

DFA AUSTRALIA LTD

Submission to the Financial System Inquiry 2014

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The goal of the system
should be to provide an
adequate level of
retirement
income
for each
Australian.



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Executive Summary

Dimensional's philosophy of investing is based on rigorous empirical and academic research and more than 30 years' experience structuring and implementing investment solutions to address global investors' needs. Dimensional continues to expand its thinking to include retirement planning and investment ideas developed by Nobel laureate and Distinguished Professor of Finance at the MIT Sloan School of Management Robert Merton.

Our view is that the superannuation goal of providing retirement income should be framed in terms of each individual fund member. As each individual is unique, it makes sense that superannuation be customised to individual needs and circumstances.

Dimensional suggests a priority should be to set a clearly defined objective for superannuation. In this submission, we suggest an objective function and nominate five criteria to determine whether superannuation can effectively deliver on that objective. We also set out a philosophy for the next generation of superannuation that we believe will deliver individuals a more dependable inflation-protected income in retirement.

We welcome the new focus on income in the discussions around superannuation and the implications that has for the products and services that the industry will create.

Introduction

Dimensional was established in 1981. We are a low-fee wholesale funds management firm with approx. \$375 billion in assets under management globally, including \$26 billion on behalf of Australian and New Zealand investors.

DFA Australia Limited is the author of this submission (AFS Licence No. 238093). Dimensional's parent company is headquartered in Austin, Texas with offices in Santa Monica, London, Sydney, Tokyo, Singapore, Vancouver, Toronto, Amsterdam, Berlin and Melbourne.

Dimensional's philosophy of investing is based on rigorous empirical and academic research and more than thirty years' experience structuring and implementing investment solutions to address global investors' needs. Three core beliefs form the basis of our investment philosophy¹:

1. Public capital markets work

In liquid and competitive markets, market prices reflect all available information about fundamental values and the aggregate risk and return expectations of all market participants. As a result, Dimensional uses information in market prices to identify reliable dimensions of expected returns—market, size, relative price, and expected profitability—and to structure and implement strategies along those dimensions.

2. Diversification is essential

Diversification helps reduce uncertainty, manage risk, and increase the reliability of outcomes. Furthermore, diversification adds value by providing flexibility, which in turn allows for more effective management and trading of a portfolio.

3. Managing trade-offs add value

Investing involves trading off risks and costs with expected returns. By identifying and focusing on the trade-offs that matter for performance, we can add value by targeting market premiums efficiently and continuously, reducing the costs associated with turnover, and implementing a flexible trading strategy that enables opportunistic execution and minimises costs.

Recently, Dimensional expanded its thinking around retirement influenced by Nobel laureate and Distinguished Professor of Finance at the MIT Sloan School of Management Robert Merton. Now the Resident Scientist at Dimensional, Professor Merton has succeeded, after 30 years of work, in developing a process to maximise the probability of individual retirees receiving a satisfactory income in retirement.

¹ There is a body of academic evidence that supports these beliefs. Four key papers include:

1. Banz, R., "The Relationship between Return and Market Value of Common Stocks", *Journal of Financial Economics*, vol 9, 1981, 3-18.
2. Fama, E.F. and K.R. French, "The Cross-Section of Expected Stock Returns", *Journal of Finance*, vol 47, 1992, 427-465; and
3. Fama, E.F. and K.R. French, "Value versus Growth: The International Evidence", *Journal of Finance*, vol 53, 1998, 1975-1999.
4. Fama, E.F. and K.R. French, "A Five-Factor Empirical Asset Pricing Model" – Draft 2013.

Dimensional's Approach

In this Submission to the Financial Services Inquiry (FSI), Dimensional will focus on the matters where we believe we can add value and have researched across the globe. Through our evidence-based approach to investment management we believe that public capital markets work, that diversification is essential, and that actively managing trade-offs in implementation adds value for our clients. With these values in mind, we will specifically address the following Financial Services Inquiry Terms of Reference topics:

3. The Inquiry will identify and consider the emerging opportunities and challenges that are likely to drive further change in the global and domestic financial system, including:
 - 3.1 the role and impact of new technologies, market innovations and changing consumer preferences and demography;
 - 3.3. changes in the way Australia sources and distributes capital, including the intermediation of savings through banks, non-bank financial institutions, insurance companies, superannuation funds and capital markets;
4. The Inquiry will recommend policy options that:
 - 4.3 meet the needs of users with appropriate financial products and services;
 - 4.4 create an environment conducive to dynamic and innovative financial service providers;

Background

With Australia's total superannuation assets² now larger than its total GDP³, it is appropriate for the FSI to review the intermediation role that superannuation funds play and to ensure these funds meet the needs of superannuation members and the policy aims of the Federal Government. It is the nexus of individual needs and economy-wide constraints that Dimensional would like to comment upon.

Our view is that the goal of providing retirement income should be framed in terms of each individual's goals. As each individual is unique, it makes sense that superannuation be customised to individual needs and circumstances. While this has long been considered the holy grail of retirement policy, it has not been considered possible. However, Professor Merton has shown that with significant advances in computing technologies and data management in recent years, an individual approach to retirement outcomes is achievable.

2 APRA Quarterly Superannuation Performance (interim edition) December 2013 (issued 20 February 2014), page 6

3 ABS – 5206.0 – Australian National Accounts: National Income, Expenditure and Product, Dec 2013

The Purpose of Superannuation

While governments have not declared in legislation the fundamental purpose of superannuation, a report prepared by the Charter Group in July 2013 on superannuation adequacy and sustainability suggested these objectives:

1. to provide an adequate level of retirement income;
2. to relieve pressure on the Age Pension; and
3. to increase national savings, creating a pool of patient capital to be invested as decided by fiduciary trustees.⁴

We support this summary, and would add that in the first point the focus should be the individual. In this way the objective function of superannuation is both community-based and individually focussed. We would therefore amend the first objective:

1. to provide an adequate level of retirement income for **each** Australian (our emphasis)
2. to relieve pressure on the Age Pension; and
3. to increase national savings, creating a pool of patient capital to be invested as decided by fiduciary trustees.⁴

⁴ A Super Charter: Fewer Changes, Better Outcomes, The Australian Government, The Treasury, July 2013, P 21

Criteria for Success in Superannuation

Professor Merton has been active in academia on the critical issues in managing assets to provide retirement income and has written widely on the issues around the concept of lifecycle finance.

Of particular interest is the definition of success in pensions (or superannuation in Australia). To be seen as successful, a fiduciary needs to provide each individual/member with an inflation-protected income in retirement for their whole lives. This is a significant and material goal for members of superannuation funds. Significant also is the description of the goal—an income stream. It is not a pot of wealth that is the target, rather an income stream from which the participant will fund their lifestyle in retirement. It is understood that the ability to fund retirement requires a sum of money, but the current multiplicity of aims of superannuation funds around wealth maximisation or risk management of volatility is not the same as managing assets to achieve an income stream.

Having established the need for income rather than a lump sum, Professor Merton says a second criteria is that members want income streams that equate to what they were used to receiving in the latter parts of their working lives. This amount is generally termed a replacement ratio (ie: the level of income needed to be replaced after retirement to ensure one achieves the same standard of living as in one's final working years).

This simple approach allows fiduciaries to begin to build individual income goals for members.

The third criteria for success is built on the view that most people do not take an interest in their superannuation savings. Better engagement has been the catch-cry for government and industry for some time, but we should recognise that the majority of people will want to have little to do with their superannuation savings until very late in their working life. This means we should build a superannuation default system that manages the achievement of each member's goal on the assumption that engagement will be minimal.

In other words, the system design should be effective for members with no input from them. However if members do engage, they should be provided with meaningful information and choices that will assist them in achieving a successful retirement.

This does not preclude superannuation funds from aiming to communicate and engage with their members more effectively. Rather, the default systems should recognise that most people find super opaque, complex and distant from their immediate lives. If this is the case, our well developed and successful trustee model of superannuation should adequately serve members' best interests through the implementation of these criteria and principles.

The fourth criteria for success is the need to incorporate the concept of human capital into the asset allocation strategy. Human capital refers to the stock of wealth that individuals have in their future contributions to their superannuation savings. In Australia, we are fortunate that this is a mandated contribution flow. For all superannuation members this is a significant sum of money, however you calculate it. Professor Merton's concern is that in DC schemes around the world, this asset is not explicitly taken into account when determining appropriate asset allocation settings.

Human capital is akin to a fixed interest asset. It is a consistent (9.25% moving to 12% of members salary) cashflow over the course of each person's working career. So a 26-year-old's current contributions and balance in super will be dwarfed by their future contribution (their human capital). If human capital is ignored in the default fund structures, the person's superannuation account would most likely be invested 70% in growth and 30% in defensive assets. If human capital is a fixed interest or defensive asset, and it dwarfs the total contributions in their account, it is not in the person's best interest to allocate any investible assets in fixed interest in their superannuation fund when they are young.

Not considering human capital in the allocation process will lead to sub-optimal outcomes for individuals.

The final criteria for success recognises the increasing power and role of computing and software intellectual property. Many of the superannuation administration systems and platforms came about with the creation of mandatory superannuation more than two decades ago. Our systems and connectivity have improved markedly since then, and the overall cost of computing speed has reduced dramatically. We are in a situation to exploit these gains, and the

default fund framework is ideally placed to ensure that the benefits are spread to assist the majority of members. So this criteria is fulfilled when the available data provided through fund membership is used to improve the likelihood of a successful retirement for all members. It implies a level of customisation for members can be achieved through the use of this data as it recognises different skills, salaries, gender, child rearing patterns, career changes, retraining and earnings capacity. Data is at the heart of all financial services organisations, and the philosophy that Dimensional is proposing uses that same data to help members achieve their goals of income in retirement.

These criteria create a different view of the role of superannuation. Fulfilling the criteria will require changes in philosophy, approach and support of the superannuation industry. We will now discuss the changes required.

The Next Generation Superannuation Approach

Dimensional is advocating a new approach for superannuation funds and trustees. The approach takes into account the ability and desire to help people achieve their individual goals. The key risk to be managed therefore is the risk of not achieving the goal.

The goal for a superannuation fund is to provide every member of the fund with an inflation-protected satisfactory income in retirement for life. This means measures such as standard deviations and portfolio volatility, which currently need to be reported on MySuper dashboards, are relevant only to investment professionals. They are complex terms that are not understood by consumers, and should not be delivered to members with the expectation that members will understand their meaning and relevance in the selection of a fund or a choice of an investment option.

The consumers of superannuation are focused on their own goals and the achievement of those goals. Targeting retirement income implies that the main risk to be managed will be the risk of not realising the targeted level of income. Members should be exposed to (investment) risk only insofar as this increases the estimated probability of achieving their targeted income.

Consequently, we believe that exposure to equity risk should be reduced when it is no longer needed to meet that target which may or may not coincide with their age. We also believe that shortfall risk

should be managed by applying liability-driven investment management techniques that aim to match a member's baseline income requirements, thereby seeking to manage interest rate risk. The reduction of equity exposure and asset/liability matching techniques have been referred to as lifecycling or lifecycle investing. Most users of these techniques use just one factor—age—as the determinant of asset allocation for a cohort of members of a superannuation fund. Our approach uses age and other factors, which allows a fund trustee to create individual goals and manage members' assets in a way that improves the estimated probability of good retirement outcomes for all members.

It is important to acknowledge the strength of the pooled default fund approach in the Australian superannuation industry. It harvests scale benefits for members and allows trustees to pass on these benefits to members in the form of lower fees. The key difference we are advocating is that mass customisation in a default fund is possible and preferable to a one-size-fits all approach. The continuing improvements in technology now allow funds to mass customise their default funds, and manage members' accounts more precisely.

If income is the goal, funds should be required to put an income projection on fund statements. There is increasing support within the industry for this to occur, but there are regulatory issues to be removed before this initiative can be implemented.



In addition, the industry needs to agree on how these numbers will be created and calculated. The US Department of Labor has recently created guidelines around the Lifetime Income Calculator⁵. The calculator itself can be found at <http://www.askebsa.dol.gov/lia/home>. While these results are obviously based on US conditions and laws, the guidelines are clearly set out. With this example, Australia should develop its own criteria to allow superannuation funds to create simple income benefit projections on member statements. A number of regulations would need to be amended for this to be possible.

The next generation solution needs a seamless transition from pre-retirement saving to post-retirement spending, with the resultant investment management skills being applied for each Australian.

CONCLUSION

Dimensional hopes that the approach Professor Merton suggests will form the basis of long-term reform in the superannuation sector. This, along with the proper definition of the objective of superannuation, and an understanding that many Australians will never engage with their superannuation until it is too late to influence the outcome, should be the catalyst for continued innovation in the superannuation industry. Dimensional would be happy to support the Financial Services Inquiry with a comprehensive review of this approach, or in other ways as suggested by the Inquiry staff.

⁵ <http://www.dol.gov/ebsa/regs/lifetimeincomecalculator.html>

The Future of Retirement Planning

PROFESSOR ROBERT C. MERTON, Resident Scientist, Dimensional Fund Advisors

Robert C. Merton is an Advisory Board member of Dimensional SmartNest LLC, parent of Dimensional SmartNest (US) LLC.

THE DC DILEMMA

The use of defined contribution (DC) plans has become the default strategy in Australia since the introduction of compulsory superannuation two decades ago. In the US and Europe, the embrace of DC has been more recent.

Although DC plans solve the problem for trustees by making costs predictable and taking risk off the balance sheet, they place a tremendous burden of complex decision-making on the user.

For example, assume the objective function is that employees hope to maintain the same standard of living in their retirement that they enjoyed in the latter part of their work lives. If that is the goal, then a defined benefit type of payout is quite attractive.

In a DC scenario, however, a 45-year-old will have contributions coming in for 20 years or more and a 35-year-old for 30 years prior to retirement, and each will need to decide the size of these contributions, as well as the types of investments to make with these funds, in order ultimately to provide the required standard of living at the age of 65.

Finding and executing a dynamic portfolio strategy to achieve such a goal is an extremely complex problem, even for the best financial minds. Yet, through the use of DC plans, the financial industry is, in effect, asking employees of all sorts—from brain surgeons, to teachers, to assembly line workers—to solve just such a problem.

The situation is not unlike that of being a surgical patient who, while being wheeled into the operating room, has the surgeon lean down and say, “I can use anywhere from seven to 17 sutures to close you

up. Tell me whatever number you think is best, and that is what I will do.” Not only is that a frightening decision for a patient to be faced with, but it is one that most patients are, at best, poorly qualified to make.

NEXT GENERATION RETIREMENT PLANNING

If one of the prospects that most frightens individuals is the possibility of outliving their assets, then it is appropriate to aim for establishing a standard of living in retirement that approximates the standard of living individuals enjoyed in the latter part of their careers.

Furthermore, judging by the behaviour of participants, most people don’t enjoy financial planning. After all, most participants don’t change their asset allocations after first establishing them. So if individuals are both afraid of outliving assets and disinclined to do financial planning, how should the next generation of plans be designed?

First, if the objective function is an appropriate standard of living in retirement, then the plan should be a system that integrates health care, housing, and inflation-protected annuities for general consumption.

Furthermore, in order to receive a real annuity at the time of retirement, individuals must expect to pay real prices. Thus, during the accumulation period, real annuity mark-to-market prices should be used. But where do we find such prices?

The answer is we can approximate them. Insurers, in particular, have the expertise to develop them. What I suggest is that, rather than establishing arbitrary interest rates for the long run, plan developers should use actual market prices derived from actual annuities and mortality experience and mark them to market with respect to real interest rates and not to arbitrary projections.

For example, if a plan is based on a 4% interest rate and the actual rate turns out to be 2%, then retirees will not have the amount of money they had counted on.

In addition, plans need to be portable. They need to be protected against all credit risks, or at least against the credit risk of the employer. Plans also need a certain degree of robustness, and that robustness must be appropriate to the people who use them.

If I am designing a Formula 1 race car, I can assume that it will be driven by a trained and experienced Formula 1 driver, so I can build in a high degree of precision because I know the car will not be misused in any way.

But if I am designing a car that the rest of us drive every day, I have to be more concerned about robustness than a sophisticated level of precision. When designing a car for the rest of us, I have to assume that the owner will sometimes forget to change the oil or will sometimes bang the tyres into the kerb. I have to assume that it will be misused to some degree, so its design must be robust enough to withstand less than optimal behaviour and yet still provide the intended outcomes.

In applying this analogy to financial plan design, one probably should not assume users will revise their savings rates in the optimal or recommended fashion.

QUALITIES OF PLAN DESIGN: SIMPLICITY AND CONSTANCY

What I have in mind is a DC plan that satisfies the goals of employers while providing the outcomes of DB plans, which do such a good job of meeting the needs of retirees.

Users should be given choices, but the choices should be ones that are meaningful to them, not the choices that are typically given today, such as what mixture of equities and debt to include in a portfolio.

To use the car analogy again, we should be designing plans that let people make their decisions based on a car's kilometres per litre, a factor that makes sense to them, rather than an engine's compression ratio. We need to design products based on questions that most people find reasonable, such as: 'What standard of living do you desire in retirement? What standard of living are

you willing to accept? What contribution or savings rate are you willing or able to make?' Such questions embed the trade-off between consumption during work life and consumption in retirement, and they make more sense to people than questions about asset allocation—or compression ratios.

Besides creating a simple design with only a handful of choices—but choices that are relevant—we need a design that does not change, at least in the way that users interact with it. An unchanging design leads to tools that people will be more likely to learn and use. In fact, a design that is unchanging is almost as important as a design that is simple.

For example, I have been driving for almost 50 years, and during that time the steering wheel in cars has not changed, even though automobile designers could have replaced steering wheels with joysticks. They have been careful to keep the car familiar so that users like me do not have to relearn how to drive each time we buy a new car.

The design of the accelerator is also emblematic of this constancy in design. Depressing and releasing the accelerator requires the same action and provides the same tactile experience that it did 50 years ago. But the technology triggered by the accelerator is entirely different today.

The lesson is that something simple and consistent is easier for people to learn and remember than something complicated and changing. The goal is to be innovative without disturbing the user's experience because planning for retirement is a complicated matter that should not be made more difficult by providing tools that are difficult to use.

Let me return to my automobile analogy. Driving a car is a complex problem. If I wrote down all the information needed to operate a car so that a driver could go from the city to the airport, I would have a tome full of instructions. It would have to explain the use of the wheel, the gearshift, the accelerator, the brakes, the mirrors, the turn signals, and more. Just getting the car in motion and onto a busy thoroughfare is a complicated coordination problem. Getting to the airport is another level of complexity altogether. And the journey itself is filled with uncertainties.

But what if the driver is told at the beginning of the drive to the airport: "You must aim the car in the right direction at the start of your trip. After that, you cannot turn the wheel." Knowing the complexities

involved in the trip ahead, such constraints make it almost inconceivable that the driver will reach the destination in a satisfactory manner.

And yet most of the models that are used to develop DC plans implicitly assume that numerous decisions are fixed. That is not an optimal design at all.

We must, therefore, design a system that is user friendly, one that people, given time, can become familiar with and thus willing to use—a system in which the designers do the heavy lifting so that users need only make lifestyle decisions that they understand and that the system then translates into the investment actions needed to achieve the users' goals.

The optimal strategies should guide users to arrive at their target retirement goals smoothly. The system will maximise the prospects of achieving a desired standard of living subject to a risk constraint of a minimum life income amount in retirement.

However, optimisation is not simply about ensuring a desired level of retirement income. It is also about the efficiency or effectiveness in achieving that goal. Just as it is possible to save too little for retirement, it is also possible to save too much and face the regret of forgone consumption opportunities during the many years before retirement. Despite these complexities, I am optimistic that such systems are doable, not with futuristic tools, but with technology and tools that are available today.

How do I think this next generation of defined contribution plans will be developed? For one thing, I foresee them developing as corporate plans through plan sponsors because, although the defined benefit plans are a legacy, I believe employers will continue to provide retirement assistance in some manner.

One important role employers can play is that of gatekeepers. Despite the doubts that are sometimes expressed by employees about their employers, when it comes to retirement planning and life-cycle products, people tend to trust their employers far more than they do third-party financial service providers. And employers, despite the criticism sometimes aimed at them, generally want the best for their employees. So, employers can perform a crucial function as reliable gatekeepers when it comes to providing retirement products for their employees.

TECHNOLOGY AND TOOLS FOR CREATING PRODUCTS

The paradox of the type of system I have just described is that the simpler and easier it is for retirees to use, the more complex it is for its producer.

The dynamic trading and risk assessment needed for the next-generation plan require sophisticated models, tools, and trading capability, none of which needs to be explained to the individual.

Interestingly, the mean-variance portfolio model is still the core of most professional investment management models, even for sophisticated institutions. Certainly, it has been updated since its first use in the 1950s, but it is a tribute to Harry Markowitz and William Sharpe that it is still at the core of thinking about risk and return in practice.

But to design the next generation of retirement products, designers must consider explicitly some of the other dimensions of risk.

HUMAN CAPITAL

The first dimension is human capital, and the response to include it may seem obvious. But it becomes less obvious how it should be done the more closely it is observed.

For example, assume that a university professor and a stockbroker have the same present value of their human capital and the same financial capital. Their risk tolerance is also the same. When deciding which of the two should hold more stocks in their portfolio, most people intuitively respond that the stockbroker should. After all, stockbrokers typically know a lot more about stocks than professors do.

But if we consider their situations more closely, we realise that the stockbroker's human capital is far more sensitive to the stock market than the professor's.

Therefore, to achieve the same total wealth risk position, the stockbroker should actually put less of his or her financial wealth into stocks.

Most models today take into account the value of human capital, but few consider the risk of human capital or how human capital is related to other assets, and that situation needs to change.

WEALTH VERSUS SUSTAINABLE INCOME

The second dimension is the use of wealth as a measure of economic welfare.

To illustrate, consider two alternative environments faced by the individual: One has assets worth \$10 million; the other has assets worth \$5 million. The environment with \$10 million can earn an annual riskless real rate of 1%; the one with \$5 million can earn an annual riskless real rate of 10%. Which environment is preferable?

Of course, if all wealth is to be consumed immediately, the \$10 million alternative is obviously better. At the other extreme, suppose the plan is to consume the same amount in perpetuity. A few simple calculations reveal that the \$5 million portfolio will produce a perpetual annual real income of \$500,000 and that the \$10 million portfolio will produce only \$100,000. So, with that time horizon for consumption, the \$5 million environment is equally obviously preferable.

The “crossover” time horizon for preference between the two is at about 10 years.

Thus, we see that wealth alone is not sufficient to measure economic welfare.

How many advice engines, even sophisticated ones, take this dimension of a changing investment opportunity environment into account? Many such engines quote an annuity (i.e., an income amount) as an end goal, but in doing so they take an estimated wealth amount and simply apply the annuity formula with a fixed interest rate to it, as if there were no uncertainty about future interest rates.

In other words, they do not distinguish between standard of living and wealth as the objective. Sustainable income flow, not the stock of wealth, is the objective that counts for retirement planning.

Imagine a 45-year-old who is thinking in terms of a deferred lifetime annuity that starts at age 65. The safe, risk-free asset in terms of the objective function is an inflation-protected lifetime annuity that starts payouts in 20 years. If interest rates move a little bit, what happens to the value of that deferred real annuity? It changes a lot.

If I report the risk-free asset the way typical superannuation accounts are reported—namely as current wealth—the variation reported in wealth every month will be tremendous. But if I report it in annuity (or lifetime income) units, it is stable as a rock.

“The lesson is that something simple and consistent is easier for people to learn and remember than something complicated and changing.”

How plans are framed and how their values are reported (wealth versus annuity income units) is thus not trivial. The proper unit of account selected is essential for conveying what is risky and what is not.

PRE-PACKAGED LIQUIDITY

Derivative securities can be designed to replicate the payoffs from dynamic trading strategies in a retirement plan. This is done by, in effect, running the Black-Scholes derivation of option pricing “backwards”.

Thus, instead of finding a dynamic trading strategy to replicate the payout of a derivative, the financial services firm creates a derivative that replicates the dynamic strategy desired and then issues that derivative as a prepaid liquidity and execution contract for implementing the strategy.

As an example, the dynamic trading strategy for which such pre-packaged trading liquidity can be created might be a systematic plan for changing the balance between equity and debt holdings in a prescribed way over time.

HOUSING RISK

Housing and housing risk is another important dimension, and reverse mortgages are entirely pertinent to this topic. If one is trying to lock in a standard of living for life, owning the house he or she lives in is the perfect hedge.

In implementing this aspect of the retirement solution, a reverse mortgage provides an importantly useful tool. A reverse mortgage strips out that part of the value of a house not needed for retirement housing consumption without putting the user at any leveraged risk with respect to the consumption of that house.

It is a practical way to decompose a complex asset and use the value to enhance one’s standard of living in retirement. It can also be a far more efficient

way of creating a bequest than holding onto a house and leaving it to heirs. After all, one does not have to be an expert to know that it is probably far from optimal bequest policy, from the point of view of the heirs' utility, to receive the value of the house as a legacy at some uncertain time in the future—perhaps next year, perhaps in 30 years. I am hopeful that this market will continue to grow rapidly in size and efficiency.

BEHAVIOURAL FINANCE AND REGRET INSURANCE

For those who believe in its findings, behavioural finance also belongs in the design of life-cycle products.

As an example, consider loss aversion, or fear of regret: It appears that loss aversion affects investors' choices in a dysfunctional way. It inhibits them from doing what is in their best interests.

How might we mitigate this problem? Is it possible to create a new financial product, called "regret insurance?" If such a thing is possible, what would it look like?

Consider the following scenario. Assume that a person is broadly invested in the stock market but, for some rational reason, decides to sell. The investor, however, fears that immediately after she sells, the market values will rise. She is frozen by her fear of regret, the regret of selling too low and missing an opportunity to enhance her assets.

Fortunately, she can mitigate this situation by purchasing regret insurance. In this case, she buys a policy that guarantees the sale of her stock portfolio at its highest price during the following two years. After two years pass, the investor and the insurer will examine the daily closing price for the portfolio, and the insurer will buy the portfolio for its highest daily closing price during the two years.

Likewise, a potential buyer of stocks may fear that prices will fall after the purchase and that he will miss out on better prices. To mitigate his regret, he purchases an insurance policy that allows him to buy the market at the lowest price recorded during the previous two years.

The learning curve experiences of nearly three decades of trading, creating, pricing, and hedging these types of securities are in place for someone entering the retirement solutions business. It is simply a matter of using market-proven technology in a way that it is not now being used.

"Sustainable income flow, not the stock of wealth, is the objective that counts for retirement planning."

CONCLUDING ILLUSTRATION

One can see from the previous example how the identified dysfunctional financial behaviour induced by regret might be offset by the introduction of regret insurance.

And if successful, the impact of that cognitive dysfunction on an individual's behaviour and on equilibrium asset prices can be offset. Note that this change occurs not because of "corrective" education or other means of modifying the individual's internal behavioural makeup but, instead, because an external means is introduced that causes the "net" behaviour of the individual to be "as if" such a correction had taken place.

I want to close with a personal, real-world example that illustrates the same dynamics of interplay between the cognitive dissonance of the individual and the corrective effect of the creation and implementation of a financial product or service designed to offset the distortions in financial behaviour that would otherwise be obtained, in this case with respect to efficient refinancing of housing mortgages, instead of regret.

In 1999, I took out a mortgage on my apartment, although I don't remember what the interest rate was. Three years later, the same broker who handled my mortgage called me and offered to reduce my mortgage payments by \$400 a month.

The offer sounded too good to be true, so I asked what the closing costs would be. He replied that the lender would cover all the closing costs. I then surmised that there must be an embedded option to refinance in my mortgage and that now the lender was trying to get that option out of the mortgage by its generous refinance offer. But the broker assured me that the new mortgage would give me the identical right to refinance whenever I wanted. Furthermore, the lender was not extending the payment period, and all the other terms of the old mortgage would remain intact, except that I would now be paying \$400 less per month.

Even though the deal sounded too good to be true, he convinced me that it was on the level, so I agreed to the refinancing. He came to my office, we signed and he notarised the contract (without my attorney being involved), and the deal has been just as beneficial as he had said.

My guess is that the broker had been given incentives to monitor mortgages like mine for possible refinancing because if he did not get to me, a competitor would. Better to cannibalise your own business by pursuing refinancing than to have the business taken away altogether. Furthermore, my mortgage was probably sold into the capital markets, so his employer, as the originator, would not lose. Certainly, this supposition does not go counter to the way the world works, and thus I ended up being a beneficiary of the competition of the system.

The point of my story is that I turned out to be an excellent illustration of behavioural finance in action. After all, how can someone who does not know the interest rate on his mortgage determine whether he should optimally refinance it?

But because of the way the market has developed, the same company that gave me the mortgage gave me a better deal at no cost. I thus ended up behaving like Rational Man in refinancing my mortgage but not because I became “educated” about optimal refinancing models (which I already knew), learned what my interest rate was (which I still do not know), and then optimally exercised.

Instead, innovation of financial services together with technology for low transaction costs and market competition allowed me to act “as if” I had. In the process, capital market prices for mortgages were being driven closer to those predicted by the efficient market hypothesis of neo-classical finance.

The next generation of retirement products will surely be designed to accommodate and offset such typically suboptimal human behaviour.

*This is an edited extract of an article
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