Living Within Our Means: A Framework for Making Decisions on the Age of Eligibility for New Zealand Superannuation

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PART I: preliminaries

Introduction

New Zealand Superannuation (NZS), along with most social security age pensions, is primarily supported by pay-as-you-go (PAYG) financing. Money is collected through the tax system to meet the pension costs on a matching cash-flow basis.

The basic equation for PAYG financing of age pensions from taxes on labour incomes in each year (t) is

$$T(t) = NP(t) \times P(t) \text{ divided by } NW(t) \times W(t)$$

where at time t:
- $T(t)$ is the rate of tax on income needed for balance
- $NP(t)$ is the number of pensioners
- $P(t)$ is the average pension amount
- $NW(t)$ is the number of workers
- $W(t)$ is the average wage

The equation can be rewritten as $T(t)$ equals $[P(t)/W(t)]$ times $[NP(t)/NW(t)]$. In the case of NZS, the first term, $[P(t)/W(t)]$, is to all extents and purposes constant; the pension is indexed to wages[1]. The tax rate $T(t)$ on wage income to support NZS thus depends on the ratio of the number of pensioners to the number of workers.

Even allowing for older people (post age 65) remaining in the work force, in ever higher proportions, the number of people aged 65 or over is projected by Statistics NZ to grow at a rate about 4 times the rate of increase in the number of workers to the end of 2051. Inevitably this means that if the age of eligibility is unaltered, $T(t)$ must increase until the population age structure stabilises – which is not expected until after 2051 (although most of the change will have occurred by 2040). Consequently, under PAYG financing, that means later generations paying

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[1] Strictly speaking, NZS is indexed to net of tax wages, so the extent of progressivity in the tax scale has a very small effect. Relativities get changed when tax scales and/or brackets are altered as well. However, the assumption of $[P(t)/W(t)]$ being constant is a reasonable approximation for the purpose of this paper.

progressively more from their incomes for the same benefits, which constitutes some degree of intergenerational inequity.

To achieve strict intergenerational equity under PAYG, ie to hold T(t) broadly constant for all years t, one would need to take steps to ensure that [NP(t)/NW(t)] remains broadly constant for all t beyond the current date. There may be some scope to increase the number of workers, but this is rather limited as is discussed later. The obvious action then is to reduce the number of pensioners by increasing the age of eligibility. Increasing the age of eligibility would seem also likely to have a dynamic effect in increasing the number of older workers, although again there would seem to be limits to this.

An alternative to action to hold [NP(t)/NW(t)] broadly constant at the current level through progressive increases in the age of eligibility is instead to set T at a higher rate which would be sustainably constant in the long term. At the extreme this would require finding a time t beyond which the population structure stabilised and [NP(t)/NW(t)] did not vary, and basing T on this value. An intermediate approach would be to find an "acceptable" value for T and agree that the number of pensioners would be lowered by increasing the age of eligibility once the fixed T began to become insufficient.

The additional revenue collected in the short term through setting T at a higher level than needed for current balance can be appropriately employed in three main ways (not necessarily exclusively); it can be invested in financial assets, ultimately available to support T at a lower level than might otherwise be required; and/or it can be invested in the physical infrastructure needed for an ageing population; and/or it can be invested in education and health preventative actions to reduce future costs and to increase non-wage-related productivity.

Note that the operation of the New Zealand Superannuation Fund could be viewed as an example of setting a higher T and investing the excess income. In point of fact, however, the contributions to the Fund were found from surplus tax revenue, and the contribution amounts determined so as to reduce intergenerational inequity to some extent, not to remove it.

Base assumptions

It will be appreciated that sitting behind this paper are two specific propositions:

1. that New Zealand Superannuation (NZS) is and will continue to be seen as a charge on the income of those in the labour force, whether employed or self-employed, and

2. that the average amount taken from labour force income to support NZS, the tax rate T, should remain reasonably steady, so that successive generations have a similar burden.

Both these propositions are of course arguable. Firstly, NZS could be paid for in a number of ways – taxes on capital, consumption, inheritances, etc. However, superannuation can be characterised as money set aside from one's working life to support oneself in retirement, and hence intuitively a charge on labour force income seems appropriate.

The second proposition addresses a sense that the support given by generations in work to those retired should remain broadly the same over time, and that in **generational** terms people should receive something of similar value in retirement to what they contributed. This proposition too could be challenged on the grounds that it takes too narrow a view of intergenerational contributions, since NZS is not the only pay-as-you-go (PAYG) feature of the country's finances. Again, however, it appears a not unreasonable working proposition. (Note too an ageing population and PAYG funding also places a strain on the affordability of health costs; there is no offset, rather the converse.)

The debate on the extent of the validity of these two propositions can be left for another forum. What the framework set out in the paper is intended to do is to facilitate an informed discussion, and regardless of the strength one assigns to the basic propositions, identifies some important factors that affect the future sustainability of NZS[2].

The issue

Ageing of the population is real. The end effect of earlier movement to lower mortality and lower fertility is projected to be an eventually (relatively) stable population, but with a much greater number of older people compared to today. Even when population numbers begin to stabilise, the extent to which mortality rates continue to decrease may result in increases in the average age, although not necessarily lead to a larger population.

Hence we can reasonably anticipate that if the current age of eligibility for NZS remains unchanged, and if NZS is to be provided out of a tax on incomes on those

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[2] One could for example calculate the shortfall from a fixed rate T compared to projected numbers of pensioners over workers and instead of reducing the number of pensioners by increasing the age of eligibility, introduce some form of affluence tax to make up the shortfall. This would be a transparent process and make clear to the public how costs were being financed.

in the labour force, then since the increasing number of pensioners will be supported from a rather more slowly growing labour force, it follows there will be a growing burden on the latter.

This issue is of course not new. Projected ratios of those aged 65+ to those aged 15-64 – the so-called dependency ratios – have been calculated and published for some time now. Their relevance has been questioned however on the basis that there will be increasing numbers of people working past the age of 65, and hence the age 65 boundary is artificial.

Another approach has been to relate costs to GDP. The Treasury in its most recent Long-Term Fiscal Report showed both NZS and health costs are going to increase significantly as a percentage of GDP, and explored some results of changing the age of eligibility, changing indexation, and introducing means-testing. Despite some media attention, however, the presentation in terms of percentages of GDP does not seem to have had much policy traction.

The challenge therefore is to find a way to present this issue that facilitates appreciation of what it means, and identifies the outcome of various policy decisions that could be taken – including the no-change decision.

Caveats re changing the age of eligibility for NZS

Since we can surmise an increase in the average age of the population is likely in time to alter the concept of "retirement age", subject to the very important caveat to health improving in a similar fashion, then having a primary focus on reviewing the age of eligibility is not unreasonable. However, before going further, one should note some problems around increasing the age of eligibility.

In particular, the assumptions about increases in jobs need caveats. These jobs will need to be created by the private sector; public sector jobs require tax revenue and their creation won't help the fiscal position. If jobs are not available then payment of unemployment benefit will use much of the projected savings from an increase in the age of eligibility.

Again, if the age of eligibility is increased, some people may not be able to work, even if jobs are available, and hence full savings projected may not be realised. Raising the average health status by improving the health of those in the bottom end is a key requirement of achieving an improved outcome.

It also needs to be appreciated that increasing the age of eligibility has a greater impact on lower socio-economic groups, since there is a clear link between

mortality and socio-economic status. There is no simple solution to this; but narrowing socio-economic inequality would be a major contribution, particularly in terms of investing in raising the levels of educational attainment and social inclusion.

The increasing number of older people in the population will increase the demand for goods and services. The extent to which this will translate into more jobs however is uncertain. Some increase in jobs is already built into health cost projections (Treasury report 80% of health expense is labour costs) and hence these have already been allowed for. Also, some goods and services will be scalable – that is, more can be produced for relatively small increases in jobs, so greater numbers of older people will not necessarily generate anything like proportionally more jobs.

The extent to which more jobs will be created then may depend significantly on the additional resources people take with them into retirement, giving them the ability to obtain higher levels of goods and services from the private sector. Seen from this perspective, retirement savings are a crucial policy area – for example, the more that future retired generations have in their KiwiSaver accounts, the more possibility of jobs being created and the labour force expanded.

PART II: methodology

The approach

The approach taken in this paper is to combine demographic and economic factors to focus on the cost of providing NZS per head of the working population. Parallel projections of NZS cost and the numbers in the working population are combined to give a measure of what will be needed in each future year, and hence across successive generations. Allowance is made for recovery of income tax and GST, so that the cost is that of the net transfer.

The cost is expressed in "real wage" terms; that is, a cost of $3,000 in future years time means the same as a cost of $3,000 today relative to wage movements. This allows the discussion of the results to be pitched in terms of figures that have current meaning, relative to wage levels. It also means that if $3,000 in these terms is around 6% of the average wage now, the same amount in future years will also be around 6% of the average wage. An increase in a cost per head on this basis entails, other things being equal, an increase in the average rate of income tax.

(There is a risk that a focus on a "cost per head" measure may suggest some kind of flat rate levy. A flat rate levy would of course be highly regressive and unworkable. The cost per head is simply an average.)

The "working population" is taken as the full-time equivalent (FTE) number of people in the workforce, salaried and self-employed, and including those seeking work. The use of FTEs is to allow for differential age-related part-time rates; as older workers remain in or return to the work force, just counting numbers without allowing for different part-time exposure may be distortionary.

Having calculated cost per head figures, the paper explores holding an amount per head at a broadly constant figure for now and the future, on grounds of intergenerational equity. This is equivalent to setting a constant tax rate T_C to balance the PAYG equation, with any excess short term revenue invested (as the result of T_C being higher than $T(t)$) in financial assets, infrastructure, and/or growing non-wage productivity.

If the long term cost per head needed to support the current NZS age of eligibility is seen as not viable, the principal mechanism to reduce cost considered here is raising the age of eligibility. Other methods to support a fixed cost as an amount per head of the working population might include raising other taxes, or introducing means-testing; as noted previously, these are not explored here, but the methodology allows modelling of the amounts needed from other sources holding T constant.

A cost mitigation regarded as out of scope is reducing benefit levels, either explicitly or by modifying the current link to wage growth. This is because the requirement that older New Zealanders have sufficient income not only to keep them out of poverty, but to enable them to belong to and participate in society, is expected to remain a cornerstone of policy. Already there is a core fraction of superannuitants, estimated as about 8%, in hardship under current levels of NZS.

Another issue not treated here, because of a desire to keep the model relatively simple, is the treatment of NZS entitlement in respect of immigrants and emigrants. The relatively short residence period (ten years) as the only qualification for NZS is unusual compared to worldwide practice, and hence presents some not insignificant fiscal risk. Some abuse is already apparent.

In any event the establishment of an acceptable amount per head will need to trade off what can be maintained as a reasonable impost on the working population against the needs of the older population. This is a political decision; but the approach here clarifies the costs and makes them real.

While the principal interest here is on NZS, ageing is also going to impact adversely on health expenditures. As a salutary reminder of these pressures, the additional health costs that arise from ageing of the population have been calculated per head of the working population as well, and are set out and discussed where appropriate.

Building blocks

Salient points to note are:

- Population projections are those made available by Statistics NZ
- Labour force participation rates are also taken from Statistics NZ. In scenarios where the age of eligibility is increased, labour force participation in the older population is increased more than in the no-change scenario
- The cost of NZS is taken from the Treasury forecast of the gross payment in 2010, and netted down for estimated income tax and GST recoveries
- NZS is projected to increase in line with gross wage growth; the legislation actually provides for annual increase in NZS at the higher of CPI and **net of tax** wage growth, and hence there may be a slight overstatement of cost depending on fiscal drag
- The projection of the effect of the NZ Superannuation Fund follows the general outline of its present operation, including the 40 year moving average, but assumes a return after tax and expenses equal to wage growth, not the higher return assumed by Treasury
- Health costs are derived using Treasury's age-related weights, calibrated to Treasury's 2010 forecast, and netted down for estimated income tax and GST recoveries. Allowance is made for potential improvement in health in line with projected improvement in life expectancy
- Health costs are presented as the **addition** above 2010 levels, and on two bases; one assuming costs increase with wage growth, one assuming an annual increase of 1% pa over and above wage growth.

As in indication of the numbers of people in the working population, the figure for those expected by 2061 is shown on each relevant chart in the next section. The number is the total, before adjustment to FTEs. For the no-change scenario, for example, the number is 2.93 million, a little below the Statistics NZ medium projection of 3.00 million.

The model is parameter driven and a wide range of possibilities can be explored. Only a limited sample is presented in this paper. A separate paper consisting of

explanatory appendices, setting out the approach taken in detail, is available on request.

PART III: results

Presentation of results

The results are shown in graphical form. The **main** chart shows costs per head of the working population in real wage terms over the years 2010 to 2060. The darker line shows the cost in respect of net NZS; the lighter line the cost on the assumption that the 40-year cost smoothing of the NZ Superannuation Fund is in operation.[3] The dotted lines show the net addition to current health costs on the basis of either no real increase (lower line) cost or a real increase of 1% pa in excess of wage growth (upper line). Where an increase in eligibility age is modelled, the new ages are shown at the top of each chart.

The **supplementary** chart shows the cumulative rate of increase in pensioner numbers (lighter bars) and the cumulative rate of increase in labour force participants (darker bars) starting from 2010.

Source: author calculations. All the population projections are based on Statistics NZ base 2006 series 5, except for Figure 6, which incorporates Statistics NZ very low mortality assumptions. The labour force projections are based on Statistics NZ base 2006 Medium projections to 2016, and thereafter projected by the author. Total projected labour force in 2061 (before adjustment for part-time employment) is given at the base of the supplementary graph.

The base case

Figure 1 shows the "business as usual" projection. The shape of the curve on the main chart will be familiar, as will the smoothing effect of the NZSF. The increase in health costs as an amount per head of the working population shows the further pressure arising from population ageing. The supplementary chart shows the cumulative growth in numbers of pensioners and numbers of FTE workers respectively, and demonstrates how the former out-runs the latter.

The base NZS cost starts at about $3,000 per head of the FTE working population. Were payments to recommence to the NZ Superannuation Fund, the cost per head would be $4,200 in 2010 – total additional tax needed is of the order of $2.6 billion. Although this would go some way to evening out the impact on successive generations, the graph makes it clear that in the long term, something like $6,000 per head of the then working population will be needed just to support NZS – and

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[3] Note that currently this process is in abeyance.

another $1500-$2,500 per head will be needed to support additional health costs.

A broad estimate of the average tax rate required to produce $3,000 per head in 2010 is 6% of income. This is an average – one could have a flat rate payroll tax of 6%, but one could also have a progressive scale that averaged out at 6%. From Figure 1, one may observe that the average tax would need to rise to 8% by 2020, 10% by 2030, and 12% by 2050.

While the increases in tax rates appear relatively modest year on year, they build up over time, and the effect of the additional health costs also has to be absorbed. Overall, the increases do not appear sustainable. As discussed earlier, these extra costs need not be levied on labour incomes, and there is also scope – although significant political difficulty would arise – to introduce means testing. One should not temporise however about the need for a management plan of some kind; there is nothing hypothetical going on here.

The next sections explore capping costs through reducing pensioner numbers (and, as a second order effect, raising worker numbers) by increasing the age of eligibility. These are considered by reference to fixing the cost per head at some intergenerationally fair level, ie future generations pay the same per head cost as current generations.

Flat-line at the current cost

A question that arises from the results of Figure 1 is what adjustment to the age of eligibility would be needed to cap the cost per head at the current level of around $3,000. This would confer a number of benefits if achievable: there would be no pressure on tax rates in respect of NZS, and the increase in the working population that might result from a delayed retirement age – although one should stress the "might" – would have a beneficial effect on the projected increase per head in health costs.

The model requires the first increase by 2012, the second by 2014, and the an eligibility age of age 70 by 2024. Further increases would be needed, although not quite so rapid, with the age of eligibility at 75 by 2050. For people currently under age 56, that means no NZS until they are age 70 at the earliest, and for those under 30, no NZS until age 75. No contributions to the NZ Superannuation Fund would be needed, but the existing Fund would be used to smooth the cost.

The supplementary chart spells out how this is being achieved; the growth in pensioners is constrained to the growth in workers. These results are of course dependent on there being more jobs created – by 2061, 3.45 million are projected
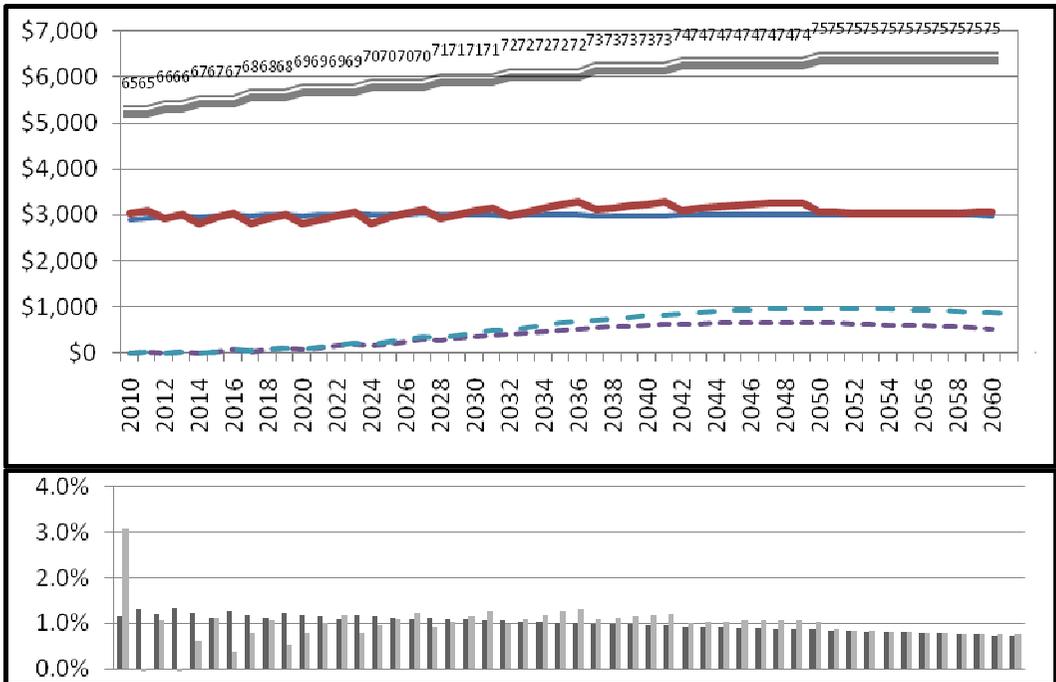
including part-time positions, compared to 3 million currently projected by the Statistics NZ Medium projection.

Figure 1: no change in eligibility age
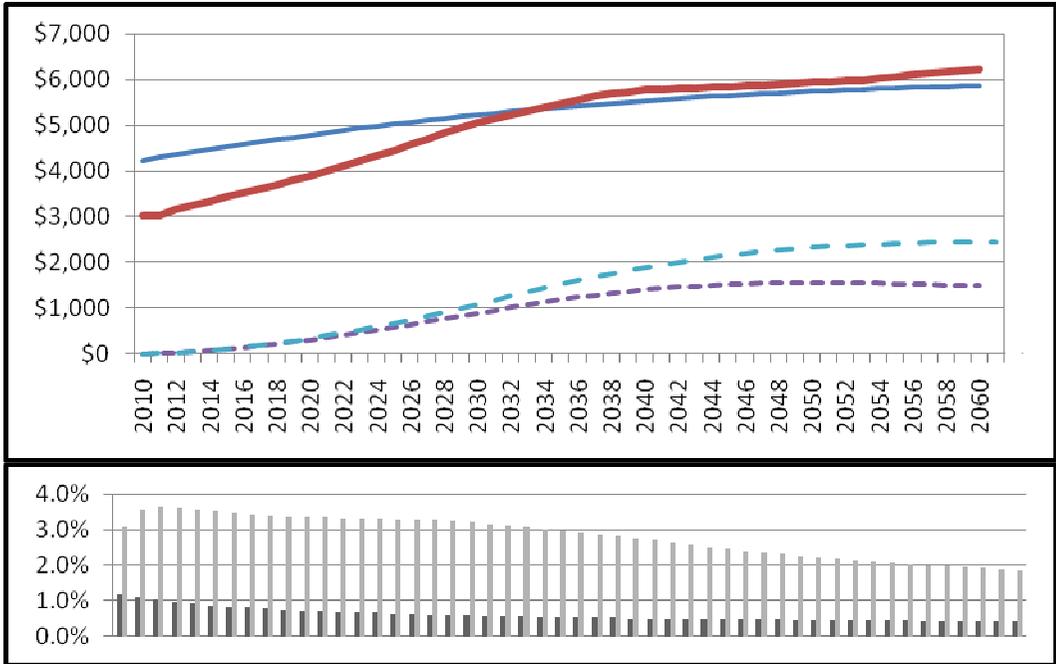
*Projected labour force 2061: **2.97** million*

Figure 2: no increase in cost per head

*Projected labour force 2061: **3.45** million*

The results also assume those older people who will not have attained the revised pension age but are not in the working population are supporting themselves without State assistance. Whether this economy is in fact even feasible is unclear.

Changes in Australia

Australia has made changes to the age at which people will become eligible for the means-tested (both income and assets) Age Pension. How would following the Australians work for us?[4]

Compared to the base case (Figure 1), Figure 3 indicates the immediate NZSF-inclusive cost per head falls a little ($3,900 down from $4,200) and the longer term cost per head hovers a little over $5,000 in place of a little under $6,000. Nonetheless, it doesn't really address the intergenerational issue, ie that average tax rates will need to rise significantly to continue to support NZS, even if NZSF contributions are reinstated. An amount per head of $3,900 each year is not going to support an age of eligibility of 67 for much past 2025. And there is still the additional cost per head of health expenditure to be financed, limiting other options.

The supplementary chart shows clearly how increasing the eligibility age is reflected in the model in terms of the number of pensioners and the number of workers – at each point that the age increases, the growth in pensioners falls and the growth in workers rises.
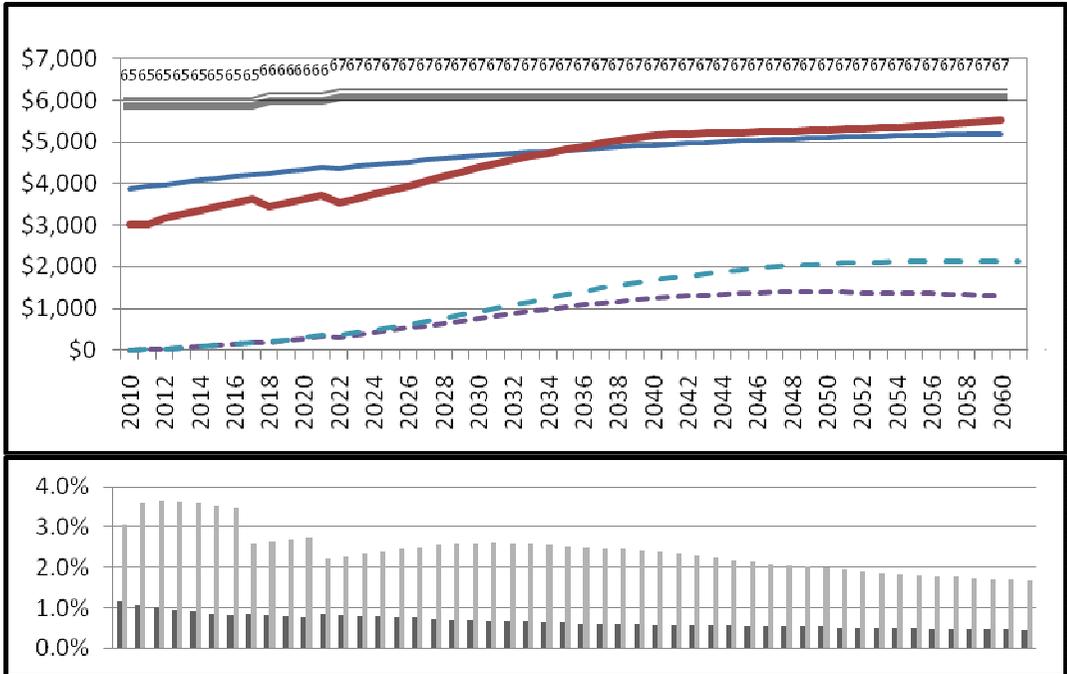
Capping the cost per head at $4,000

The model allows exploration of a number of long term fixed costs per head of the projected working FTE population. Figure 4 presents the results of increasing the age of eligibility so as to cap the cost per head at $4,000. The increase in the tax on labour incomes needed to move from $3,000 to $4,000 is around another two percentage points on average, and not far from the current NZSF-inclusive cost were NZSF contributions being made.

Under the model's basic settings, adjustments to the age of eligibility needed to achieve a $4,000 per head cap are a one year increase in the age of eligibility every five years to 2030, followed by a final increase to age 70 in 2040. Note that although the pensioner numbers are growing faster than the numbers in work, there

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[4] The actual Australian changes envisage increasing the age of eligibility by six months every two years, starting in 2017 (and finishing in 2025). For simplicity the approach taken here is to assume a change to age 66 in 2018 and to age 67 in 2022.

is stability since the big growth in pensioner numbers over the first 30 years under the base case has been mitigated by the increase in eligibility age by 2030.
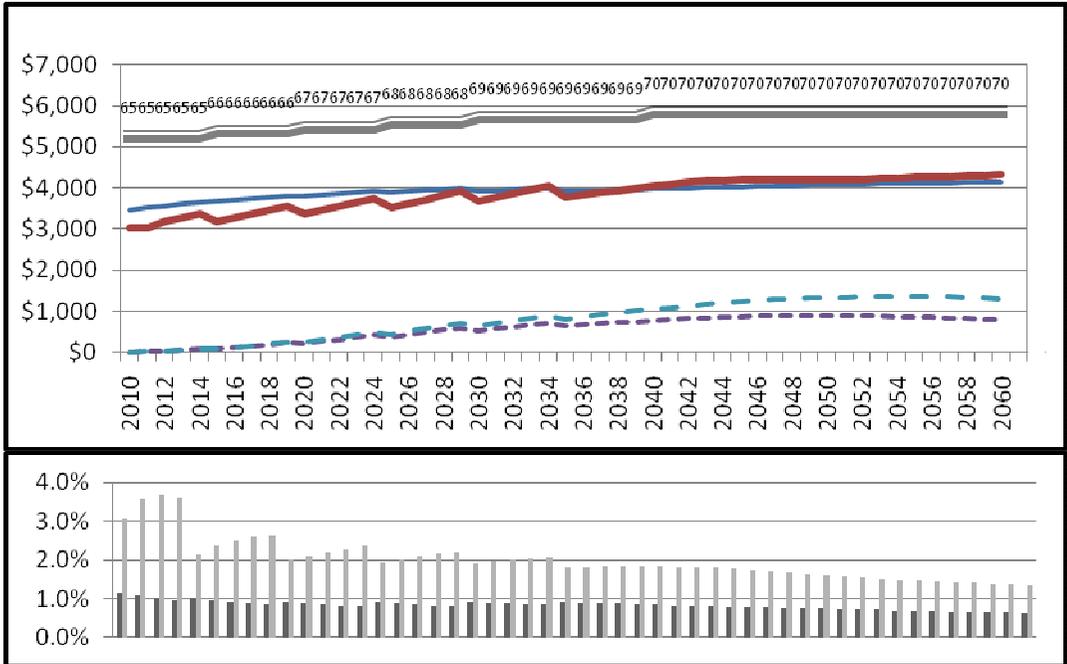
Figure 3: follow Australia

*Projected labour force 2061: **3.02** million*

Figure 4: cap increase to $4,000 per head

The chart shows dollar values on the y-axis from $0 to $7,000 with values of 65, 66, 67, 68, 69, and 70 labelled across the top, and years from 2010 to 2060 on the x-axis. A second chart below shows percentages from 0.0% to 4.0%.

The key point is that capping the cost at something like $4,000 per head requires planning for an age of eligibility of 70 by 2040. From an acceptability point of view, existing pensioners would not be affected, and younger workers have the trade-off of later eligibility against lower taxes; but older workers would have their expectations dashed, and, as noted earlier, it would be disproportionately less equitable to those from lower socio-economic groups. There are however some possible policy interventions which could mitigate that last issue.

Arguably this approach is overly simplistic, overlooking contributions from other taxes, or from means-testing. But, as has been emphasised throughout, the cost per head of additional health expenditure due to ageing of the population also will need attention, and leaves little wiggle room.

Lower than expected mortality

All the results presented so far have been based on the Statistics NZ series 5 population projection, which assumes medium rates of mortality improvement. There can be legitimate concern as to the risk posed by mortality rates decreasing faster than anticipated by the medium projection. In figure 5, the results are shown for the same changes to eligibility age as above but replacing the medium mortality projection with Statistic NZ's very low mortality projection.

Figure 5: Proposed Figure 4 increases in eligibility age, very low mortality projection
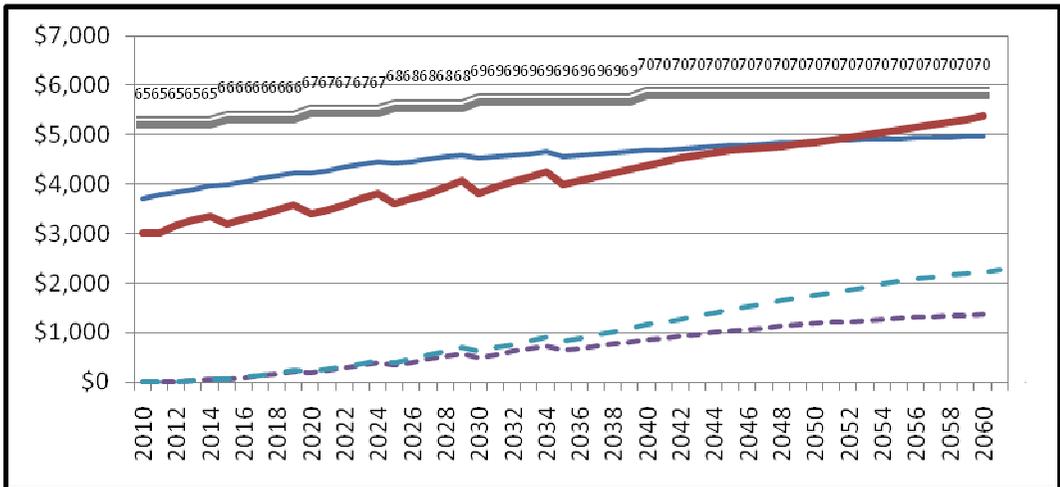
It is clear that improvement in longevity greater than currently anticipated by the Statistics NZ medium projection will have a significant negative effect on the feasibility of maintaining a cost per head at the $4,000 level. At this point such improvement is conjectural, but any management plan should allow for it. If over the next ten years greater improvement than currently projected becomes apparent, then consideration will have to be given to further extension of the age of eligibility, or to supplementation of the cost in the form of means-testing or other taxation.

However, having established a cap, one would, in terms of intergenerational fairness at least, be reluctant to move it upwards. And as identified earlier, increasing the age of eligibility will have a greater adverse effect on those from the lower socio-economic groups. Even the movement to age 70 by 2040 may be seen as too extreme, and certainly any movement beyond that would present great difficulty. If significant socio-economic differentials have not been reduced, then the room to manoeuvre may be constrained.

PART III Conclusions

The modelling work in this paper has put forward the concept of the net cost of NZ per head of the FTE working population expressed in current wage-relative terms. The model allows this cost to be projected forward in a way that means its value in future years can be related directly to today's situation.

It identifies the effect of demographic pressures, and by relating this directly to the funding support available from those in paid work, whether employed or self-employed, provides a measure of affordability.

Finally, it identifies that unless some form of management plan is put in place, current arrangements impose significant intergenerational inequity. What current generations are paying to support a PAYG system is not congruent with what they expect to receive. Moreover, even the smoothing inherent in the NZ Superannuation Fund contributions is not sufficient to address that inequity, albeit it does blunt its edges to some degree.

The way forward is difficult. There have been a number of transfers between generations over the past 80 years, in different directions at different times. This paper has focused on changes to the age of eligibility, but this is but one aspect. Serious attention has to be given to possible means-testing, despite the known drawbacks that entails, and the huge advantages of having universal entitlement. Affluence taxes have been suggested as an area to be explored.

Nonetheless, this paper argues that drawing a line in the sand as to what the State will collect from worker incomes to support NZS is essential. Some examples of such lines in the sand have been explored here. The cost per head metric is seen to have a number of advantages, but possibly other measures could be developed – the need is to have some agreed and intergenerationally fair metric.

The emphasis here is on generations contributing equally in relation to what they will in turn receive. In the case proposed for a cap at a level than the current cost, the immediate NZ Superannuation Fund-inclusive higher contribution is still below the cap, and the difference between that and the cap provides a future-proofing investment opportunity. In any event, while the NZ Superannuation Fund investments to some extent represent a stake in the potential greater return from younger countries, eventually this advantage will cease to exist.

There therefore needs to be some thought as to the best investment that NZ could be making internally. Arguably the arguments for and against such investment have received little attention because there has been no money. Setting a fixed cost per head higher than currently needed under PAYG would address the supply side, and promote cost-benefit analysis of opportunities in preventative health, education etc as mentioned before; possibly also infrastructure needs, such as building up social housing stocks.

And one might finish by noting that investment which lowers socio-economic differences may be essential if extending the age of eligibility is to be acceptable as a major lever for controlling cost.