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David Blake

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How to use behavioural economics to improve the life cycle savings-consumption balance

David Blake

Pensions Institute
Cass Business School
City, University of London

d.blake@city.ac.uk

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Abstract

We show how nudges can be used both to encourage people to save enough to provide a decent standard of living in retirement and to draw down their accumulated pension fund to maximize retirement spending, without the risk of running out of money. Networks can help too, particularly employer-based networks.

JEL code: D91

1.   Introduction

Most people are not rational life cycle financial planners. They face behavioural barriers and are subject to behavioural biases which prevent them behaving optimally over their lifetimes. Behavioural economics can help overcome these barriers. This has been shown to be the case in the accumulation phase of the life cycle when people are saving up for retirement: SMART (save more tomorrow) plans[1] have become very popular in the US and elsewhere, for example. We show that it might also be the case in the decumulation phase – when people have retired and they are drawing down their accumulated assets – if they use SPEEDOMETER (spend optimally throughout retirement) plans.[2] Both SMART plans and SPEEDOMETER plans rely on nudges to move people towards behaving optimally. Networks can help too, particularly employer-based networks. One potentially interesting way to implement these plans is to use a life-cycle fund as part of a corporate platform.

2.   Most people are not rational life cycle financial planners

A rational life cycle financial plan requires people to accurately forecast: total career income, total available retirement resources, asset returns, interest rates, tax rates, inflation, their longevity or life expectancy, and their medical and other health costs. Most people do not have the skills to do this. The plan would also require people to have the commitment to start and maintain a very long-term savings and investment programme. Many people do not have the necessary commitment to do this either. This is because of behavioural barriers and biases.

3.   Identifying behavioural barriers and biases

We need to recognize that, in reality, individual decisions are subject to:

- **Bounded rationality**: Certain types of problems are too complex for individuals to solve on their own. An optimal life-cycle financial plan is a clear example of this. One reason for this is that many people have a poor sense of the 'time dimension' of their lives. Such people can think about events that are coming up in a few weeks' or months' time and plan for these, such as next summer's holiday. But time horizons such as 5 years', 10 years', 20 years' or 40 years' ahead are all lumped together in some nebulous distant place called the 'future'. Such people find it impossible to imagine themselves being old and financially preparing for this eventuality.

- **Bounded self-control**: Individuals lack willpower to execute plans, especially long-term plans.

In view of these limits on optimizing behaviour, we need to change our understanding of individual economic decision making, especially long-term savings decisions, such as those involved in accumulating and decumulating assets in a pension plan.

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[1] Thaler and Benartzi (2004)

[2] Blake and Boardman (2013)

3.1 Pre-retirement behavioural barriers and biases

The first set of barriers and biases relates to the decision about starting to save. **Procrastination** and **inertia** are bad for saving. Employees fail to join pension plans where they are required to opt in. Saving for retirement means reducing consumption now in order to have a comfortable income in the future. This requires **self-control** which is not always easy. Some people find it as hard to save as others do to lose weight or give up smoking.

The next set concerns the decision about how much to save. It is difficult to know how much to save for retirement. Members may be **anchored** by irrelevant information. Suppose we know the default contribution rate in the pension plan is 5%. Presumably that must be the right rate? Not necessarily if the pension plan is poorly defined. A rational lifecycle financial planner would be able to work out that the appropriate contribution rate would be nearer 15% if a desirable standard of living is required in retirement. This shows how important it is for each of the default components of a pension plan to be appropriately designed.

Then there is the possibility of **cognitive polyphasia**. People can think about the same issue in contradictory terms in different situations: 'I know I should be saving 15% of my income if I want a good pension' but at the same time 'I think I will be able to live on much less when I retire, so I do not need to save as much as I thought, which means I can spend more today'.

The final set relates to what assets to invest in. Most defined contribution (DC) members do not want to make an active decision about what type of funds to invest in. We know this is true since around 90% of plan members choose their plan's default investment fund whether it is suitable or not.

There are many behavioural biases relevant to investment. Many people do not like taking investment decisions because they might later **regret** the decision that they make. This would especially be the case if the investment lost money, since people tend to be prone to **loss aversion**. Often people use **mental accounting** to keep track of their investments. This means that they treat some assets as being currently accessible and others as being accessible only in the future. The separate mental accounts are effectively treated as non-fungible, implying that the marginal propensity to consume from the separate accounts is different; this is sub-optimal. By contrast, a rational life-cycle financial planner would treat all assets holistically and hence have a single marginal propensity to consume from total wealth.

The way an investment proposition is **framed** can have an enormous influence on decisions made by most people, whereas it has no effect on a rational life-cycle financial planner. To illustrate, if most people are told 'you are aware equities are risky', this is likely to have a negative influence on the decision to hold equities in long-term investment portfolios, since most people do not like to take risks. It leads to a strategy of 'reckless conservatism' with investments held in low risk, but low yielding bonds. On the other hand, if the conversation begins 'you are aware that equities tend to generate higher returns in the long run, despite some short-term volatility', then there is some chance that a suitably balanced and sensible portfolio might eventually be agreed.

Another issue is **choice overload/anxiety** which is a common feature of complex problems. Having too many investment funds from which to choose can mean no decision at all is made. Individuals' minds can become frozen like rabbits in a headlight. When faced with difficult choices, individuals often employ **simplifying heuristics** (simple rules of thumb), such as 'choose the default option' on the grounds that someone else must have thought that it was good idea. Since we know that this is common practice, again it shows how important the design of the default is. A related practice is **herding:** many people just follow the herd wherever the herd is heading on the presumption that someone in the herd must know that it is the right thing to do.

Another behavioural trait is **weak investment preferences**: people do not have strong views on what assets to invest in. This arises, in part, because investment is a genuinely complex problem and, in part, because most people do not understand the issues and risks involved. It means that individuals can be easily led. It also means that the design of the investment choice menu can influence outcomes. Experiments have shown that with a list of five funds, many people will choose the first fund or the middle fund however the funds are listed whether in order of increasing risk, decreasing risk, or randomly.

When it comes to the decision about when to retire, again there are behavioural barriers and biases. One of these is **time inconsistency**. When you are young, you believe that you will be able and willing to work longer if necessary to compensate for inadequate pension savings, even if someone tells you that you will probably not feel like that when you are older. When you are old, you are very likely to regret not saving enough when you were younger, because you do after all want to retire earlier. This is another example of the poor understanding of the time dimension of a person's life.

3.2 At-retirement behavioural barriers

What should be the optimal retirement income strategy? Effective retirement saving needs an optimal decumulation strategy as well as an optimal accumulation strategy. It needs to deal with both *human spenders* – people who run down their resources too quickly in retirement – and *human hoarders* or *squirrels* – people who spend too slowly in retirement or who wish to guarantee inheritance for their children. A properly designed retirement income strategy can help both types.

Many people dislike the idea of buying an annuity to hedge their individual longevity risk, the uncertainty attached to individual lifetimes. Annuities are perceived as poor value and the two most likely reasons for this are that, first, individuals underestimate how long they (and their partner) are likely to live and, second, they have a poor understanding of the potential range of actual lifetimes around the expected life time. Figure 1 shows the expected distribution of deaths of UK males aged 65 and 85, respectively. In both cases, there is a wide range of possible death dates around life expectancy.

Figure 1 – Distribution of deaths

Source: 100% PNMA00 medium cohort 2007
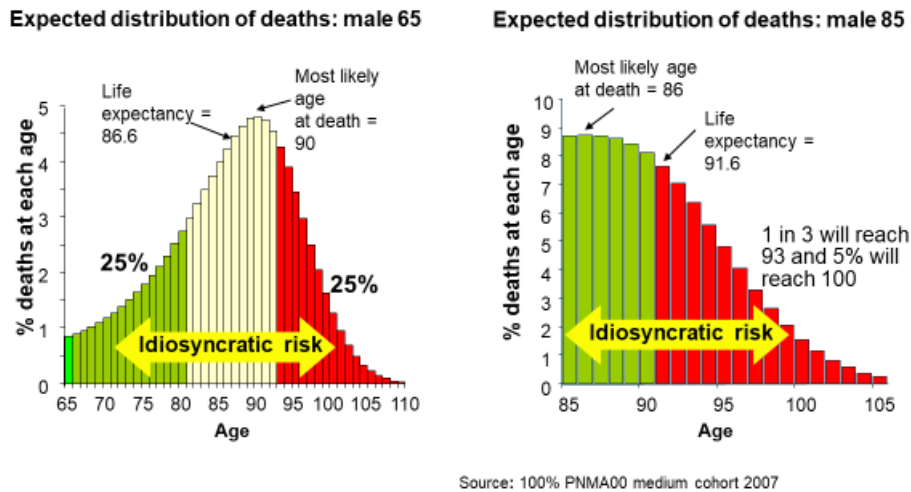
There are many behavioural biases relevant to decumulation. First, there is the **illusion of control**: people like to feel in control of their capital but annuitisation leads to an apparent 'loss of control' since they have 'given away' their capital to an annuity provider. Second, there is the issue of **framing**. Studies show that when expressed using a 'consumption' frame, annuities are regarded as desirable: you will have a regular stream of income to support your standard of living in retirement for however long you live. However, expressed using an 'investment' frame, annuities are regarded as risky: you could use capital to buy an annuity and you could die the next day and your investment would be completely lost.

Related to this last point is **regret** and **loss aversion.** Many people feel that annuities are a gamble. However, the probability of dying very soon after purchasing an annuity is very low – less than 1% for UK males at age 65 according to Figure 1 – but this probability is likely to be overestimated.[3] So the 'loss' from buying an annuity is likely to be perceived to be high: dying AND losing all your capital too! Conversely, the significant probability of out-living one's resources if one doesn't annuitize – the probability of living beyond life expectancy is around 50% for 65-year old males – is underestimated.[4] So the 'gain' from annuitizing is perceived to be low. As a consequence of this, the 'gain' from annuitizing will give a small utility benefit, while the 'loss' from dying early may have large utility loss. Accordingly, people feel that they will be better off by not annuitizing and hence unwisely assuming their own individual longevity risk.

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[3] Another behavioural trait is that people tend to overestimate low probability events.

[4] People tend to underestimate high probability events.

4. How behavioural economics can help overcome barriers

Behavioural economics combines economics, finance, psychology and sociology. It recognizes that individuals do try to maximize personal welfare, but that there are limits to the extent they can do this. Individuals are *Humans* not *Econs* (using the terminology of Thaler and Sunstein (2008)'s *Nudge*) and need **nudging** towards optimal solutions. It also recognizes the importance of social norm groups and social **networks** ('people like us') in helping individuals improve outcomes. The ideas come out of the US, so needs to be adapted to other countries

4.1 Overcoming pre-retirement barriers

When it comes to starting to save, behavioural traits have been exploited to design pension schemes that increase long-term pension savings. The classic example is the '*save more tomorrow'* (*SMART*) plan of Thaler and Benartzi (2004). The plan member agrees to start or increase savings on regular basis, not now but on a future significant date, such as the date of next pay rise.

Figure 2 - Savings rates in Save More Tomorrow plans
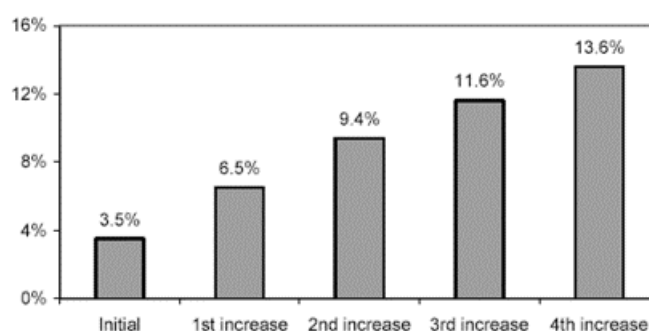
Source: Thaler and Benartzi (2004)

SMART plans deal with a number of behavioural traits. They accept that individuals have **self-control problems** and would benefit from using **pre-commitment devices.** These include: **auto-enrolment with payroll deduction** – individuals are automatically enrolled into the plan (which is usually associated with a pension plan at the place where these individuals work) and have to make the active decision to withdraw from the plan; **auto-escalation** – the savings rate is initially low, but increases gradually over a number of years (see Figure 2); **withdrawal restrictions** – the plan creates psychological and financial barriers to accessing the funds before retirement.

The plans exploit **inertia**, since once signed up, workers typically do not cancel the payroll deduction facility. They also use **herding behaviour** constructively: a worker is more likely to join if other workers are joining.

In terms of how much to save, SMART plans recognize the importance of an appropriate default contribution rate. Further, contribution matching by employers provides a powerful incentive to choose a higher and more appropriate contribution rate. Once enrolled, members tend not to alter contribution rate unless automatic annual increases are in place. Again **inertia** is exploited positively.

When it comes to what to invest in, SMART plans deal with **choice overload/anxiety** by having only a small number of investment funds to cover the range of different risk tolerances that individuals have. It is much more important for individuals to know what a particular investment fund does, than what its asset mix is, the knowledge of which will mean little to most people.

To deal with **simplifying heuristics**, it is important to have a well-designed and low cost default fund which utilizes a life-cycle or lifestyle investment strategy and automatically de-risks in the lead up to retirement.

4.2 Overcoming at-retirement barriers

One of the most important requirements is to overcome the **illusion of control** which prevents people annuitizing optimally. 'All-or-nothing' annuitisation is likely to be suboptimal as well as undesirable. Gradually purchasing annuities over time might be a better strategy. This deals with: interest rate risk by hedging the interest rate cycle; the possibility that investment returns might be higher in future; the possibility that mortality rates might be higher in future; and the possibly that the individual will enjoy a long period of retirement and will not want to be locked into a low-yielding bond-like investment – which is what a fixed-income annuity is – over an extended period.

The next requirement is to overcome **regret** or **loss aversion**. Any pooling of mortality needs to be perceived to be fair by the public. Currently, this is not true. At younger ages, the annuity mortality cross-subsidy (or survivor credit or mortality premium) gives poor value to those dying early. An annuity is a risk-sharing device in which those who die early cross-subsidize those who live a long time. This is *ex-ante* fair if all members of the pool of annuitants have similar life expectancy when the annuity is purchased. One solution to this problem is to offer money-back or capital-protected annuities: see Figure 3. Another is to offer impaired life annuities to those who have a reduced life expectancy on account of say a terminal illness, like cancer, or a lifestyle choice, such as smoking. So it is not a question of IF but WHEN pensioners should annuitize see Figure 4.

Figure 3 – Death benefits under a money-back annuity

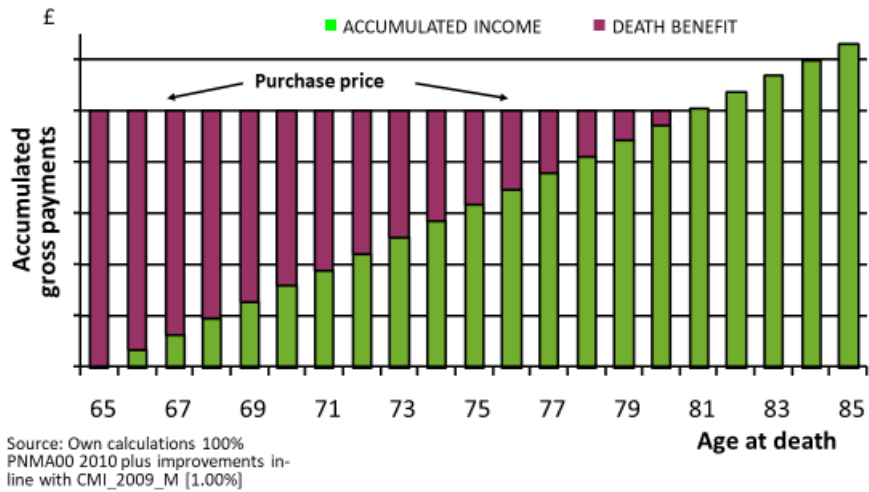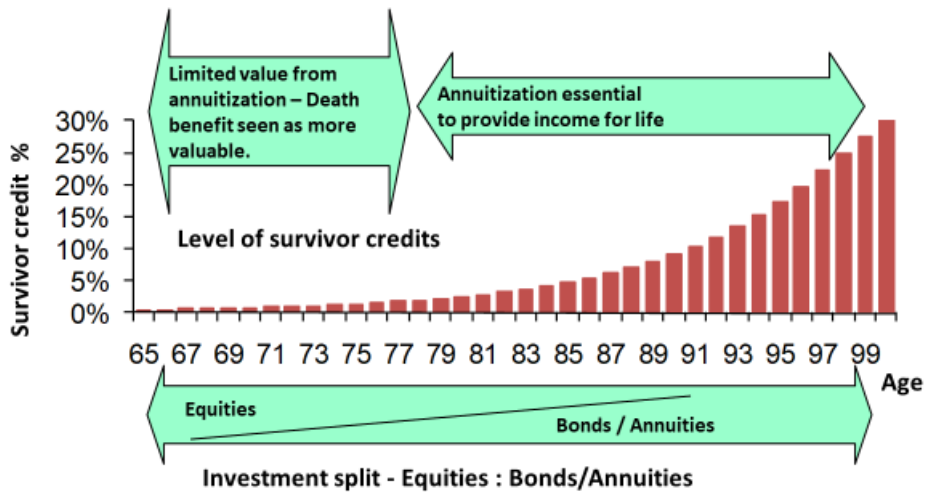Source: Own calculations 100%
PNMA00 2010 plus improvements in-
line with CMI_2009_M [1.00%]

Figure 4 – When to annuitize

Source: Own analysis; 100% PNMA00 2010 plus improvements in-line with CMI_2009_M [1.00%]; Survivor credit
$- q_x / (1 - q_x)$

To deal with **framing**, the discussion should be posed in a way that generates the optimal outcome for most people. Talk about the income stream 'generated' by the annuity rather than the 'loss' of the lump sum. Explain the annuity in a 'consumption frame' – which makes an annuity look safe – rather than an 'investment frame' – which makes an annuity look risky. Emphasize the risk of living in poverty in old age, rather than giving up the lump sum. Studies show that people with annuities are happier: they can spend their annuity payments knowing they have full longevity risk protection.[5] Show a series of photos of decreasing bundles of goods that can be purchased due to inflation.

5. SPEEDOMETER retirement expenditure plans

Blake and Boardman (2013) introduced the idea of *SPEEDOMETER* retirement expenditure plan as the counterpart in the decumulation phase to SMART plans in the accumulation phase. *SPEEDOMETER* stands for 'spending optimally throughout retirement'. The plan has five components.

First, make a plan. The can be done either by using an on-line or telephone-based service providing generic financial advice or, if wealth permits, involving a financial adviser whose role is to assist with making and implementing the plan and conducting annual reviews.

Second, secure 'essential' income. The plan manages all assets and income sources holistically to secure essential income. This is defined as the minimum, core inflation-protected income sufficient to meet the retiree's 'essential' needs for the remainder of their (and their partner's) life. State or social security pensions are also usually inflation protected, so should form the basis of providing essential income in retirement.

Third, have insurance and a 'rainy day' fund to cover contingencies. The plan uses insurance solutions, when available and cost effective, to cover contingencies. Where appropriate, rely on state support and maximize the welfare benefits available from the state, such as relief from local authority or municipal taxes. Where possible, maintain flexibility by holding sufficient assets to meet uninsurable shocks (i.e., a 'rainy day' fund).

Fourth, secure 'adequate' income. Secure an adequate level of life-long income above the minimum if there is sufficient wealth. 'Adequate' income is defined as that needed to achieve the minimum lifestyle to which the pensioner aspires in retirement.

Fifth, achieve a 'desired' standard of living and make bequests. The plan uses a simplified choice architecture for managing any residual wealth with the aim of achieving a 'desired' standard of living in retirement, while allowing part of the remaining wealth to be bequested at a time of the retiree's choosing.

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[5] Mitchell and Utkus (2004)

This is a universal plan for all retirees, although not all retirees will have the resources to use all stages of the plan.

A SPEEDOMETER plan deals with behavioural traits through: the use of **pre-commitment devices** and **inertia**; the use of defaults; the plan, NOT the member, deals with the complexity of decumulation decision making; the use of money-back annuities; the use of phasing; **positive norming** via effective communication.

A SPEEDOMETER plan involves just four key behavioural nudges: first, make a plan; automatic phasing of annuitisation; capital protection in the form of 'money-back' annuities; the slogan 'spend more today safely' to reinforce that 'buying an annuity is a smart thing to do'.

6. How networks can help

It is now beginning to be recognized that nudging is more effective in networks. There are a variety of possible networks:

- **Employment-based networks** are most effective for: encouraging pension savings and helping to pay-off debt (e.g., student loans) via pay-roll deduction with the deductions used to create positive savings once debts have been paid off.

- **Social networks**, such as family, friends and neighbours, can be effective in promoting a 'people like us' herding effect.

- **Internet-based networks** can be used to show the effectiveness of savings strategies. An example is 'Daily Dollar', a daily budgeting Facebook app (facebook.com/LiveSolid) which 'brings to life the notion that small lifestyle changes can add up to big savings'. You can publish the results on your Facebook profile.

- **Age-based networks** - see Table 1.

- **Networks based on personality types** - see Table 2.

7. How to implement: A life cycle fund plus corporate platform

In this section, we look at one way of implementing our strategy: using a life cycle fund and a corporate platform.

A life-cycle fund manages savings and loans around key life events: paying off student loans and future debt management; tax-efficient short/medium term savings vehicles (such as Individual Savings Accounts in the UK) and share incentive plans; house purchase; marriage; children and school fees; holidays; retirement; inheritance and tax planning; long-term care.

Table 1 - Age-based networks

Age range	Description
Baby Boomers (1946 – 64)	Gilt Edge Lifestyles Mid Life Affluence Modest Mid Years Advancing Status Ageing Workers
Generation X (1965 – 81)	Successful Starts Happy Housemates Surviving Singles On The Breadline Flourishing Families
Generation Y (1982 – 95)	Happy Housemates Surviving Singles On the Breadline
Source: www.experian.co.uk	

Table 2 - Networks based on personality types

Personality type in retirement	Description
Empowered Reinventors (19%)	Can easily adapt to change – welcome adventure and new challenges
Carefree Contents (19%)	Optimistic about coping with change – but do not seek adventure or new challenges
Uncertain Searchers (22%)	Recognise change could be fulfilling and satisfying, but still trying to make sense of change
Worried Strugglers (40%)	Worried, bored or saddened after the change. Lack of planning and preparation play a role here
Source: *The New Retirement Mindscape* (Ameriprise Financial, January 2006)	

The plan can be implemented using a (corporate) wealth management platform (or wrap) with the employer as facilitator, thereby exploiting one of the most effective networks listed in section 6.

An important question to address is how much choice and flexibility should be offered. *Econs* like lots of choice and flexibility. Many people, especially the young, claim to like choice and flexibility, especially the flexibility to delay starting a long-term pension savings programme! This suggests the platform should provide lots of self-selection. But is this really suitable? *Humans* do not really like that much choice and flexibility. Rather they like well-designed defaults. This suggests that they should be offered suitably segmented information and products, selected on the basis of effective client profiling (such as that based on the personality types listed in Table 2).

Finally, we need to recognize that savings is a habit that needs to be encouraged from a very early age: first, get 'em young! One simple way of doing this is to have four boxes for pocket money as shown in Figure 5. The first box (labelled 'instant gratification') is for savings that are available for immediate spending. The second box (labelled 'feel good') is the charity box, savings to be used for spending on someone other than oneself, such as buying a present for Mum. The third box (labelled 'deferred gratification') is short-term saving for a specific purpose such as a toy: when sufficient money has been saved to buy the toy, it is purchased. The fourth box (labelled 'precautionary or long-term savings') is savings for an unspecified purpose. When the child grows up, this turns into the life-cycle fund (and, as the adult gets older, it becomes mainly the pension fund).

Figure 5 – Four boxes for pocket money

7 Conclusions

Behavioural economics teaches us that we should assume nothing or at least very little when it comes to improving the life-cycle consumption-savings balance for most people. Products and

marketing strategies should be designed with the abilities of less sophisticated, less experienced people in mind: this will involve guiding choices, choice-editing etc. Wherever possible, we should work with human biases – not against.

Nudging will help if the product design is good. Another critical lesson is that the default features of the pension plan should be well designed. These are the default contribution rate, the default investment strategy during the accumulation phase (including the de-risking glide path leading up to retirement) and the default income withdrawal strategy in decumulation (which must involve the purchase of a lifetime annuity at some stage). There is absolutely no point in nudging people towards a poorly designed pension plan. **Networks** can help support and reinforce good individual behaviour.

Well-designed pension plans recognize the need to help both *Human Spenders* and *Human Hoarders.* People need reassurance that it pays to save. Pension death benefits need to be as generous for annuities as they are for income drawdown. Phasing into annuitisation may be more acceptable. Annuity products with equity linking might be valuable for those who are sufficiently risk tolerant.

An important lesson of behavioural economics is that better communication and education alone will not work. There is an overriding need for a well-designed default option. As David Laibson of Harvard University has said: 'Education no substitute for a good default'.[6] This is because the vast majority of individuals will not be able to design their own retirement income programme. Who wants to go into a car show room and be offered a choice of car kits to self assemble? All the heavy lifting has to be in the design of the default.

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[6] Pioneer Investment's European Colloquia 2007