear that the problem of deciding how much to save and how to allocate is extraordinarily difficult and beyond the ability of most individuals to solve optimally or rationally. This result is that individuals often rely on norms, modeling their choices on the behavior of others.

An important branch of economics talks about systematic biases in individual's behavior such as the status quo bias or biases associated with anchoring or framing. If you give people a choice between saving 5%, 10% or 15%, and you put the number 5 after 10 and 15, they will chose 10, if you put 15% first, they will chose 15. So how you frame the question affects the individual's choice. In a rational world that would never occur. Another bias is that individuals are systematically excessively myopic.

The consequence of this is that how employers frame decisions for their employees can have a very big effect on what decisions they make. That puts a very big onus on firms because whatever they do they are framing decisions and this will affect behavior. Key questions emerge from the findings in behavioral economics: How should these defaults be set? What is the appropriate framework for advice? What is the appropriate regulatory framework?

One way of thinking about these issues involves what I call the basic framework for retirement asset management. It begins by identifying key types of individuals based on easily observable characteristics such as family status, homeownership, employment status and wealth. By taking large amounts of data, we can identify various clusters of types which can be very helpful in revealing systematic patterns of behavior. We have identified four clusters for low-income individuals (Figure 1) and another four clusters for high-income individuals (Figure 2).

complex family structure	<p>CLUSTER 2 12,51% Over 45, married, with children, very low education</p> <p>Good earning capacity, but high expenses and very low saving ability. Moderate income streams (some households with more than one earner), but low accumulated wealth. Low financial knowledge, low participation to financial markets, the most ask advice High risk aversion, high replacement rate.</p>	<p>CLUSTER 4 15,89% Under 45, married with 1-2 children, high level education</p> <p>Moderate earning capacity, and saving ability. Many are sustaining extraordinary expenses Some financial wealth accumulated. Almost 1/3 own a business, many have a mortgage Only a half with relevant financial investments, the most ask advice but a good number of do-it-yourself investors Medium/low risk aversion, many insurance owners</p>
	<p>CLUSTER 1 12,18% Old (over 55), mostly alone, retired, low level</p> <p>Pensioners with very low saving ability. Living alone or in households with low income streams, who set aside a moderate amount of financial wealth, some of which has been inherited. Low financial knowledge, the most who have financial investments ask advice for their investments High risk aversion, high replacement rate, the most are averse to debts.</p>	<p>CLUSTER 3 13,15% Under 45, single, high level education</p> <p>Moderate/low earning capacity and low saving ability Low financial wealth accumulated; some non homeowners and some paying mortgages Low risk aversion, many do-it-yourself investors, but low participation to financial markets Over 1/3 are insurance owners, 50% are worried for the future when retired</p>
	Low Human Capital	High Human Capital

Figure 1: Low status households – generally with total household wealth (financial and real) below € 275,000.

Source: **Laura Marzorati**

Ability to Save and the Motivations for Saving: Evidence from the UniCredit Customers' Behaviour , PGAM Economic Research Trends in Savings and Wealth Working Paper n. 10/05

complex family structure	CLUSTER 6 <i>11,84%</i> Old, married, with children, retired, very low education <i>Good earning capacity (despite many are retired), very high saving ability</i> <i>Substantial wealth accumulated. Many own a business</i> <i>Good fin. knowledge, a few have multiple bank relations, the most have financial investments and ask advice</i> <i>Medium/high risk aversion, but substantial participation to financial markets</i>	CLUSTER 8 <i>11,26%</i> Middle aged, married with children, high level education <i>Very good earning capacity, moderate saving ability due to high expenses</i> <i>Substantial wealth accumulated/inherited. Over 2/3 own a business, many have a mortgage</i> <i>Good fin. knowledge, some multiple bank rel., the most have fin investments and ask advice</i> <i>Medium/low risk aversion, low replacement rate, many insurance and pension fund owners</i>
	CLUSTER 5 <i>11,86%</i> Old, mostly married, no children, retired, low level <i>Pensioners with high saving ability</i> <i>Still good earning capacity with substantial accumulated/inherited wealth</i> <i>Good fin. knowledge, a few have multiple bank relations, the most have financial investments and ask advice</i> <i>Medium/high risk aversion, but substantial participation to financial markets.</i> <i>High replacement rate</i>	CLUSTER 7 <i>11,31%</i> Under 55, single, high level education <i>Good earning capacity, high saving ability</i> <i>Substantial wealth accumulated. Almost 2/3 own a business</i> <i>Good fin. knowledge, multiple bank relations, the most have financial investments, 1/3 are do-it-yourself</i> <i>Low replacement rate, many insurance owners</i>
	Low Human Capital	High Human Capital

Figure 2 : High status households – generally with total wealth (financial and real) above € 215,000

Source: **Laura Marzorati**

Ability to Save and the Motivations for Saving: Evidence from the UniCredit Customers' Behaviour , PGAM Economic Research, Trends in Savings and Wealth Working Paper n. 10/05

Of course, it is important to give individuals choice. One reason is that there are information asymmetries, and individuals have more information about themselves than others do. But another reason is that individuals value their right to choose. So the question is to design choice within each prototype, and to allow for wide differences, for instance, in their willingness to take risks. Individuals will presumably have some perceptions about whether they are more risk averse or less risk averse, and this can actually be tested against other aspects of their behavior.

The first challenge therefore is to frame the set of choices and defaults. One approach is to give people binary or triple choices: here is the prototype, if you are less risk-averse than normal you might want to take this portfolio, if you are more risk adverse, you might want to take that portfolio. Another approach uses dials, with a default setting at, say, 50. But if you view yourself as very risk averse, you might turn the dial all the way in one direction, and if you are not very risk averse, you can set the dial in the other direction. These are two alternative approaches that need to be explored.

We can test the reasonableness of the prototypes by simulation, using representative utility functions which reflect commonly observed degrees of risk aversion. In this way we can measure how given observed risk characteristics of human, financial and housing capital lead to different patterns of savings and portfolio allocation for different prototypes over time. We can also compare what happens to these people in the simulation model against what is actually observed. Do those who have invested more in housing or those with riskier human capital systematically invest more or less of their financial assets in equity? This is part of a research strategy which is ongoing and will take a considerable length of time.

Regulators need to address the challenges just described. The first step is to improve the quality of information. Market participants often have an incentive to provide distorted or at best incomplete information and it is important for this to be counter-balanced. Regulators can play an important role in tightening up the information requirements, for instance, by imposing minimum disclosure criteria, restricting conflicts of interest, identifying what credentials “advisors” must have to provide advice, and ensuring that they apply a risk-based framework. The challenge is to balance simplicity with meeting the complexities of the individuals’ needs and the differences among individuals.

One of the things that I think they should do is identify guidelines for unacceptable practices, such as high transaction costs or multiple fund schemes. One practice that has been identified is that some companies start many mutual funds knowing randomly that some are going to do very well and some are not going to do so well. Later they discontinue the ones that perform badly and keep only the best so that they can say “look at our fund, it has done this well for ten years in a row”. In reality, it is pure luck that it has done well for ten years in a row, but they do not tell you that, they do not give you the full picture, they just say look at this one fund. This is a deceptive practice that ought to be curtailed.

Other practices include deceptive advertising, excessive investment in company stock, or insufficient diversification. But while the regulators can do something about some of the worst abuses, they can do little about the fundamental problem of inappropriate advice, especially when certain precepts have come to be well accepted. Firms have an incentive to play into conventional wisdom or common prejudices. If the conventional wisdom holds that individuals as they grow old should hold a larger fraction of their portfolio in bonds, then a firm that caters to that belief is likely to do better—at least in the short run—than one that runs counter to that wisdom. I think it is the responsibility of asset managers and distributors to meet the challenge of supporting households in these complex choices.

Responsible behavior is good business

Very briefly, the strategy for developing retirement products should look like this. First, identify the major ways in which individuals differ from each other that are relevant to the investment savings decision. Some of these have been discussed above. Second, form a set of key prototypes, the smallest number that still captures a large fraction of the variability across individuals. Earlier I identified several of the critical factors; empirical evidence on savings and portfolio behavior of different groups would verify that these are indeed important determinants of behavior. Third, build choice into each prototype to take into account the different levels of willingness to take risks and explore the key variations of choice within them.

On the basis of this information we can frame a set of choices and a set of defaults looking for the minimum numbers of products which effectively spans the range of desired combinations. In the traditional mean variance model “dialing up” simply means choosing a fraction of financial wealth invested in the “market” portfolio of equities; the asset manager simply provides two funds, one with the minimum variance and one representing the “market”. Simulation exercises can be conducted to identify how close to the “efficient” frontier one can go given a range of prototypes, with say 5 or 6 well chosen funds. I think it is likely that we may want to provide what are sometimes called life cycle products, which automatically age in ways that are appropriate for individuals of different prototypes. For instance, they might reflect changes to the nature of human capital as people age, an aspect I described above.

I would argue that it makes good business sense to behave responsibly. Individuals can understand what is wrong with some of the maxims that have been standard fare in the industry if those errors are explained well and simply, especially when there are other responsible intermediaries between the worker and the asset manager/distributor such as firms and unions.

To conclude, individuals today face a formidable task in making savings and investment decisions for retirement. There is an alternative framework that will help them make better, more informed decisions and still allow choice and there is growing support for these alternatives. Asset managers and distributors need to develop products and ways of providing advice and guidance that help individuals to make better choices.

Meanwhile regulators need to find better ways of regulating. However, even with the best of regulation there will be problems at the macroeconomic, systemic and individual levels. For individuals to know how to better manage their retirement wealth, for asset managers/distributors as well as regulators to do a better job of what they should be doing, there is a need for more research, both empirical and theoretical.