



Can We Fund a Comfortable Retirement for Most New Zealand Employees with a 7% Contribution Rate?

for Financial Services Council

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1. Pension Scenarios: from Conservative to Balanced

Specification

Six scenarios are presented that illustrate the effect on savers' balances at age 65 of changing the real effective rate of return (after inflation, tax and fees) on savings in KiwiSaver. The objective is to achieve a savings balance that will fund a second pension which enables a person to have a comfortable retirement income equal to twice the value of New Zealand Superannuation (NZS).

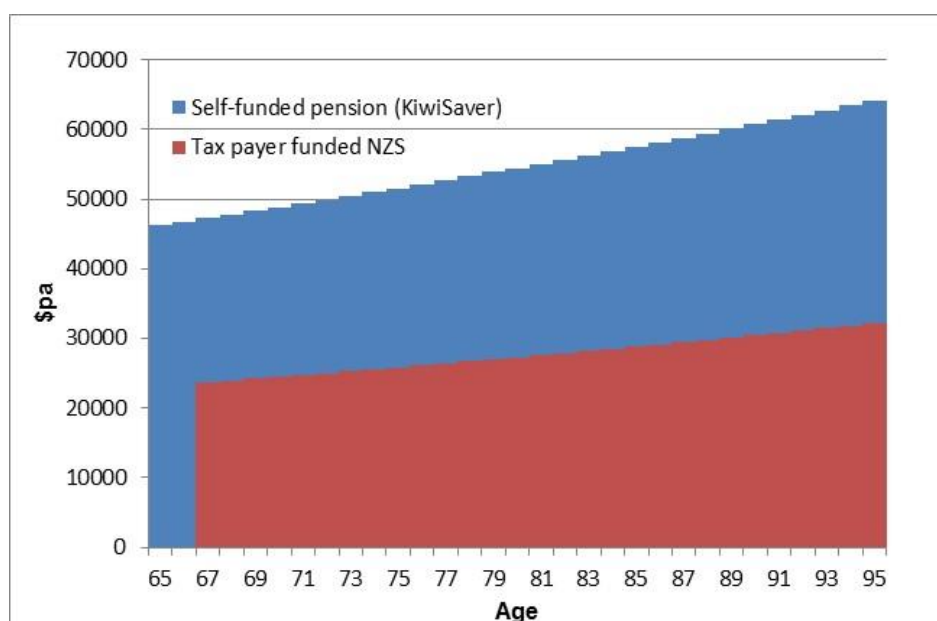
Assuming that:

- an individual retires at age 65,
- the pension is entirely self-funded at ages 65 and 66,
- NZS is paid from age 67,
- the total pension received by the individual from age 65 increases at the same annual rate as NZS (that is the rate of growth in labour productivity);

we ask: What constant contribution rate is required for someone in working-lifetime income decile 2, defaulting into a conservative KiwiSaver fund, to accumulate a savings balance at age 65 that will deliver a private pension which is equal to twice the value of NZS for two years at ages 65 and 66, and equal to NZS from 67 onwards?¹

The concept is illustrated in Figure 1. The blue area represents the portion of the pension that is KiwiSaver funded while the red area represents the tax-payer funded NZS.

Figure 1: Pension Profile



¹ Some data and discussion on income deciles is presented in Appendix A.

The scenario specifications are as follows:

A: This scenario builds on those presented in FSC's *Pensions for the 21st Century* report. We look at a cohort that is aged 25 in 2021, retiring at 65 in 2061, with the following assumptions:

- Labour productivity is 1.1% pa. and NZS is indexed to this.
- The real rate of return on investment after fees and tax is 4% pa for someone on the average tax rate. (assuming a conservative portfolio).
- Existing PIE KiwiSaver tax rates apply.²

Tax Rates

	Ordinary Tax Rate %	PIE Tax Rate	PIE Tax Rate Advantage
Up to \$14,000	10.5	10.5	0.0
\$14,000 to \$48,000	17.5	10.5	7.0
\$48,001 to \$70,000	30.0	17.5	12.5
Over \$70,000	33.0	28.0	5.0

- There is a \$1000 up front contribution from government.
- The government also contributes an annual average \$521 to each account. The \$521 is indexed to labour productivity.
- The age of eligibility for NZS rises by six months every year from 2019/20, until it reaches 67, where it remains.³
- Life expectancy at age 65 in 2061 is about 31 years for both males and females (SNZ 2012 Very Low Mortality population projections).

B: Move the KiwiSaver portfolio from Conservative fund to a Balanced fund.⁴ Fee rates are therefore higher by five basis points.

C: Reduce the fee rate by 10 basis points to reflect economies of scale in funds management and accounts management.

D: Remove the annual \$521 (indexed) government contribution.

E: Reduce the tax rates on PIE investment earnings to compensate for the fiscal effect of removing the annual \$521. The average PIE tax rate is estimated to be

² Note that allocating an appropriate marginal tax rate to investors over their working years is not straightforward. We assume that the real progressivity of the income tax structure remains.

³ This is different from the scenarios in *Pensions for the 21st Century* where it was assumed that the age of eligibility for NZS rises in line with increases in longevity.

⁴ Fund portfolio compositions are presented in Table 9.

about 8%, which can be consistent with some degree of progressivity that has most people on 8%).⁵

F: Reduce the tax rates on PIE investment earnings from 10.5%, 17.5% and 28%, to a uniform 1%, consistent with the tax rate on property investment with 80% gearing.

The effect of other tax rates are analysed in the next section.

Note that the rate of return used to calculate the required annuity (KiwiSaver funded pension) is assumed to be the same as the rate of return on the KiwiSaver portfolio. In other words, the choice of investment portfolio during retirement is the same as the choice before retirement.

Results

The results are summarised in Table 1. Bold numbers denote the changes from the previous scenario. Blue numbers show the required contribution rate.

Table 1: Scenarios for a Move from a Conservative to a Balanced Portfolio

	A	B	C	D	E	F
Gross real rate	6.42%^	7.80%	7.80%	7.80%	7.80%	7.80%
Fee rate	1.10%	1.15%	1.05%	1.05%	1.05%	1.05%
Gross real after fees	5.26%	6.57%	6.68%	6.68%	6.68%	6.68%
Inflation rate	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Nominal rate after fees	7.37%	8.71%	8.81%	8.81%	8.81%	8.81%
Tax	10.5%	10.5%	10.5%	10.5%	4.3%	1.0%
Real rate of return	4.50%	5.68%	5.77%	5.77%	6.31	6.59%
Tax	17.5%	17.5%	17.5%	17.5%	8.0%	1.0%
Real rate of return	4.00%	5.08%	5.17%	5.17%	5.99%	6.59%
Tax	28.0%	28.0%	28.0%	28.0%	15.0%	1.0%
Real rate of return	3.24%	4.18%	4.26%	4.26%	5.38%	6.59%
Annual govt contribution	\$521	\$521	\$521	0	0	0
Required balance*	\$510,100	\$449,280	\$444,750	\$444,750	\$406,720	\$382,240
Required contribution rate		13.1%	8.5%	8.1%	10.1%	7.6%

^Morningstar's projection for Conservative funds is 6.7%.

*The rate of return used to calculate the required annuity (self-funded KiwiSaver pension) is assumed to be the same as the rate of return on the KiwiSaver portfolio.

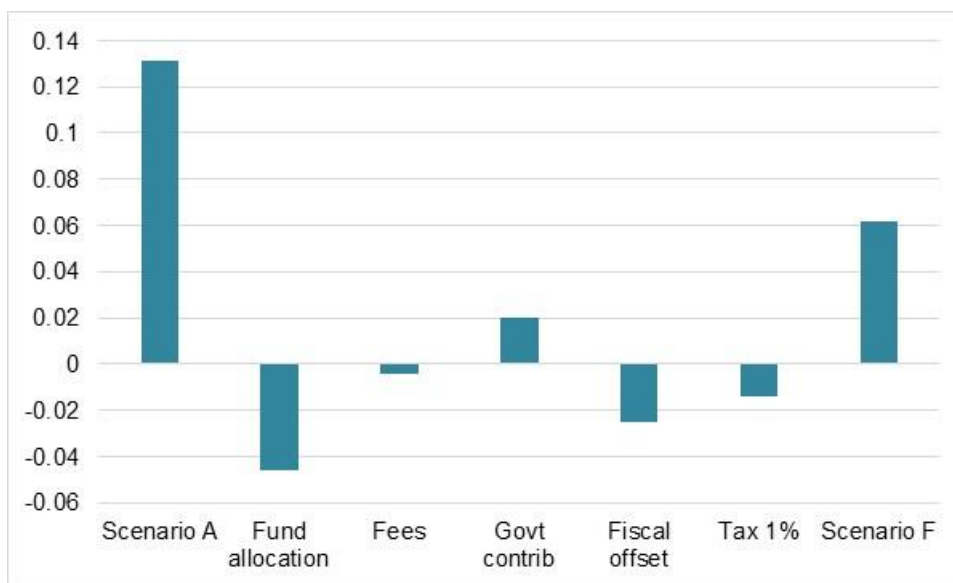
⁵ Source: *The Tax Barrier to Retirement Prosperity in New Zealand 2013*, FSC, forthcoming.

In Scenario A the required contribution rate is 13.1%. This falls markedly to 8.5% if savings are invested in Balanced funds, even though the fee rate is also higher. If fees can be 10 basis points lower, the required contribution rate falls slightly to 8.1%.

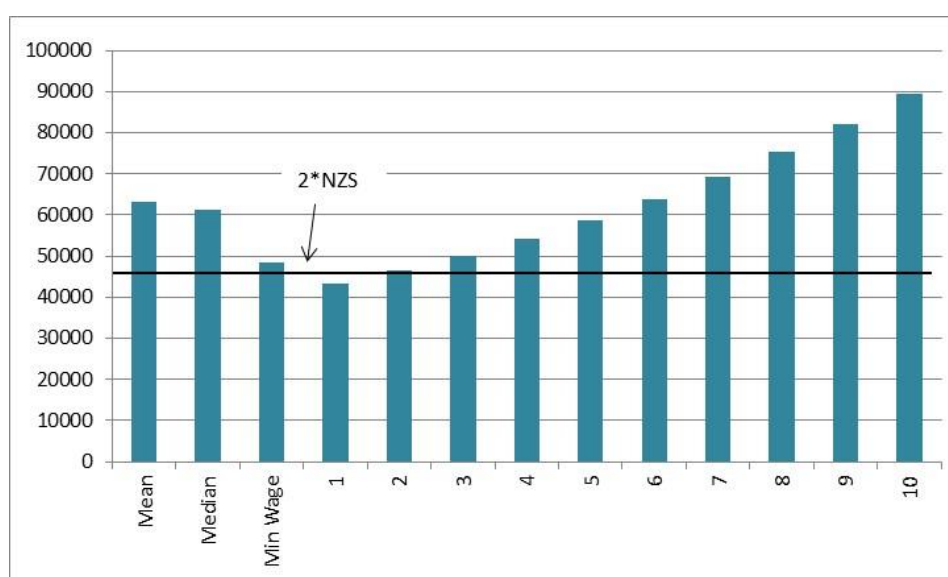
Removing the annual (indexed) \$521 government contribution raises the required contribution rate for decile 2 by a two percentage points to 10.1%. If the resulting fiscal gain is totally recycled to savers to compensate them for the loss of the annual \$521, the middle tax rate could fall from 17.5% to 8.0%. The lowest rate of 10.5% could be reduced to 4.3% and the top rate of 28.0% could be reduced to 15.0%, although other combinations are possible. For individuals in decile 2 (who are in the middle tax bracket) the lower tax rate more than offsets the loss of the \$521 – their required contribution rate falls from 8.1% in scenario C to 7.6% in scenario E.

With tax rates at a uniform 1%, which would put KiwiSaver on a par with property (under 80% gearing), the required contribution rate can fall further to 6.2%. Figure 2 provides a graphical illustration of the effects of the various parameter changes on the required contribution rate, clearly showing the dominant effect of switching the KiwiSaver portfolio to a balanced fund. Note though that the estimated sizes of the effects is sensitive to the order in which the parameters are varied.

Figure 2: Changes in Contribution Rate for Decile 2



The scenario F results for all deciles are shown in Figure 3. By construction decile 2 just manages to achieve a pension twice the value of NZS at age 65. The same contribution rate means that someone with mean working-lifetime income could secure a pension that is approximately 3.8 times NZS.

Figure 3: Private Pension Amount at 65, Scenario F

Variations on Scenario F

As noted above the tax rates on KiwiSaver returns in scenario F are consistent with the tax rate on property investment with an 80% gearing. In scenarios F1 and F2 we look at the effect of higher tax rates, consistent with property investments that have 50% gearing and no gearing.

Scenarios F3 and F4 incorporate tax rates similar to those in Australia.

The effect of assuming tax rates required to achieve neutrality if the \$1000 kick start is removed along with the annual \$521, is shown in F5. Scenario E is shown for comparison. Again other degrees of progressivity around the middle rate are possible.

Table 2: Alternative KiwiSaver Tax Rates

	Low	Middle	High
Current	10.5	17.5	28.0
F Rental property with 80% gearing	1.0	1.0	1.0
F1 Rental property with 50% gearing	3.0	5.0	9.0
F2 Rental property with no gearing	6.0	9.0	15.0
F3 Australian nominal	15.0	15.0	15.0
F4 Australian effective (approx)	8.0	8.0	8.0
E Fiscal neutrality with \$521 pa removed (\$1000 kick start retained)	4.3	8.0	15.0
F5 Fiscal neutrality with \$521 & \$1000 removed	3.5	6.4	12.0

Source: *The Tax Barrier to Retirement Prosperity in New Zealand*, FSC, forthcoming.

Table 3 shows that the required contribution rates for decile 2 vary over the range 6.2% to 9.4%, but mostly above 7%. Note that in scenario E3 the flat 15% rate that applies to Australian Superannuation Guarantee funds would imply an increase for those currently in the lowest tax bracket in New Zealand.

Table 3: Scenario F Variations

	F	F1	F2	F3	F4	E	F5
Gross real rate	7.80%	7.80%	7.80%	7.80%	7.80%	7.80%	7.80%
Fee rate	1.05%	1.05%	1.05%	1.05%	1.05%	1.05%	1.05%
Gross real after fees	6.68%	6.68%	6.68%	6.68%	6.68%	6.68%	6.68%
Inflation rate	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Nominal rate after fees	8.81%	8.81%	8.81%	8.81%	8.81%	8.81%	8.81%
Tax	1.0%	3.0%	6.0%	15.0%	8.0%	4.3%	3.5%
Real rate of return	6.59%	6.42%	6.16%	5.38%	5.99%	6.31	6.38%
Tax	1.0%	5.0%	9.0%	15.0%	8.0%	8.0%	6.4%
Real rate of return	6.59%	6.25%	5.90%	5.38%	5.99%	5.99%	6.13%
Tax	1.0%	9.0%	15.0%	15.0%	8.0%	15.0%	12.0%
Real rate of return	6.59%	5.90%	5.38%	5.38%	5.99%	5.38%	5.64%
Annual govt contrib	0	0	0	0	0	0	0
Required balance*	\$382,240	\$395,800	\$410,630	\$434,460	\$406,720	\$406,720	\$400,770
Required contribution rate	6.2%	6.9%	7.8%	9.4%	7.6%	7.6%	7.2%

*The rate of return used to calculate the required annuity (self-funded KiwiSaver pension) is assumed to be the same as the rate of return on the KiwiSaver portfolio.

2. Pension Scenarios: from Conservative to Growth

Here we repeat the analysis in the previous section, but assume a move from a default conservative portfolio to a growth portfolio, rather than from a default conservative portfolio to a balanced portfolio. The fee rate is somewhat lower to acknowledge current practice whereby higher growth funds tend to incur higher fees. This provides a small offset to the lower gross rate of return

The results are shown in Table 4.

Table 4: Scenarios for a Move from a Conservative to a Growth Portfolio

	A	B	C	D	E	F
Gross real rate	6.42%^	8.60%	8.60%	8.60%	8.60%	8.60%
Fee rate	1.10%	1.25%	1.15%	1.15%	1.15%	1.15%
Gross real after fees	5.26%	7.26%	7.37%	7.37%	7.37%	7.37%
Inflation rate	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Nominal rate after fees	7.37%	9.40%	9.51%	9.51%	9.51%	9.51%
Tax	10.5%	10.5%	10.5%	10.5%	4.3%	1.0%
Real rate of return	4.50%	6.29%	6.39%	6.39%	6.96%	7.27%
Tax	17.5%	17.5%	17.5%	17.5%	8.0%	1.0%
Real rate of return	4.00%	5.65%	5.73%	5.73%	6.62%	7.27%
Tax	28.0%	28.0%	28.0%	28.0%	15.0%	1.0%
Real rate of return	3.24%	4.68%	4.75%	4.75%	5.97%	7.27%
Annual govt contribution	\$521	\$521	\$521	0	0	0
Required balance*	\$510,100	\$421,800	\$418,170	\$418,170	\$381,080	\$357,420
Required contribution rate	13.1%	6.6%	6.3%	8.3%	6.1%	4.8%

*The rate of return used to calculate the required annuity (self-funded KiwiSaver pension) is assumed to be the same as the rate of return on the KiwiSaver portfolio.

As in Table 1, for decile 2 the lower tax rates in Scenario E are more than sufficient to offset the removal of the annual government contribution.

In scenario F the required contribution rate for decile 2 is only 4.8%, compared to 6.2% in Table 1 for with investment in a balanced portfolio. With a larger beneficial effect from the portfolio switch (from scenario A to scenario B) the proportionate effect of the tax reduction is somewhat smaller. In Table 4 the change in the required contribution rate between scenarios D and F is 3.5 percentage points compared to 3.9 percentage points in Table 1.

Table 5 is analogous to Table 3, but again based on a growth portfolio rather than a balanced portfolio. The required contribution rates are about 1.5 percentage points lower than in Table 3, implying that a maximum 7% contribution rate looks more feasible than when most people are invested in balanced funds.

Table 5: Scenario F Variations

	F	F1	F2	F3	F4	E	F5
Gross real rate	8.60%	8.60%	8.60%	8.60%	8.60%	8.60%	8.60%
Fee rate	1.15%	1.15%	1.15%	1.15%	1.15%	1.15%	1.15%
Gross real after fees	7.37%	7.37%	7.37%	7.37%	7.37%	7.37%	7.37%
Inflation rate	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Nominal rate after fees	9.51%	9.51%	9.51%	9.51%	9.51%	9.51%	9.51%
Tax	1.0%	3.0%	6.0%	15.0%	8.0%	4.3%	3.5%
Real rate of return	7.27%	7.09%	6.81%	5.97%	6.62%	6.96%	7.04%
Tax	1.0%	5.0%	9.0%	15.0%	8.0%	8.0%	6.4%
Real rate of return	7.27%	6.90%	6.53%	5.97%	6.62%	6.62%	6.77%
Tax	1.0%	9.0%	15.0%	15.0%	8.0%	15.0%	12.0%
Real rate of return	7.27%	6.53%	5.97%	5.97%	6.62%	5.97%	6.25%
Annual govt contrib	0	0	0	0	0	0	0
Required balance*	\$357,420	\$370,560	\$384,580	\$407,590	\$381,080	\$381,080	\$375,380
Required contribution rate	4.8%	5.5%	6.3%	7.6%	6.1%	6.1%	5.8%

*The rate of return used to calculate the required annuity (self-funded KiwiSaver pension) is assumed to be the same as the rate of return on the KiwiSaver portfolio.

Portfolio Variation with Life Cycle

The above scenarios implicitly assume that any KiwiSaver funds accumulated prior to age 25 are withdrawn to pay for a deposit on a first home, so the choice of portfolio for the initial years of saving is inconsequential. In reality young savers may prefer to adopt a lower volatility portfolio prior to first home purchase. The same might apply to people approaching retirement.

For example the portfolio style might be conservative-balanced-conservative or balanced-growth-balanced.

We have (at this stage) not modelled this type of portfolio switching. Given the diversity of ages around which household formation occurs and the variety of target retirement ages, it is unclear when portfolio switching should occur. In any case with regard to those approaching retirement, volatility risk may be better managed at less cost to the KiwiSaver investor by the top-up insurance that FSC has proposed or by a purchased capital guarantee.

3. Treasury Demographic & Economic Scenarios

We present some scenarios that adopt Treasury's *Affording Our Future* assumptions, specifically. For the first scenario:

1. Labour productivity growth of 1.5% pa instead of the 1.1% pa assumed above.
2. SNZ's P50 population projections, with life expectancy at age 65 in 2061 of 24.7 for males and 26.6 for females (rounded to 25 and 27 for modelling). In the VLM scenarios life expectancy at 65 is 31 for both sexes.
3. NZS is indexed to consumer price inflation rather than wage rates, from when someone retires. Thus as long as wage rates continue to increase, successive cohorts will obtain higher levels of NZS, but each cohort's NZS is thereafter held constant in real terms.

We also assume that the objective is still to achieve a total pension from age 67 that is double a wage-linked NZS, but it should be noted that the Treasury options are designed to reduce the public cost of NZS over time, not to provide a comfortable level of income in retirement.

With actual NZS linked to prices from age 67 the required private pension that tops up NZS needs to increase. Therefore so must the contribution rate. Acting in the other direction, however, the P50-based life expectancies reduce the total amount needed to top up NZS.

In other respects the specifications are as in scenario A. Table 6 shows the results.

Table 6: Treasury Scenarios

	A	Tsy	Tsy (1.1%)	Tsy-1	Tsy-2
Gross real rate	6.42%	6.42%	6.42%	6.42%	6.42%
Fee rate	1.10%	1.10%	1.10%	1.10%	1.10%
Gross real after fees	5.26%	5.26%	5.26%	5.26%	5.26%
Inflation rate	2.00%	2.00%	2.00%	2.00%	2.00%
Nominal rate after fees	7.37%	7.37%	7.37%	7.37%	7.37%
Tax	10.50%	10.50%	10.50%	10.50%	10.50%
Real rate of return	4.50%	4.50%	4.50%	4.50%	4.50%
Tax	17.50%	17.50%	17.50%	17.50%	17.50%
Real rate of return	4.00%	4.00%	4.00%	4.00%	4.00%
Tax	28.00%	28.00%	28.00%	28.00%	28.00%
Real rate of return	3.24%	3.24%	3.24%	3.24%	3.24%
Annual govt contribution	\$521	\$521	\$521	\$521	\$521
Required balance*	\$510,100	\$648,330	\$497,800	\$1,058,020	\$741,080
Required contribution rate	13.1%	15.3%	12.8%	26.4%	17.8%

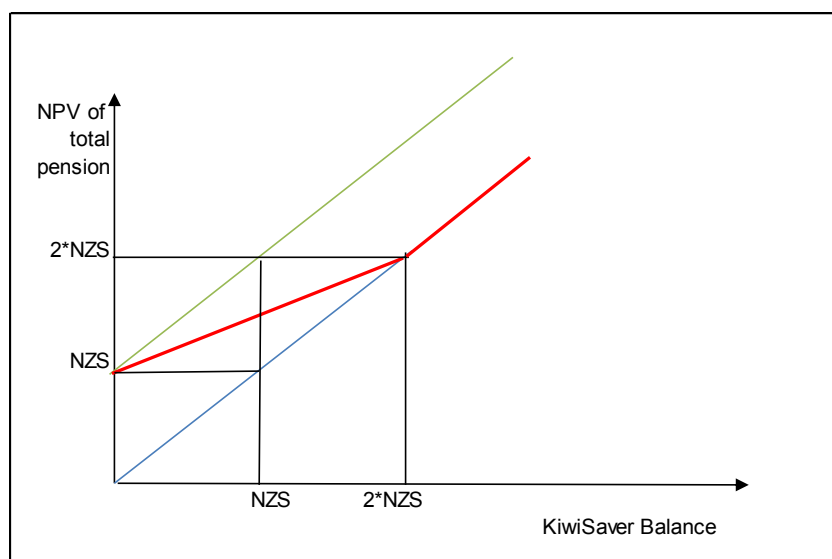
*after inflation, fees and tax

The required contribution rate for someone in decile 2 needs to be 15.3% compared to 13.1% in Scenario A. However, the comparison is distorted by the difference in the assumed rate of growth of labour productivity. Setting this parameter back to 1.1% means that the required contribution rate is now 12.8% – marginally lower than scenario A. Thus the lower life expectancy outweighs the effect of CPI indexation of NZS during retirement.

Treasury (2013)⁶ suggest a means test such that one's entitlement to NZS abates at 50c for every dollar that one's KiwiSaver balance at the age of NZS entitlement exceeds the expected present value of one's NZS entitlement.

In Figure 4 the red line shows the effect of the means test. With no private savings one is entitled to the full value of NZS. If private savings amount to the equivalent of the present value of NZS, the entitlement to NZS is reduced by a half, so the present value of one's total effective pension 1.5 times NZS. If one accumulates two or more times the present value of NZS, the entitlement to NZS is completely eroded.

Figure 3: Means Tested NZS



In effect an individual needs to save enough to fund two extra pensions, but after the means test on KiwiSaver the individual gets the benefit of only one of them. In fact because the period from age 65 to the age of NZS entitlement at 67 is unaffected by the abatement regime, total savings would not need to exactly double. As shown in Table 6, in scenario Tsy-1 (with 1.5% productivity growth), the required contribution rate needs to rise to 26.4%.

Scenario Tsy-2 applies a 25% abatement rate instead of a 50% abatement to one's KiwiSaver balance at age 67. This is similar to the Cullen proposal whereby KiwiSavers are required to annuitise half of their KiwiSaver balance, with their NZS entitlement being abated by 50c for every dollar of annuity. Private savings at age 67 of 1.33*NZS are required to achieve a total pension that is equal to twice the value of NZS. As a consequence the required contribution rate for decile 2 is 17.8%.

⁶ Treasury (2013): *The Future Costs of Retirement Income Policy, and Ways of Addressing Them*. Background Paper for the 2013 Statement in the Long-Term Fiscal Position.

4. Macroeconomic Costs

The following table sets out the specification for two scenarios.

Table 7: Extended KiwiSaver Scenarios

	Voluntary Scenario	Universal Scenario
1 Coverage	Existing participation rate up by 10 percentage points in 2016, 5 percentage points in 2019, 2.5 percentage points in 2022 and again in 2025.	All longitudinal income deciles except deciles 1 and 2, of whom only 20% participate.
2 Contribution path for new entrants	1% in 2016 rising to 10% in 2025	1% in 2016 rising to 7% in 2022
3 Contribution path for existing members	Rising to 4% in 2019, to 10% in 2025	Rising to 4% in 2019, to 7% in 2022
4 Employee/employer split	50/50	50/50
5 Government Kick Start	\$1000	\$1000
6 Annual government contribution	\$512 indexed to labour productivity.	zero
7 Tax	Existing; 17.5% for most people. Otherwise 10.5% and 28%.	8.0% for most people. Otherwise 4.3% for the lowest PIE tax group and 15% for the highest PIE tax group. (A flat rate 1% is also analysed).
8 Fund type	Default into Conservative, but average portfolio is Balanced.	Default into Balanced but average portfolio is Growth.
9 Fees	1.10%	1.15%
10 NZ Super eligibility age	65	Rises by six months every year from 2019/20, until it reaches 67, where it remains.
11 Eligibility for top-up to achieve twice NZS	30 years of contributions.	30 years of contributions

Modelling Issues

1. Coverage by decile for the Universal scenario: Although coverage would be linked to current income in any given year, we use longitudinal income deciles as a proxy for costing purposes. For someone in longitudinal deciles 1 and 2 it is unlikely that they would ever spend a significant length of time in higher

cross-sectional deciles. However, the reverse is probably not true – most of the people in the lower cross-sectional income deciles are temporarily on low incomes or out of the labour force – young earners in their first jobs, students, secondary earners and beneficiaries.⁷

2. Existing KiwiSaver members: Assumptions are required about existing participation by decile, age and sex, and existing fund balances by decile, age and sex. Until better data is available the following are assumed:
 - Fund balances by age and sex are estimated from the data that the FSC obtained last year from Mercer and Westpac (with econometrically fitted curves and moved forward from 2012 to 2016).
 - A pro-rata scaling of these balances by decile in proportion to relative income levels by decile.
 - Uniform participation rates by decile. The Horizon survey for FSC last year does not show much variation except that participation is below average for those on less than \$20,000 per annum and above average for those on over \$200,000 per annum. We ignore this for now.
 - Uniform participation rates by age. The Horizon survey for FSC last year does not show much variation between the ages of 18 and 64.
3. Top-up eligibility: Assume that all savers manage 30 years of contributions. A sensitivity test could assume say 80%.
4. Current participation rate: Assume 50%.

Results

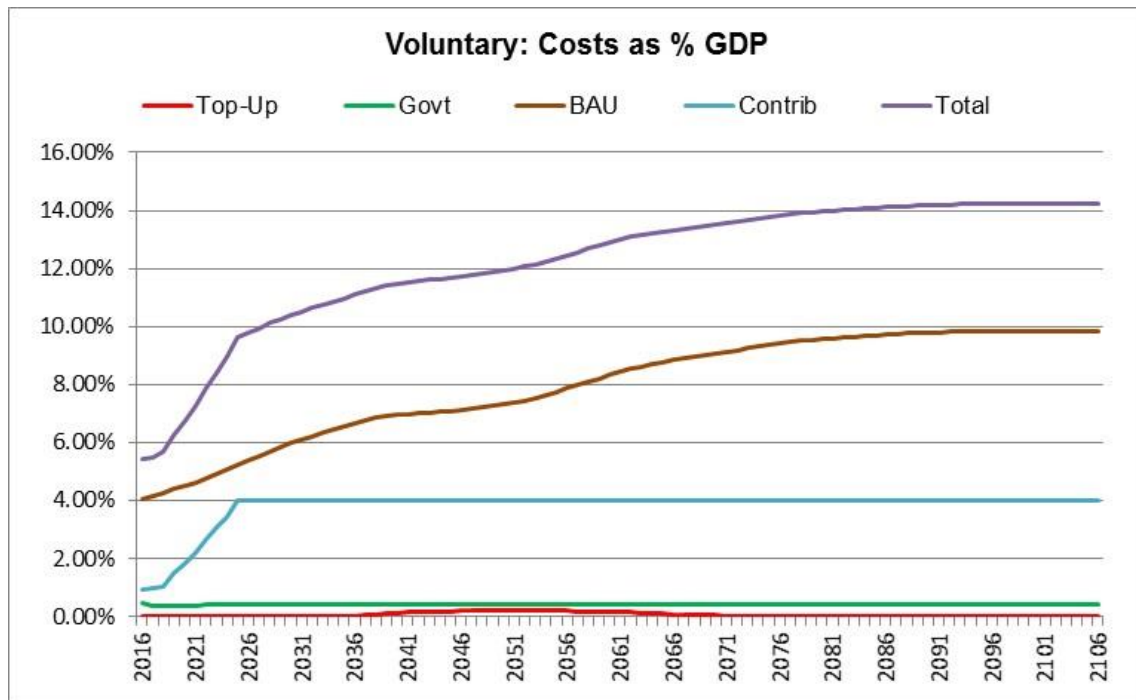
Figure 4 illustrates the results for the Voluntary scenario. The BAU line represents 'Business as Usual' with no change to the age of NZS eligibility and funding via PAYGO. By the end of the century the cost is around 10% of GDP (given SNZ's VLM population scenario), compared to 4% currently.

Under the proposed Voluntary scheme the total cost of pensions peaks at 14.2% of GDP, comprising:

- PAYGO funded NZS at 9.8% of GDP, the same as in BAU.
- Government contributions (Govt) of 0.4% of GDP (the annual \$512 and the \$1000 kick start).
- Top-up costs are low, peaking at around 2050 at 0.20% of GDP (about \$900m in current 2012/13 prices).
- Aggregate private contributions of 4% of GDP (being 70% of the working age population contributing 10% of earnings – which are about 57% of GDP).

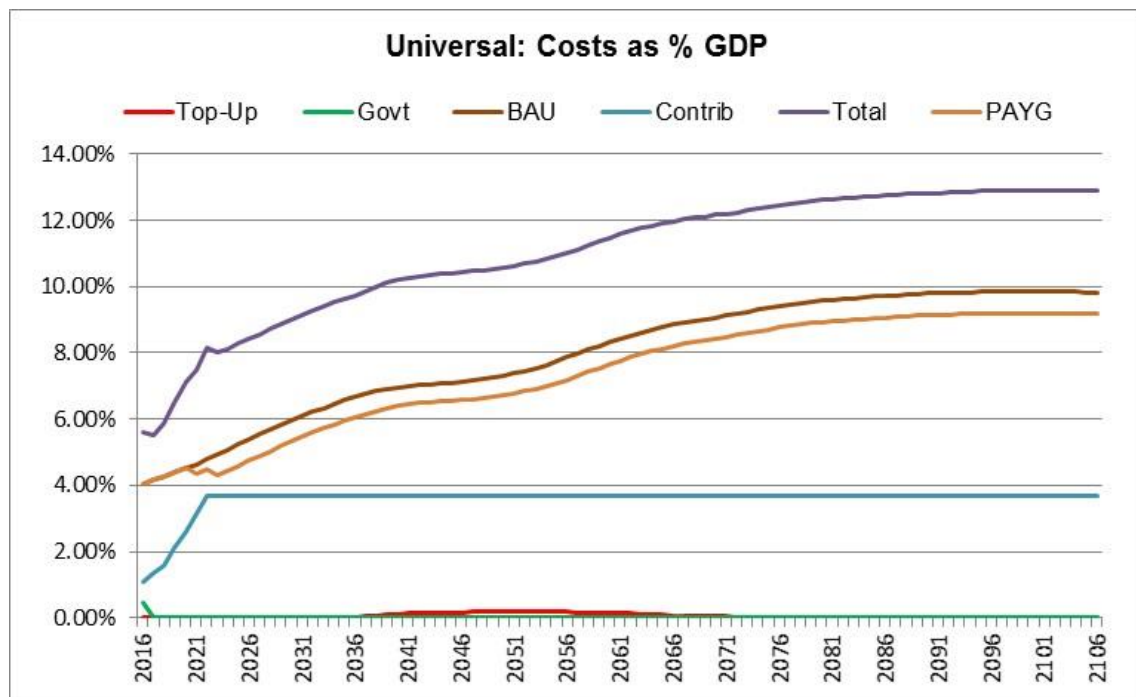
⁷ Treasury paper SH-13-3-0 to Office of the Minister of Finance, April 2008.

Figure 4: Voluntary Coverage with Current PIE Tax Rates (10.5%, 17.5% & 28%)



* A contribution rate of 10% of earnings combined with population coverage of about 70% implies an aggregate contribution rate of about 4% of GDP.

Figure 5: Universal Coverage with Fiscally Neutral PIE Tax Rates (4.3%, 8% & 15%)



* A contribution rate of 7% of earnings combined with population coverage of about 92% implies an aggregate contribution rate of about 3.7% of GDP.

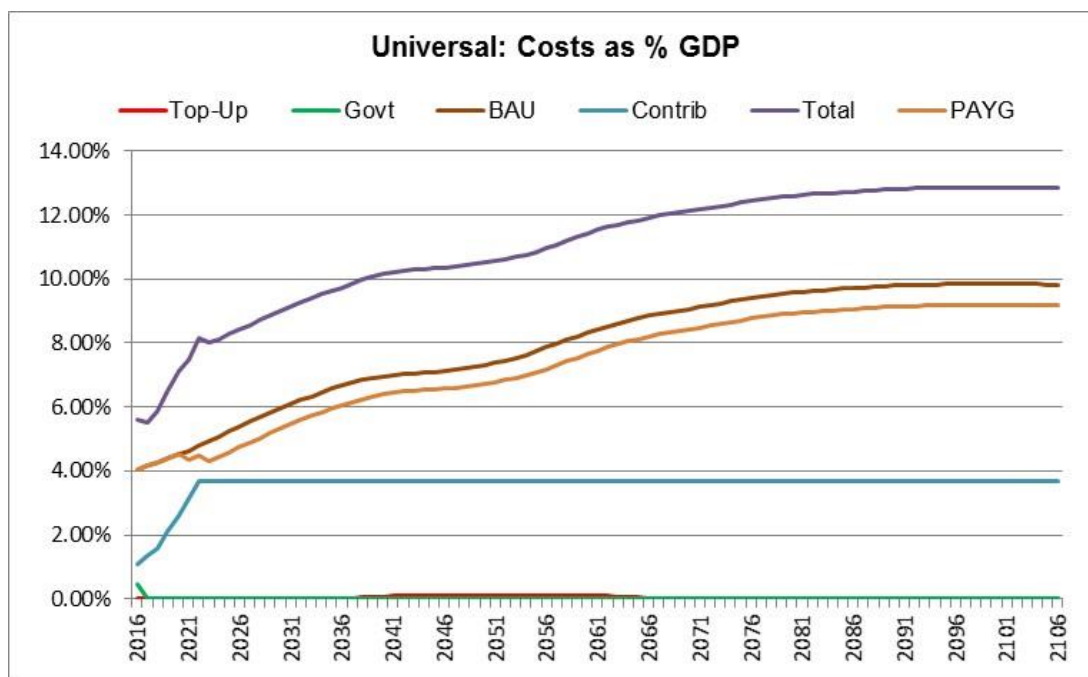
With universal coverage (Figure 5), including a move to age 67 for eligibility for NZS, the total pension cost is lower at 12.9% of GDP, comprising:

- PAYGO funded NZS at 9.2% of GDP.
- Government contributions approximately zero (only the kick start exists).
- Top-up costs modest, again peaking earlier around 2053 at 0.18% of GDP (about \$800m in current 2012/13 prices).
- Aggregate private contributions of 3.7% of GDP (half of the working age population who already contribute plus all remaining decile 3-10, plus 20% of deciles 1 and 2 adds to about 92% participation, contributing 7% of earnings).

Variation on Universal Scenario

The tax rates in the Universal scenario are 4.3%, 8% and 15.0%, with most investors subject to the middle rate. To achieve neutrality with respect to investment in rental property with 80% gearing would require the tax rate on KiwiSaver earnings to be around 1% – as in Scenario F above. See Figure 6.

Figure 6: Universal Coverage with 1% PIE Tax Rate



* A contribution rate of 7% of earnings combined with population coverage of about 92% implies an aggregate contribution rate of about 3.7% of GDP.

The long run total pension cost is unchanged at 12.9% of GDP, but top-up costs in 2053 are 0.11% of GDP instead of 0.18% of GDP – a direct result of the lower taxation of returns. The largest difference is in Funds Under Management – see below.

Funds Under Management

The implied Funds Under Management (FUM) for the voluntary and universal scenarios are summarised below in Table 8 and Figure 7.

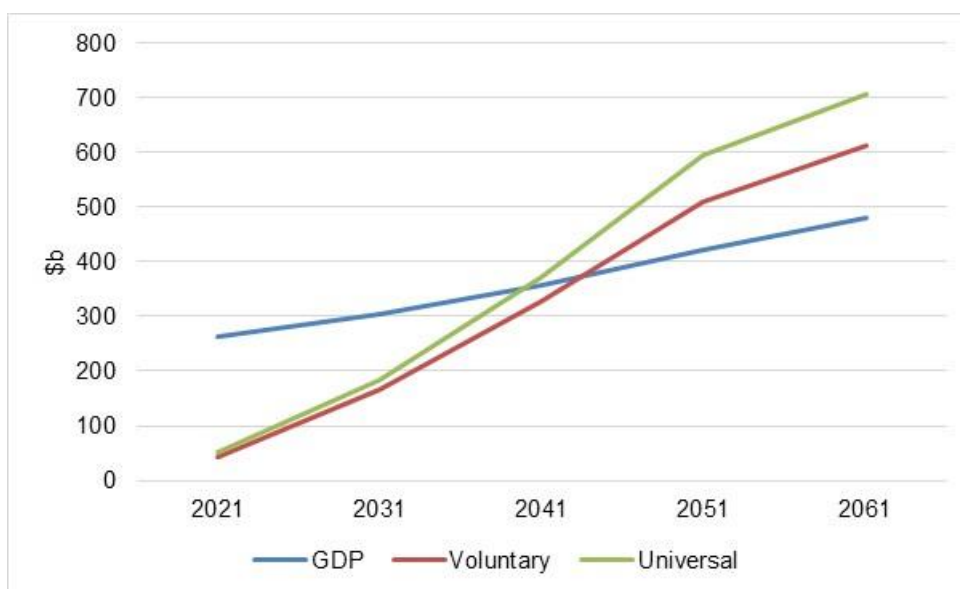
Clearly the Universal option produces a far larger savings pool. By 2061 it is more than 50% larger and around 153% of GDP. Even though the Universal scheme has a lower contribution rate, it has more participants and lower tax rates on investment earnings than the Voluntary Scheme. Two caveats should be noted:

1. Although the model extends to 2101, no new cohorts enter after 2066. Thus FUM estimates beyond then would be misleading.
2. Funds held by people over 65 and under 25 are excluded.

Table 8: Funds Under Management

	GDP	Voluntary		Universal	
		Current PIE Tax Rates (10.5%, 17.5%, 28%)	Fiscally Neutral PIE Tax Rates (4.3%, 8%, 15%)		
	\$billion	\$billion	%	\$billion	%
2021	263	44	17%	51	20%
2031	306	165	54%	184	60%
2041	356	327	92%	371	104%
2051	421	511	121%	596	142%
2061	481	613	127%	708	147%

Figure 7: Funds Under Management v GDP



Currently KiwiSaver funds have about \$1.6 billion invested in New Zealand equities out of an aggregate portfolio of \$17.2 billion. This does not distinguish between

portfolio types. However, Table 9 shows a possible portfolio composition for different types of KiwiSaver funds.

Table 9: Morningstar Portfolio Allocations (%)

	Conservative	Moderate	Balanced	Growth	Aggressive
Australasian Equity	5.0	8.0	16.0	24.0	32.0
International Equity	9.0	14.0	25.0	36.0	48.0
Property	6.0	8.0	9.0	10.0	10.0
New Zealand Fixed Interest	34.0	31.0	23.0	14.0	5.0
International Fixed Interest (Hedged)	34.0	31.0	23.0	14.0	5.0
New Zealand Cash	12.0	8.0	4.0	2.0	0.0

Applying this information to the projected FUM estimates in Table 8 provides an indication of the effect on the New Zealand and Australasian share markets – see Table 10. Under the Voluntary scenario where most KiwiSaver accounts are invested in Balanced funds, investment in Australasian equities could be worth \$26 billion by 2031, and around \$44 billion under a Universal scheme. The New Zealand component may be around \$15 billion and \$17 billion respectively.

Table 10: Projected KiwiSaver Equity Investment (\$ billion)

	Australasian Equity		NZ Equity	
	Balanced	Growth	Current aggregate KiwiSaver portfolio	
	Voluntary	Universal	Voluntary	Universal
2021	7.0	12.3	4.1	4.8
2031	26.4	44.1	15.3	17.1
2041	52.3	89.1	30.4	34.5
2051	81.8	143.0	47.5	55.4
2061	98.1	169.9	57.0	65.8

A different perspective is provided by Table 11. By 2061 the Voluntary and Universal scenarios have funds under management invested in New Zealand equities amounting to around 12-13% of GDP. This is more than double the amount that would be likely if KiwiSaver continues unchanged (contribution rates averaging 6.5% with about 50% participation). It also represents by how many percentage points of GDP the stock market would increase in the absence of any other favourable shocks.

Table 11: Impact of KiwiSaver FUM on NZ Stock Market in 2061

	\$ billion	% of GDP
As at 2013	1.6	0.8%
No change	24.7	5.1%
Voluntary	57.0	11.9%
Universal	65.8	13.7%

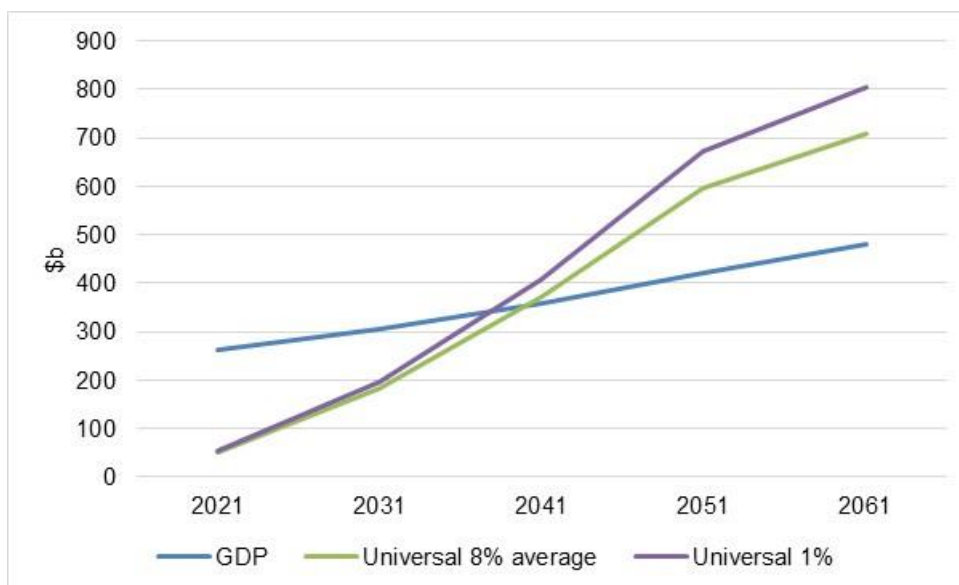
Universal Scenario with 1% PIE Tax Rate

Reducing the tax rate on KiwiSaver investment earnings to 1% raises FUM by 7% by 2031 and 14% by 2061, relative to the fiscally neutral PIE tax rates scenario. This may seem less than expected, but the relative effect of the change in the average tax is only 7%, raising what most KiwiSaver investors actually retain from 92% of the pre-tax return to 99% of the pre-tax return.

Table 12: Funds Under Management (% of GDP)

	Universal Fiscally Neutral PIE Tax Rates (4.3%, 8%, 15%)	Universal 1% PIE Tax Rate
	%	%
2021	20%	20%
2031	60%	64%
2041	104%	114%
2051	142%	160%
2061	147%	167%

Figure 8: Funds Under Management v GDP



Appendix A: Income Distribution

Table A1 shows the distribution of personal income for people aged 15 and above. This is based on cross-sectional data measured at a point in time; namely the year ended June 2012.

Most people do not spend their entire life in the same income decile, which means that measures of lifetime income distribution tend to show less inequality than cross-sectional measures. Lifetime Gini coefficients are typically 50-60% of cross-sectional Gini coefficients. Much of the difference is attributable to the effect of age as income tends to be lower at younger ages and at older ages, peaking between 50 and 60. Another significant contributing factor is time out of the labour force, especially for women.

The last two columns in Table A1 express the mean of each income decile as a proportion of the overall mean, for the cross-sectional data, and for an estimated working lifetime (ages 20-65) income distribution. For example, at a point in time (the year ended June 2012) the income of decile 1 is only 3% of mean income, but adding up total income earned between the ages of 20 and 65 raises the income of decile 1 to 53% of the overall mean.

Table A1: Personal Income Distribution 2012, Ages 15+

Deciles	Income	Decile mean as % of overall mean	
		Cross Section	Working Life 20-65
1	Under \$1,400	3	53
2	\$1,400 to \$10,999	16	61
3	\$11,000 to \$16,299	36	70
4	\$16,300 to \$21,899	51	79
5	\$21,900 to \$29,999	69	89
6	\$30,000 to \$37,799	90	101
7	\$37,800 to \$46,999	113	114
8	\$47,000 to \$59,999	142	128
9	\$60,000 to \$79,999	186	144
10	\$80,000 and above	292	161
Mean	\$39,800	100	100
Median	\$30,200	76	95
Minimum Wage	\$28,700	72	72
NZS single	\$19,700	49	49
NZS half married	\$16,200	41	41
Supported Living Allow.	\$15,100	38	38
Job Seeker support	\$12,000	30	30

Source: SNZ Household Economic Survey & Infometrics estimates.