

Mandatory Retirement Income Schemes, Saving Incentives, and KiwiSaver

Andrew Coleman

Motu Economic and Public Policy Research
andrew.coleman@motu.org.nz



MOTU NOTE #6
JUNE 2011

Introduction

All OECD countries have schemes that help people manage their retirement. Some of these schemes are mandatory, and are implemented through the tax system; others are voluntary but receive substantial subsidies. There is considerable variety across countries. While New Zealand has both mandatory and subsidised schemes, they are smaller than those in almost all OECD countries.

The recently convened Saving Working Group was intended to stimulate public discussion about New Zealand's savings performance and to provide high level advice on options to improve national savings. While there may be no reason to change New Zealand's current retirement saving institutions, it is possible that economic welfare may be enhanced if the schemes are modified or if schemes similar to those used in other OECD countries are introduced. It is also possible that increasing longevity will mean the current schemes are less suited to future generations than they are to current generations, and will benefit from change.

This note provides an overview of the reasons why governments intervene to help people manage their retirements, and the costs of these interventions. It then uses this cost-benefit framework to provide a discussion of the main options facing New Zealanders if they wished their government to alter the way it intervenes to help people manage their retirement as life expectancy increases.

Types of Pension Schemes

A typical OECD country pension model is sometimes referred to as the three-tier system, where the tiers are:

- Tier 1: publicly provided pension schemes;
- Tier 2: mandatory personal retirement savings schemes; and
- Tier 3: voluntary personal retirement savings schemes.

Tier 1 schemes involve the payment of a pension that is unrelated to payments made to the government. In some countries, such as New Zealand, the payment is made to all eligible citizens independent of their income; in most countries, including Australia, the payment is quite small and means-tested and made to ensure retirees have a minimum standard of living. Tier 2 schemes have a saving and insurance role and are designed so that an individual's resources in retirement are related to their earnings while they were working. They can be further classified by whether retirement incomes are independent of investment earnings ("defined benefit") or are dependent on investment earnings ("defined contributions"). The tier 2 social security schemes used in the United States and throughout Europe are defined benefit schemes, while the compulsory retirement saving scheme adopted in Australia is a defined contribution scheme. New Zealand is unusual as, along with Ireland, it is the only OECD country not to have a tier 2 scheme.

Most OECD countries supplement their mandatory pension schemes with voluntary tier 3 schemes that provide incentives for retirement saving. In the majority of these countries, people can place their savings in special retirement saving funds that are subject to "EET" expenditure tax treatment: income that is transferred to these funds is exempt from tax when earned, capital income earned in these funds is exempt from tax as it

While there may be no reason to change New Zealand's current retirement saving institutions, it is possible that economic welfare may be enhanced if the schemes are modified or if schemes similar to those used in other OECD countries are introduced.

accumulates, but payments from the funds are taxed when withdrawn. New Zealand curtailed its EET retirement tax scheme in 1989, and is considered to have amongst the least generous tier 3 schemes in the OECD (Whitehouse, 1999).

with the post-tax level of pension for a couple being equal to at least 66% of the net post-tax average wage.¹ New Zealand Superannuation provides the highest gross payment for a tier 1 scheme in the OECD: 39% of average earnings, compared to 27%

Table I: Classification of Mandatory Systems

	Tier 1: Defined Benefit	Tier 2: Mixed Defined Benefit/Contribution	Tier 2: Defined Contribution
General Taxes	Flat-rate pension (New Zealand)		
Social Security Taxes	Pension depends on contributions but not on investment returns (USA, most of Europe)		
Compulsory Saving Accounts	Pension depends on contributions and investment returns (Australia, Chile)		

The choices over the type and size of the incentives and the mandatory schemes vary widely across countries. Most OECD countries have a mixture of mandatory tier 1 and tier 2 schemes, as well as subsidised tier 3 schemes. For a description and comparison of the various schemes, see Whitehouse (1999); Whiteford and Whitehouse (2006); OECD (2009); Weaver (2010); and Whiteford (2010).

New Zealand Retirement Schemes

New Zealand has tier 1 and tier 3 schemes. New Zealand's tier 1 scheme is New Zealand Superannuation, which is available to all persons over 65 who meet residency requirements. The level of New Zealand Superannuation is tied to wages,

across the OECD.² The current settings are effective at preventing poverty among the elderly, as those 65 and over experience relatively low hardship rates (Perry, 2009). Nonetheless, the lack of a tier 2 scheme means average retirement benefits are low by OECD standards, even although the basic retirement pension is generous.

New Zealand's tier 3 scheme is KiwiSaver. KiwiSaver is a voluntary retirement savings scheme which attracts contributions from employers and government incentives. Following the 2011 budget, employees who join the scheme put at least 2% of their income into the scheme, and this is matched by a 2% contribution from their employers. The government makes an initial contribution of \$1000 when a person joins the scheme, and provides an annual tax credit of \$521, provided

¹ The current standard rate of NZS for a married couple, with both qualifying, is \$561.24 per week (\$280.62 each). The level for an individual is set relative to the level for a couple.

² OECD (2009). See the discussion in Whiteford (2010).

that the person makes contributions of \$1043 or more over the year.³ Income earned in KiwiSaver accounts is taxed. The government does not provide tax concessions for other long term savings schemes.

Why do Governments Intervene? The Savings and Investment Problems

Looking at the long view, he may want to be generally thin, brave and prudent, but to accomplish this he will have to overcome strong desires for food, escape and financial abandon in the immediate future. Ulysses and the Sirens will not be a remote fantasy, but a central problem of life.
(Ainslie, 1991, p. 335)

Most people encounter two savings problems at some stage of their lives. The first problem is to overcome the temptation to spend when they want to save – the problem of self-control. The second problem is working out how much to save, and how to invest these savings. For many people, neither problem is particularly challenging. For others, one problem or other is particularly difficult.⁴

Society provides a variety of means to solve the savings problems. We encourage children to adopt good habits to ensure they save and invest wisely as adults. Banks, pension companies, and saving cooperatives develop products that make regular saving and investment easier. Yet governments intervene in most developed countries, for three reasons:

- (i) they believe many people will solve the problems badly if left to their own devices;

- (ii) they can provide investment products that are poorly provided by the private sector, such as annuities; and
- (iii) they can provide insurance protection to ensure people have some resources in retirement even if they suffer catastrophic investment returns.

Internationally, most governments intervene by regulating financial providers, by providing people with information that can assist them to save and invest, by subsidising savings, and by implementing mandatory schemes. The mix of these four choices depends on the extent that governments believe people can solve the savings and investment “problems”. The aim is that most people will not reach retirement age and regret either the amount they saved or the way they invested.

New Zealand has smaller mandatory, tax-sheltered, or subsidised saving schemes than most other countries. The relatively limited use of compulsion and subsidised saving schemes seems to reflect beliefs that most people can adequately solve the savings and investment problems, and beliefs that the costs of compulsion and subsidies are high.

Reasons for Mandatory Savings Schemes

The World Bank’s conceptual framework for pensions suggests that there are two core objectives of the pension system: to protect against the risk of poverty in old age, and to enable people to smooth consumption from work to retirement (Holzmann *et al.*, 2008). There are four basic reasons why governments use mandatory saving schemes that provide resources in retirement *and* require

New Zealand’s relatively limited use of compulsion and subsidised saving schemes seems to reflect beliefs that most people can adequately solve the savings and investment problems, and beliefs that the costs of compulsion and subsidies are high.

³ In the 2011 budget, the government reduced the matching contribution rate from one dollar per dollar contributed by an individual to one dollar for every two dollars contributed by the individual, with an annual maximum of \$521 rather than \$1043. It also changed the tax treatment of the employer contribution.

⁴ The problems of self control and the difficulty of making good investment decisions are the subjects of large behavioural economics literature. See for example Strotz (1955), Kahneman and Tversky (1979), Schelling (1984), Laibson (1997), Laibson, Repetto, and Tobacman (1998), Rabin (1998), Loewenstein (1999), Camerer and Loewenstein (2004), Glaeser (2004), and Camerer, Loewenstein, and Prelec (2005).

payments when people are working to achieve these objectives.

- (i) They ensure people save a minimum amount for their retirement, because many people find it difficult to correctly calculate the amounts they should save, or find it difficult to discipline themselves to save this amount.
- (ii) They solve the moral hazard problem that some people would deliberately under-save while working in order to take advantage of a government provided welfare benefit when retired. Because most governments provide means-tested welfare benefits to citizens who are in poverty, some people would have an incentive to save little while working and rely on the benefit when retired if contributions were not mandatory.⁵
- (iii) They protect individuals and whole cohorts against catastrophic investment outcomes by forcing them to invest in a particular way. Many people find their life savings are unexpectedly wiped out by wars or disasters, by theft, by inflation, because loans are not repaid, or because of the firms they own fail. Mandatory schemes that require investments in diverse asset portfolios or that provide a government-guaranteed pension provide insurance against catastrophic investment outcomes. They also provide protection against unscrupulous agents who have large incentives to take advantage of savers. Mandatory contributions are similar to insurance premiums paid in advance in return for a guaranteed retirement income.
- (iv) Tier 2 schemes solve the moral hazard problem that some people will adopt unduly risky investment strategies in anticipation that they

keep the bulk of the returns should an investment do well, and a government welfare benefit in old age if it does not.

The Costs of Mandatory Savings Schemes

Each type of compulsory scheme has various costs and benefits. The three main costs are:

- (i) the “timing cost” – people are forced to save at times that may be inconvenient;
- (ii) the “portfolio cost” – people are forced to invest in assets that they do not wish to purchase; and
- (iii) the “work disincentive cost” – people have less incentive to participate in the paid workforce if the retirement income received is only weakly related to the funds contributed through mandatory taxes or compulsory superannuation deductions.

(i) The Timing Cost

Saving enhances people’s enjoyment of life, as it allows households to consume at different times than they earn their income. This means they can spend more when young and healthier, or increase spending when they have families, or indulge in luxuries when older, as they see fit. It means they can respond appropriately to misfortune or accidents, or afford “lumpy” expenditures, such as expensive holidays.

Since people are best placed to choose when they spend, they are also best placed to decide when to save. While mandatory savings schemes can help people improve the timing of their spending if they find saving or investment difficult, dictating when people save can be very costly if it changes their desired consumption patterns.

Many people find their life savings are unexpectedly wiped out by wars or disasters, by theft, by inflation, because loans are not repaid, or because of the firms they own fail. Mandatory schemes that require investments in diverse asset portfolios or that provide a government-guaranteed pension provide insurance against catastrophic investment outcomes.

⁵ This problem is called the “rational prodigality” problem. There are other solutions to the rational prodigality problem; for example, governments could provide small saving subsidies to ensure low income people save for retirement (Homburg, 2006).

Mandatory saving schemes do not alter the consumption decisions of all people who participate. People who wish to save more than the mandated contribution do not have to change their consumption patterns but merely reduce the amount they save privately. People who have accumulated wealth or who can borrow can maintain consumption patterns by changing their private asset holdings. The people who are most affected by compulsory schemes are those who have few assets and who cannot borrow, or who can only borrow at very high interest rates – typically younger, low income people, or people with many children. These people can ordinarily save at other stages of their lives, so mandatory tax payments or compulsory saving contributions can impose considerable hardship or reduce their enjoyment from life.⁶

(ii) The Portfolio Cost

The portfolio cost occurs when a compulsory saving scheme or tax-funded pension scheme causes people to hold different assets than they would have otherwise chosen. There are three main circumstances where this can cause significant costs.

- Many business owners or potential business owners become unable to raise enough funds to start businesses, expand their businesses, or repay debt to the extent they would like.
- Many young households become unable to amass a sufficiently large deposit or have enough free cashflow to buy a house, delaying the time until they can purchase a first house or upgrade to a larger house.
- Many households will repay mortgage debt more slowly than otherwise. In New Zealand there is a tax advantage to repaying private mortgage debt rather than accumulating financial

assets, because the returns to saving are taxed but mortgage interest payments are not tax deductible. Consequently, in conjunction with the rest of the tax system, a mandatory saving scheme imposes high costs on homeowners as it slows the rate at which individuals repay their mortgages.

Mandatory schemes may also distort investment decisions because they place restrictions on the classes of assets that approved investment vehicles can hold, and these may not be the assets that investors would ordinarily have chosen.

(iii) The Work Disincentive Cost

The work disincentive cost occurs when high marginal taxes make additional paid work less worthwhile and people are deterred from participating in the paid workforce – or enticed to work in other countries. This is mainly a problem for tax-funded tier 1 and tier 2 pensions that have only a weak relationship between the amounts of tax paid and pension received. The problem is most acute for people with weak attachment to the local workforce, particularly younger people who may migrate, older people who may take early retirement, and parents contemplating part-time work. One of the main advantages of contributory compulsory saving schemes over tax-funded tier 1 or 2 schemes is that they reduce work disincentive costs.

Age-related Contributions

The timing and portfolio costs of mandatory saving schemes largely arise when households cannot easily adjust the amount they save, or how they save. The disincentive cost arises because people can adjust their work effort. The costs of compulsion are reduced if saving is compulsory only at times in people's lives when the costs are least, typically when people are older, for then they typically have greater wealth, higher incomes, and

⁶ Since mandatory saving schemes have their largest effects on those who cannot alter their financial arrangements to avoid them, it is often quipped that compulsory saving schemes only raise savings to the extent that they reduce welfare.

fewer children at home. The workforce disincentive costs are minimised when people have the greatest commitment to the workforce, which in New Zealand is in middle age. For these reasons, the costs of mandatory saving schemes are minimised by having an age-dependent contribution structure, with contributions occurring later rather than earlier in life. For example, a tax-funded pension scheme could have an income tax surcharge for people over 50.⁷ Switzerland has a mandatory pension scheme where the contributions vary with age.

Subsidised Voluntary Saving Schemes

The disadvantages of mandatory systems can also be mitigated if people can choose the timing and type of assets they wish to purchase. For these reasons, it may be preferable to have a relatively modest mandatory scheme supplemented by subsidised or voluntary savings. The subsidies should be designed to induce people to increase their savings if they are inadequate, and to choose assets that minimise the risk of catastrophic investment outcomes.

The disadvantages of providing incentives for retirement saving relate to the fiscal cost. The costs of these schemes have to be paid by raising taxes or by cutting other forms of expenditure. These costs mean that even if incentives increase household saving, the increase in national saving will be smaller – and national savings could even fall if households do not change their saving, but merely transfer assets from unsubsidised to subsidised forms.

Summary: A Cost-Benefit Framework

Table 2 outlines the main potential benefits and costs of interventions aimed at changing saving and investment behaviour. On the benefits side are the improvements in private saving and

investment behaviour that may occur, because people would otherwise save or invest suboptimally, plus any improvement in national saving and investment that may occur. Note that the increase in national saving may be less than the increase in private saving, because of reduced tax collection. On the cost side are the timing, portfolio, and work disincentive costs, plus the cost of any taxes needed to pay for subsidised saving schemes. While aspects of most retirement schemes can be analysed using this classification of costs and benefits, the weight that should be placed on each category is fundamentally a political decision.

Several Ways Forward: Alternative Retirement Saving Schemes as Longevity Increases

There are several reasons why New Zealand may wish to modify its current retirement saving schemes. These range from concern that neither individuals nor the nation as a whole is saving or investing adequately, through concern that the current schemes are an inefficient means for the country (and its people) to achieve their goals, to concern that the current scheme was designed for an earlier time when life expectancy was low, and will not perform adequately in a future period when life expectancy is longer. This note uses the above cost-benefit framework to consider how the performance of the current retirement scheme may change as longevity increases over the next four decades, and compares it with five other possible options. These options can be divided into those that modify but maintain the basic structure of the current system, and those that involve a radical change to the current structure.

Longevity has been steadily increasing in

There are several reasons why New Zealand may wish to modify its current retirement saving schemes. These range from concern that neither individuals nor the nation as a whole is saving or investing adequately, through concern that the current schemes are an inefficient means for the country (and its people) to achieve their goals, to concern that the current scheme was designed for an earlier time when life expectancy was low, and will not perform adequately in a future period when life expectancy is longer.

⁷ Age-dependent taxes and contributions are discussed in Banks and Diamond (2010).

Table 2: Costs and Benefits of Different Interventions

Benefits	Costs
<p>Private saving benefits:</p> <p>Does the intervention help solve the private savings problem?</p>	<p>Timing costs:</p> <p>Does the intervention impose costs by altering when people save?</p>
<p>National saving benefits:</p> <p>Does national saving rise by as much as private saving? Does it rise at all?</p> <p>Does the intervention lower the chance the government will pay (unfunded) welfare benefits to older people?</p>	<p>Portfolio costs:</p> <p>Does the intervention impose private costs by altering how people invest?</p> <p>Does the intervention impose national costs by altering how people invest?</p>
<p>Private investment allocation benefits:</p> <p>Does the intervention raise average investment returns without increasing risk?</p> <p>Does the intervention reduce the riskiness of private investment ?</p> <p>Does the intervention reduce the chance people will take excessive risks if they know the government will pay old-age welfare benefits?</p>	<p>Work incentive costs:</p> <p>Does the intervention change the incentive to participate in the workforce?</p>
<p>National investment allocation benefits:</p> <ul style="list-style-type: none"> - Does the intervention improve average investment returns from the national capital stock, without changing risk? - Does the intervention reduce riskiness of national investment? 	<p>Revenue raising costs:</p> <p>What are the costs of any additional taxes that are imposed to raise funds for subsidies (including deadweight costs)?</p>

New Zealand, and is expected to increase further, possibly by another six years by 2050 (Statistics New Zealand, 2007). This is likely to double the fraction of the population that is over 65 years old and entitled to a pension under current eligibility rules. In turn, this means that the amount spent on government pensions is likely to increase from 4.2%

to 8.0% of GDP if current payment levels and the age of eligibility are maintained (Bell *et al.*,2010). An increase of this size would require significant tax increases or expenditure cuts and would cause considerable changes in economic wellbeing.

An increase in longevity increases the benefits of appropriately solving the

savings and investment problems – or, alternatively, raises the costs of not solving them. The benefits increase because each person gains the benefits of having retirement income for longer. However, increasing longevity also increases the costs of interventions. Conceptually, the optimal retirement policy to deal with increasing longevity should deliver the greatest increase in benefits for the smallest increase in costs. Clearly, this could be a set of policies that are different from those currently in place.

The six pension scheme options that are considered are as follows.

Modifications to Present System:

- (i) New Zealand Superannuation continues in its current form, possibly with modifications to the amount of the benefit or the age of entitlement.
- (ii) New Zealand Superannuation continues in its current form, but is prefunded.
- (iii) New Zealand Superannuation continues in its current form, but the age of eligibility is increased and a tier 3 scheme such as KiwiSaver is used to encourage voluntary savings to supplement pension payments.
- (iv) New Zealand Superannuation continues in its current form, but the age of eligibility is increased and a compulsory savings scheme is used to supplement pension payments.

Radical Changes:

- (v) New Zealand adopts a mixed “defined benefit/contribution” tier 2 pension scheme, funded by a social security tax, that provides a pension that is higher for those who have paid more taxes.
- (vi) New Zealand adopts a tier 2 compulsory retirement saving scheme

that provides a pension that is higher for those who have paid more taxes.

Modifications to the Present System

Option 1: New Zealand Superannuation continues in its current form, possibly with modifications to the amount of the benefit or the age of entitlement.

If New Zealand Superannuation continues in its current form, with an eligibility age of 65, by 2050 increases in longevity will increase pension payments by nearly 4% of GDP. Taxes will need to increase by a similar amount. These increases will occur primarily because each person will receive a pension for a much longer period.

As a tier 1 scheme, New Zealand Superannuation provides a transfer from high lifetime-income people to low-lifetime income people by giving all people the same pension regardless of lifetime tax payments. This complicates the analysis of the scheme, since for most people New Zealand Superannuation not only represents a way of forcing them to save and invest (through tax deductions) but entails an additional lifetime tax or transfer payment. Ignoring the transfer element, New Zealand Superannuation addresses the savings and investment problems by (a) deducting taxes from people’s incomes while they are working (and to a lesser extent when they are retired) and (b) providing them with government-guaranteed annuitised income in retirement. For most New Zealanders, this is their only opportunity to obtain annuity income, while the government guarantee provides assurance that they will not suffer catastrophic investment outcomes.

If the retirement age is kept constant, the total benefits of New Zealand

If New Zealand Superannuation continues in its current form, with an eligibility age of 65, by 2050 increases in longevity will increase pension payments by nearly 4% of GDP.

Superannuation increase with longevity because each recipient, on average, obtains the benefits for longer. However, the value of each additional year of the pension is less than current average annual value of New Zealand Superannuation. To see this, suppose average life expectancy past age 65 increases from T years to T+K years. The increased pension entitlement could be approximately replicated by making people save for the first K years of their retirement after age 65, before getting New Zealand Superannuation at age 65+K. The maximum additional benefit of the pension as longevity increases is therefore the annual pension multiplied by K. The current value of New Zealand Superannuation is greater than the annual pension multiplied by T, however, because it has an option value as it is provided in annuity form. Consequently, the average annual value of the additional K years of the pension is smaller than the average annual value of the current T years.⁸

The timing, portfolio, and work incentive costs of New Zealand Superannuation also increase with longevity. The timing costs increase as the higher taxes further reduce consumption opportunities of younger people, the portfolio costs increase because an increasingly large fraction of people's earnings that could be invested in assets of their own choice are diverted to taxation, and the work incentive costs increase because the higher taxes reduce the incentive to work additional hours, or to spend additional years in the workforce. The increase in these costs are likely to get higher and higher as the average retirement period increases, as greater and greater cuts to consumption are needed for an individual to maintain any particular saving plan.

If the marginal benefits of New Zealand Superannuation decline as longevity

increases, but the marginal costs increase, continuing the scheme in its current form is likely to have higher costs than benefits. If this is the case, it may be preferable to consider alternative retirement arrangements.

Coleman (2010) modelled the effect of increasing longevity in an economy where people were limited in the amount they can borrow to smooth consumption through time, but were forward-looking and were able to save and invest competently. The results of this paper suggested that if marginal income tax rates were increased proportionately to pay for the additional New Zealand Superannuation payments, increased timing and portfolio costs mean almost all young people would be worse off. This is because the higher tax payments make many of them reduce their consumption when they are young, and make it harder for them to purchase suitable housing. In the model, almost all people would prefer the age of eligibility for pensions to be increased rather than have taxes increased as longevity increased, for then they could choose the times when they wished to save. This was true even for the poorest people, who would gain much more in additional pension payments than they paid in taxes. Of course, since this model assumes that people can adequately solve both the saving and the investment problems without assistance, the benefits of mandatory pension schemes are assumed away so the costs of mandatory schemes naturally dominate. Nonetheless, this model suggests that timing costs and portfolio costs are likely to rise quite sharply as the average length of retirement increases.

In the absence of a model encompassing both the benefits and costs of mandatory systems, it is difficult to be precise about

If marginal income tax rates were increased proportionately to pay for the additional New Zealand Superannuation payments, increased timing and portfolio costs mean almost all young people would be worse off.

⁸ A similar conclusion is reached by considering what would happen if the average lifetime expenditure per recipient was kept constant as longevity increased because the pension was reduced by a fraction $K/(T+K)$. Maintaining the pension level and age of eligibility at current levels is then equivalent to increasing total lifetime pension receipts by an amount sufficient to prevent the pension from declining. These additional dollars of pension income are clearly valuable. However, since they are unlikely to be more valuable than the first few dollars of pension income, the marginal value of the last $K/(K+T)$ fraction of the pension is unlikely to be as large as the average value of the pension.

the way increasing longevity alters the welfare consequences of New Zealand Superannuation. However, it is clear that the costs of schemes to help people plan for retirement will increase if the parameters of the current scheme are not changed. Two methods to reduce these costs are immediately apparent. The first is to reduce total pension payments, most obviously by reducing the pension amounts or by raising the age of eligibility.⁹ Increasing the entitlement age one-for-one with increases in longevity will preserve the benefits of New Zealand Superannuation associated with the provision of a government-guaranteed annuity while reducing the costs of the current system. The second change is to ensure that any increases in taxes take place in a way that minimises costs. This could be done by focusing any increase in taxes onto middle-aged people, who are least affected by the timing and portfolio costs, possibly by having an age-specific income tax surcharge.

Option 2: New Zealand Superannuation continues in its current form, but is prefunded.

New Zealand Superannuation currently contributes nothing to national saving rates or national wealth, as under the current “Pay-as-you-go” (PAYGO) system tax revenues collected to pay for pensions are paid out immediately. In time the government could alter this situation by making the transition to a prefunded “Save-as-you-go” (SAYGO) pension scheme. This scheme would have the same pension entitlement rights and payment schedule as the current scheme. The tax payments would be accumulated into a fund, however, and the fund used to pay the pensions. As the fund accumulates, national saving and wealth increases. In a long-run equilibrium, the fund would be sufficiently large that its earnings plus new contributions would balance pension payments.

A prefunded SAYGO scheme has many advantages over a PAYGO scheme. Not only is national wealth higher, but for any level of pension payments lower taxes are needed as the earnings from the fund are used to pay part of the pension. In terms of the above cost-benefit analysis, this is unambiguously better, as there are lower costs for the same benefits. The difficulty is making the transition from a PAYGO system to a SAYGO system, for temporarily higher taxes are needed as the fund accumulates. This increases the costs during the transition without a commensurate increase in benefits. Whether the transition is beneficial overall therefore depends on whether the transitional costs of higher taxes are smaller than the permanent benefits of lower taxes.

When increases in longevity mean taxes will need to increase to maintain the current level of pension benefits, prefunding entails an immediate increase in taxes to prevent an even greater increase in taxes later. If the timing, portfolio, and work incentive costs of taxation increase at an accelerating rate with the tax rate, prefunding will lower the overall costs of a pension scheme as longevity increases. The costs and benefits will fall on different people, however, with older people benefiting less (and possibly losing out) from a prefunding strategy.

The Government began using the New Zealand Superannuation Fund to prefund New Zealand Superannuation in 2002, but contributions were put on hold in 2009. Prefunding could most easily be restarted if the Government raised taxes or cut expenditure and used the funds to recommence contributions to the New Zealand Superannuation Fund. The Saving Working Group recommended this strategy.

A prefunded SAYGO scheme has many advantages over a PAYGO scheme. Not only is national wealth higher, but for any level of pension payments lower taxes are needed as the earnings from the fund are used to pay part of the pension.

⁹ Obviously a mixture of these options is possible. For example the government could raise the age of eligibility, but allow people to have a smaller pension for longer if they wanted. Such schemes already exist in the United States and elsewhere.

Option 3: New Zealand Superannuation continues in its current form, but the age of eligibility is increased and a tier 3 scheme such as KiwiSaver is used to encourage voluntary savings to supplement pension payments.

In this option, the age of eligibility is increased one-for-one with life expectancy and people wanting to retire at 65 would use a tier 3 scheme to accumulate sufficient assets to provide them with the additional years of pension payments. This sum is reasonably straightforward to calculate, and it would be easy for a tier 3 scheme to be structured so that people with more than a certain lifetime income would be able to save this amount. Note that if life expectancy beyond 65 increased from T to $T + K$ the required saving would be similar to the amount needed to buy an annuity at age 65 valued at $K/(T+K)$ of the current pension.

This option would be appropriate if it induced most people to increase their voluntary savings by enough that they still solved the savings and investment problems, but with lower costs. The main benefit of using a subsidised voluntary scheme is that it reduces the timing, portfolio and work incentive costs associated with mandatory schemes. In particular, it enables people to choose the time they save, and it eliminates the work incentive problems associated with raising taxes. These advantages are substantial. The extent that the costs would be reduced relative to the cost of extending New Zealand Superannuation would depend on the cost and nature of the incentives. Obviously greater subsidies have greater costs, as taxes need to be raised to pay for them; but they may be needed to provide encouragement to get people to save and invest appropriately.

Four questions need to be answered if a voluntary saving scheme is to be used as

an alternative to maintaining the age of eligibility of New Zealand Superannuation at 65: the extent that incentives are needed to induce people to voluntarily save, the way the incentives are structured; the cost of the incentives; and the way savings products are structured so that they best solve the investment portfolio problems.

Starting with the investment portfolio problem, the main advantages of mandatory pension schemes are that they reduce the chance of catastrophic outcomes (unless the government of the country is forced to renege on its obligations, or chooses to do so) and they provide annuity income. Government-subsidised schemes could be structured to solve both of these problems, particularly if low-risk options were the default options and if the Government were willing to sell annuities.¹⁰ It is noticeable that KiwiSaver was introduced without any strategy for savers to be able to buy annuities, either from private sellers or from the government, and in this sense KiwiSaver is not currently well structured to solve the investment problem.

The optimal size and structure of any incentives needed to induce people to use KiwiSaver to save for the first years of their retirement has not been rigorously analysed. Globally, KiwiSaver is unusual as its main incentive consists of a partially matching contribution added to the amount *saved* in a KiwiSaver account. Earnings on the fund are taxed at normal rates. The incentive, which was capped at \$20 per week, is intended to induce people to make contributions into KiwiSaver accounts to obtain the matching contribution, and in the process both save more and invest in a wider class of assets. It is questionable how much additional saving is created by this incentive structure, as many participants would have saved in other ways in any case. However, it is likely

The optimal size and structure of any incentives needed to induce people to use KiwiSaver to save for the first years of their retirement has not been rigorously analysed.

¹⁰ Note that if the only purpose of KiwiSaver were to supplement New Zealand Superannuation if the age of eligibility were increased, the Government would not need to provide annuities as people only need to save a fixed amount to cover the first few years of retirement. However, the Government may wish to provide additional annuities to people wanting greater annuity income than that provided by New Zealand Superannuation.

that the scheme has induced many people to broaden their investment strategies, for New Zealanders have traditionally invested little in managed funds or retirement saving schemes.¹¹

In contrast, the incentives on tier 3 schemes in many OECD countries comprise of an “EET” expenditure tax structure that reduces the tax paid on investment earnings.¹² This structure has the advantage that all assets within the retirement scheme are taxed equally, eliminating the distortionary effects of taxes on asset allocation. More broadly, by taxing retirement savings on an EET basis, countries can implement expenditure taxes that are more progressive than a goods and services tax, enabling them to increase the revenue raised from expenditure rather than income taxes. Given that expenditure taxes are less distortionary towards saving and investment decisions than income taxes, structuring tier 3 retirement saving schemes in this manner has many benefits.¹³

If New Zealand continues to provide tier 3 scheme incentives that are related to the amount that is saved, the optimal size of the incentive needs to be established. It remains to be questioned whether \$20 per week rather than any other amount provides the best trade-off between the benefits of solving the savings and investment problems and the costs of taxes needed to pay the incentives. The appropriate level is difficult to ascertain because some of the people for whom mandatory schemes provide the greatest benefit – those who have the most difficulty solving the saving problems – are unlikely to participate in a voluntary scheme unless there are quite high incentives. As such there is a tradeoff between the extent of participation and

the level of subsidies. Nonetheless, the taxes needed to pay for these subsidies are not as large as the taxes that would need to be paid should the age of eligibility of New Zealand Superannuation not be increased, as the incentive payments only comprise a part of the savings that are accumulated. Consequently, it will be much less costly to provide a subsidised KiwiSaver scheme in response to increasing longevity than it will be to maintain the current structure of New Zealand Superannuation. The benefits to lower lifetime-income people will not necessarily be as large, however.

Option 4. New Zealand Superannuation continues in its current form, but the age of eligibility is increased and a compulsory savings scheme is used to supplement pension payments.

This option is similar to option 3, but rather than using incentives to encourage people to use a tier 3 scheme to save for the first few years of their retirement, the scheme would be made compulsory. The option would be preferable to option 3 if the ratio of benefits to costs of a compulsory scheme were higher than with a voluntary scheme.

There are two main advantages to making KiwiSaver compulsory. First, it would increase the coverage of KiwiSaver. Currently 50% of New Zealanders between 18 and 65 belong to KiwiSaver; this would be increased to 100%. Secondly, it would reduce the cost of KiwiSaver subsidies, for if KiwiSaver were compulsory, there would be no reason to subsidise it. This would reduce the amount of taxes needed to fund KiwiSaver, and lower the costs imposed by higher taxes.

Against these benefits are the disadvantages associated with the timing cost and the portfolio cost. If KiwiSaver

There are two main advantages to making KiwiSaver compulsory. First, it would increase the coverage of KiwiSaver. Currently 50% of New Zealanders between 18 and 65 belong to KiwiSaver; this would be increased to 100%. Secondly, it would reduce the cost of KiwiSaver subsidies, for if KiwiSaver were compulsory, there would be no reason to subsidise it.

¹¹ By the end of 2010, three years after its inception, some \$8 billion was invested through KiwiSaver, compared to \$19 billion in private superannuation funds.

¹² This structure is considered subsidised only in the sense that it is considered normal to use income taxes rather than consumption taxes to raise revenue. It could just as easily be argued that the application of income taxes to retirement savings accumulated outside of government-approved EET retirement savings schemes face a tax surcharge relative to a consumption tax norm.

¹³ Note that to raise an equivalent amount of revenue, expenditure tax rates have to be higher than income tax rates as people only pay tax on the fraction of their income they consume rather than save.

were compulsory, a large number of people would find themselves saving at particularly inconvenient times, or unable to accumulate the assets they wish to accumulate, such as a deposit on a house or business. These costs would depend on the size of the contributions. If the rate were small, as it currently is, these costs would not be too high, but the amounts saved and invested would not be large either. One solution may be to make compulsory contributions increase with age, for then the timing and portfolio costs would be minimised for any amount saved.

Options for Radical Change

The radical change options would entail New Zealand adopting mandatory tier 1 and tier 2 saving schemes similar to those in most OECD countries. These schemes have a smaller basic pension than New Zealand, but pensions increase with the size of contributions. If either option were adopted in New Zealand, the size of New Zealand Superannuation tier 1 payments would probably be reduced, or means tested.

These options would need to be introduced on a phased-in basis, so that both additional payments and future pensions only apply to people who are currently below a certain age. To preserve intergenerational equity, it might be necessary to impose additional taxes on older age groups or on all people to ensure funding for New Zealand Superannuation continues.

These schemes are the schemes of choice in most OECD countries because of their advantages, although they do have high costs (OECD, 2009; Whiteford and Whitehouse, 2006). Adopting one of these schemes would entail a radical change for New Zealand, but one that may be welcomed by younger people, who would be the prime beneficiaries. If one were adopted, they would retire with a

very different pension scheme than the one applied to current retirees, or the pension scheme facing currently older workers.

Option 5: New Zealand adopts a mixed “defined benefit/contribution” tier 2 pension scheme, funded by a social security tax, that provides a pension that is higher for those who have paid more taxes.

Option 5 entails adopting a tier 2 retirement scheme to supplement a basic tier 1 pension in a manner similar to the United States and most European countries. In these systems, individuals and their employers pay social security taxes on their labour incomes when working. When they retire, they and/or their spouse receive a pension that increases with the size of their total contribution but does not depend on investment returns. In the United States, individuals and employers each contribute 7.65% of their income up to \$107,000, and payments are related to the total amount contributed over a 35-year period. In some European countries, payments are related to their final salary. In some countries people are offered a choice between the age of entitlement and the amount of pension they obtain if they wish to delay their retirement.

A tier 2 pension scheme can operate on a pay-as-you-go or a save-as-you-go (prefunded) basis. For this option to increase national saving and wealth, it would need to be funded on a save-as-you-go basis, and for this reason, it would need to be introduced on a phased-in basis for younger working age people, so that they have time to accumulate sufficient balances. The contributed taxes would be kept and invested by the government in a separate fund.

In general terms, a prefunded tier 2 scheme offers several benefits. It better solves the saving and investments problem for

A tier 2 pension scheme can operate on a pay-as-you-go or a save-as-you-go (prefunded) basis. For this option to increase national saving and wealth, it would need to be funded on a save-as-you-go basis, and for this reason, it would need to be introduced on a phased-in basis for younger working age people, so that they have time to accumulate sufficient balances.

most people on above median incomes, as it requires greater contributions and provides greater resources in retirement. As a prefunded scheme, it raises national saving and asset accumulation. If it is only funded from taxes on labour income (and employer contributions) it means the distortionary income taxes that are levied on capital income can be lower. And it mitigates the work disincentive problem associated with taxation. Offsetting these benefits are two disadvantages. First, it raises the timing and portfolio costs unless the social security tax payments are increasing in age, as taxes and contributions are higher. Secondly, it would increase poverty amongst low-lifetime income retired people if the tier 1 pension is cut.

Increasing longevity has a similar effect on the costs and benefits of tier 2 schemes as it does on tier 1 schemes. While the benefits of the scheme increase with longevity, the additional annual benefits are likely to be less than the average annual benefits; however, the additional annual costs of the scheme are likely to be higher than the average annual costs. This means the cost-benefit ratio worsens as longevity increases. As tier 2 schemes have higher average contribution rates and pensions than tier 1 schemes, the timing and portfolio costs are higher under this option than with New Zealand Superannuation. The workforce participation costs are likely to be lower, however, particularly if there is a close link between contributions and the size of the pension. The approach adopted by Switzerland, in which contributions are greater for older people than younger people, is one method to minimise the timing and portfolio costs.

Given that New Zealand does not currently have a tier 2 scheme, the relevant question is not how the costs and benefits of a tier 2 scheme increase with increasing longevity, but whether New Zealand would be better to replace

New Zealand Superannuation with a tier 2 scheme because it has a better balance of costs and benefits than New Zealand Superannuation when average life expectancy is much higher than it is now. This question has not been analysed in a rigorous manner, given the difficulty of modeling the benefits of interventions. A tier 2 scheme is likely to have larger benefits, as it provides larger annuity incomes in retirement for people with larger incomes, but it is also likely to have larger costs since the contributions are higher. In addition, any switch of this nature would have distributional consequences, as the reduction of workforce participation costs tends to favour higher-lifetime income people.

Option 6: New Zealand adopts a tier 2 compulsory retirement saving scheme that provides a pension that is higher for those who have paid more taxes.

This option is similar to option 4, except the size of the compulsory scheme is much larger, and is similar to option 5 except each person makes mandatory contributions to their own retirement fund rather than a collective fund. The advantage of this option is that it further reduces the workforce incentive cost, as the mandatory deductions increase later pensions. This advantage is likely to be particularly important to older people considering when to retire, for any additional work directly increases the resources available for their retirement. The disadvantage is that people are more exposed to macroeconomic investment returns, and thus have greater risk than if they participated in a defined benefit tier 2 scheme. Moreover, for this scheme to work adequately, there would need to be some provision to obtain annuity income in retirement, or else people will be provided with a large lump sum on retirement without necessarily the appropriate skills to manage it.

Increasing longevity has a similar effect on the costs and benefits of tier 2 schemes as it does on tier 1 schemes. While the benefits of the scheme increase with longevity, the additional annual benefits are likely to be less than the average annual benefits; however, the additional annual costs of the scheme are likely to be higher than the average annual costs. This means the cost-benefit ratio worsens as longevity increases.

As longevity increases, the costs of a compulsory retirement saving scheme are likely to increase faster than the benefits, as the timing and portfolio costs are likely to increase at an accelerating rate with the size of the contributions. These costs may be able to be reduced by having contribution rates increase with age. However, once again, that is not the main criteria when considering whether or not to switch from New Zealand Superannuation to a compulsory saving scheme: rather the question is whether the ratio of costs to benefits are lower for a compulsory scheme than for New Zealand Superannuation when life expectancy is high. As for option 5, this question has not been rigorously analysed, in part because of the difficulty of modelling the benefits of interventions.

Conclusion

This note has outlined the main costs and benefits of interventions aimed at helping people manage their retirement. The benefits largely stem from assisting people to solve the savings and investment problems, while the timing, portfolio and workforce disincentive costs reflect the deadweight losses associated with the interventions.

It is possible that the very different schemes used across the OECD to manage retirement reflect different views on the extent to which the savings and investment problems can be solved privately, although the differences may also reflect inertia in the historical development of different policies.

This inertia is important. Most people wish to plan for their retirement many years in advance of it occurring, and are quite justified in wanting some stability in the government's retirement policies so that they can better plan. Yet policies

may need to change as the underlying structure of society and the economy change, because these changes alter the balance between the costs and the benefits of different policies. Policies that are appropriate in one setting may simply not be optimal in another. This situation suggests that policies that can be relatively easily altered as circumstances change may be most appropriate, particularly if these changes can be introduced in a manner that means cohorts experiencing different circumstances can have the policy settings altered to suit these circumstances.

The continued (and welcome) increase in life expectancy is one such change. The above analysis suggests that maintaining the current payment level and age of eligibility for New Zealand Superannuation will increase costs by more than benefits as longevity increases, making it increasingly unsuited to the needs of younger cohorts and future cohorts. There are various ways to alter this calculus while keeping New Zealand Superannuation as the centrepiece of New Zealand's retirement income schemes, including the greater use of prefunding, the use of compulsory or voluntary schemes to supplement New Zealand Superannuation, and the introduction of age dependent income taxes. There are ways that the calculus could be altered with more radical reforms, including the adoption of the tier 2 schemes in place in all OECD countries except Ireland and New Zealand. To date there has been relatively little systematic analysis of how the costs and benefits of these schemes are likely to stack up in an age where longevity is noticeably higher than it is now. As such, there has been relatively little analysis of which schemes are likely to be most suited to the generations who are currently young, or yet to be born.

Most people wish to plan for their retirement many years in advance of it occurring, and are quite justified in wanting some stability in the government's retirement policies so that they can better plan. Yet policies may need to change as the underlying structure of society and the economy change.

References

- Ainslie, George. 1991. "Derivation of 'Rational' Economic Behaviour from Hyperbolic Discount Curves," *AEA Papers and Proceedings*, 81:2, pp. 334–40.
- Banks, James, and Peter Diamond. 2010. "The Base for Direct Taxation," in *Dimensions of Tax Design: The Mirlees Review*, Sir James Mirlees et al., Eds. Oxford: Oxford University Press, pp. 548–648.
- Bell, Matthew, Gary Blick, Oscar Parkyn, Paul Rodway and Polly Vowles. 2010. "Challenges and Choices: Modelling New Zealand's Long-term Fiscal Position," *New Zealand Treasury Working Paper 10/01*, New Zealand Treasury, Wellington.
- Camerer, Colin, and George Loewenstein. 2004. "Behavioural Economics: Past, Present and Future," in *Advances in Behavioural Economics*, Colin Camerer, George Loewenstein, and Matthew Rabin, Eds. New York: Russell Sage Foundation, 2004, pp. 3–51.
- Camerer, Colin, George Loewenstein, and Drazen Prelec. 2005. "Neuroeconomics: How Neuroscience Can Inform Economics," *Journal of Economic Literature*, 43:1, pp. 9–64.
- Coleman, Andrew. 2010. "Squeezed In and Squeezed Out: The Effect of Population Ageing on the Demand for Housing," *Motu Working Paper 10-01*, Motu Economic and Public Policy Research, Wellington.
- Glaeser, Edward L. 2004. "Psychology and the Market," *AEA Papers and Proceedings*, 74:2, pp. 408–13
- Holzmann, Robert, Richard Paul and Mark Dorfman. 2008. "Pension Systems and Reform: A Conceptual Framework," *The World Bank Discussion Paper 08-24*, The World Bank, Washington DC.
- Homburg, S. 2006. "Coping with Rational Prodigals: A Theory of Social Security and Savings Subsidies," *Economica*, 73:289, pp. 47–58.
- Kahneman, Daniel, and Amos Tversky. 1979. "Prospect Theory: An Analysis of Decision Under Risk," *Econometrica*, 47:2, pp. 263–91.
- Laibson, David. 1997. "Golden Eggs and Hyperbolic Discounting," *Quarterly Journal of Economics*, 112:2, pp. 443–77.
- Laibson, David, Andrea Repetto, and Jeremy Tobacman. 1998. "Self-Control and Saving for Retirement," *Brookings Papers on Economic Activity 1998(1)*, Brookings Institution, Washington DC.
- Loewenstein, George. 1999. "Is More Choice Always Better?" *Social Security Brief 7*, National Academy of Social Insurance, Washington DC.
- OECD. 2009. *Pensions at a Glance 2009: Retirement Income Systems in OECD Countries*. OECD, Paris France. Available online at http://www.oecd.org/document/13/0,3746,n_2649_34757_47305613_1_1_1_1_00.html, last accessed 26 May 2011.
- Perry, Bryan. 2009. "Non-income Measures of Material Wellbeing and Hardship: First Results from the 2008 New Zealand Living Standards Survey, with International Comparisons," *Ministry of Social Development Working Paper 01-09*, Ministry of Social Development, Wellington NZ. Available online at <http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/monitoring/living-standards/living-standards-2008.html>, last accessed 26 May 2011.
- Rabin, Matthew. 1998. "Psychology and Economics," *Journal of Economic Literature*, 36:1, pp. 11–46.
- Schelling, Thomas C. 1984. "Self-Command in Practice, in Policy, and in a Theory of Rational Choice," *AEA Papers and Proceedings*, 74:2, pp. 1–11
- Statistics New Zealand. 2007. *National Population Projections: 2006(base) - 2061*. Wellington: Statistics New Zealand.
- Strotz, R.H. 1955. "Myopia and Inconsistency in Dynamic Utility Maximisation," *Review of Economic Studies*, 23:3, pp. 165–80.
- Weaver, R. Kent. 2010. "The Political Economy of Retirement Income Policy: New Zealand from an International Perspective," in *Retirement Income Policy and Intergenerational Equity*, Judith Davey, Geoff Rashbrooke and Robert Stephens, Eds. Wellington: Institute of Policy Studies, pp. 11–24.
- Whiteford, Peter, and Edward Whitehouse. 2006. "Pension Challenges and Pension Reforms in OECD Countries," *Oxford Review of Economic Policy*, 22:1, pp. 78–94.
- Whiteford, Peter. 2010. "Equity Issues in Pension Design and Pension Reform: New Zealand in Comparative Perspective," in *Retirement Income Policy and Intergenerational Equity*, Judith Davey, Geoff Rashbrooke and Robert Stephens, Eds. Wellington: Institute of Policy Studies, pp. 33–77.
- Whitehouse, Edward. 1999. "The Tax Treatment of Funded Pensions," *University Library of Munich MPRA 14173*, unpublished. Available online at <http://mpra.ub.uni-muenchen.de/14173/>, last accessed 26 May 2011.