Proposed FSC KiwiSaver Scenarios: The Power of Changing Compound Returns, Taxes & Fees on KiwiSaver Retirement Balances

for Financial Services Council

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Contents

Authorship

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1. Background

Introduction

In 2013 the Financial Services Council released *Can We Fund a Comfortable Retirement for Most New Zealand Employees with a 7% Contribution Rate?* It was assumed that KiwiSaver savings would be used to fund a second pension equivalent to New Zealand Superannuation (NZS) which would be paid on top of NZS, giving a combined 'comfortable' retirement income of about two times NZS.

The report looked at the effects on KiwiSaver accumulation of changes in one's investment portfolio, changes in KiwiSaver fund tax rates and changes in fees, demonstrating that the most significant effect comes from the choice of portfolio, followed by the effect of taxes. By changing the investment style from conservative to growth, the fund tax treatment of, and fees paid, by default KiwiSavers, the contribution rate required to fund a comfortable retirement drops from 13.1% to 6.1% of income.

After the 2013 report was released commentators and analysts asked for a breakdown of the differences in contributions and tax paid, and of the effects of compounding under each scenario.

Hence this paper looks in more detail at these effects, asking:

> How is an individual's KiwiSaver balance at age 65 affected by taxes, fees and the choice of investment portfolio?

As usual with these types of questions, they seem simple, but determining an answer depends on a large collection of assumptions. To preserve some degree of continuity with previous analysis, the above questions are investigated in the context of Scenarios A and E as described in *Can We Fund a Comfortable Retirement for Most New Zealand Employees with a 7% Contribution Rate?* The specifics are set out in the following section.

Background Assumptions

An individual is aged 25 in 2021, retiring at 65 in 2061, with the following assumptions for Scenario A:

1. Labour productivity is 1.1% pa. and NZS is indexed to this.
2. Under a conservative portfolio the real rate of return on investment after fees and tax is 4% pa for someone on the average KiwiSaver fund (PIR) tax rate of 17.5%.
3. Existing PIE KiwiSaver PIR tax rates apply. See Table 1.
4. There is a $1000 up front contribution from government.

5. The government also contributes an annual average $521 to each account. The $521 is assumed to be indexed to labour productivity.

6. The age of eligibility for NZS rises by six months every year form 2019/20, until it reaches 67, where it remains. The formula currently used to set NZS would remain and there would be no income or assets test.

7. Life expectancy at age 65 in 2061 is about 31 years for both males and females (SNZ 2012 Very Low Mortality population projections).

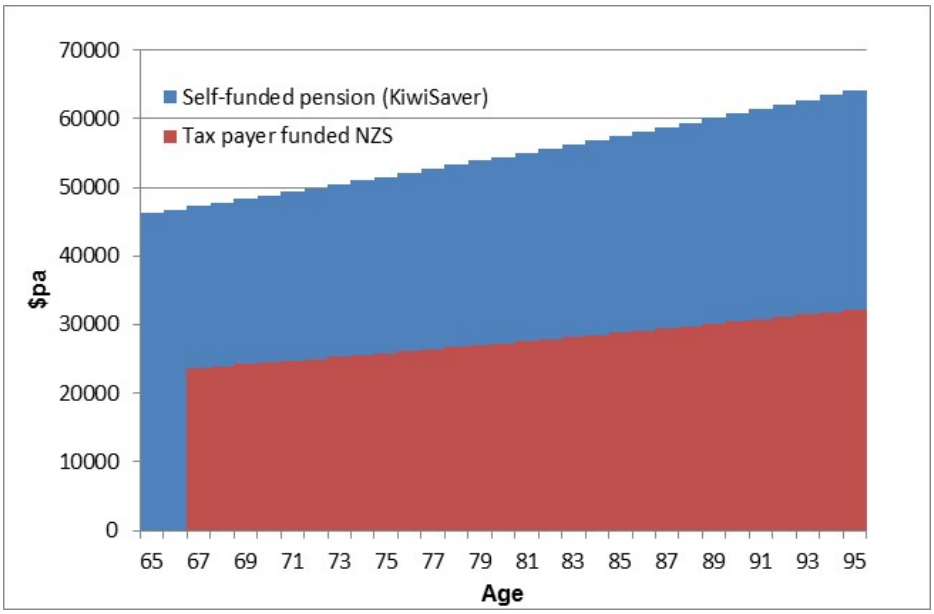
8. The contribution rate is set at 13.1% which, for someone whose average income profile over their working life places them in the second lowest of ten longitudinal income groups (deciles), enables them to accumulate a savings balance at age 65 that will deliver a private pension which is equal to twice the value of NZS for two years at ages 65 and 66, and equal to NZS from 67 onwards? Figure 1 below illustrates the concept. For 2013 this second decile level of income is about $30,300, slightly above the minimum wage of $28,200. Note that this is not the same as a cross-sectional measure of the average income of the second decile.

Table 1: Conservative to Balanced or Growth Portfolios - KiwiSaver Scenarios to Fund a Comfortable Retirement at Two Times New Zealand Superannuation

	Income for PIR bands	Scenario A Conservative	Scenario E Balanced	Scenario E Growth
Inflation rate		2.00%	2.00%	2.00%
Gross real rate		6.42%	7.80%	8.60%
Fee rate		1.10%	1.05%	1.15%
Gross real after fees		5.26%	6.68%	7.37%
		Current PIR rate	FSC Proposed PIR Rates	
KiwiSaver fund PIR Tax rates and income bands*	Up to $48,000	10.5%	4.3%	4.3%
	$48,0000 to $70,000	17.5%	8.0%	8.0%
	Over $70,000	28.0%	15.0%	15.0%
Real after tax rates of return (Related PIR tax rate)		4.50% (10.5%)	6.31% (4.3%)	6.96% (4.3%)
		4.00% (17.5%)	5.99% (8.0%)	6.62% (8.0%)
		3.24% (28.0%)	5.38% (15.0%)	5.97% (15.0%)
Contribution rate required to achieve target balance		13.1%	7.6%	6.1%

* For more detail see http://www.ird.govt.nz/toii/pir/workout/

Figure 1: Pension Profile



2. Scenario A: Conservative Portfolio

The first part of Table 2 shows the distribution of one's KiwiSaver balance at age 65 in terms of how it is accumulated – the money going in – the KiwiSaver's contributions and the investment earnings if there are no taxes or fees. The second part shows how that notional balance is eroded by taxes and fees to what one actually receives at age 65 – the money going out.

Table 2: Decomposition of Scenario A*
(Conservative portfolio 4.0% return for mean income, contribution rate 13.1%)

	Mean	Median	Minimum Wage	Decile 10
	$'000	$'000	$'000	$'000
Income level in 2013	54.6	46.9	28.2	159.5
Where does the money come from?				
KiwiSaver's contributions over 40 years	390	335	201	1138
Government's contributions ($1000 start-up + $521 pa annum indexed)	29	29	29	29
Total investment returns if no tax or fees paid	1245	1083	689	3457
KiwiSaver balance at age 65 if no tax or fees paid	**1664**	**1447**	**919**	**4624**
Where does the money go?				
Tax paid at current PIR rates on investment returns	232	208	88	928
Loss of compounding investment returns from tax payments not able to be reinvested	362	235	92	1027
Combined tax loss effect	595	444	180	1955
Fees actually paid	153	134	93	382
Loss of compounding investment returns from fee payments not able to be reinvested	5	61	63	65
Combined fee loss effect	158	195	156	447
Actual KiwiSaver balance available at age 65 after impact of tax and fees	**911**	**809**	**584**	**2222**
Current effective tax rates on investment returns	47.8%	41.0%	26.1%	56.6%
Starting current PIR tax rates on KiwiSaver funds^	17.5%	17.5%	10.5%	28.0%
Marginal income tax rates	30.0%	17.5%	17.5%	33.0%

* While relative effect sizes are not independent of the order in which they are calculated, the hierarchy of impacts is robust; investment returns matter most, then taxes and then fees.
^ As KiwiSaver balances accumulate the associated returns typically tip someone into the next PIR tax bracket.

There are four sets of figures; for an individual on mean income, on median income, on the minimum wage and in income decile 10. For illustrative purposes these incomes are assumed to apply over an individual's entire working life – they do not vary with age. Table 3 shows estimated values for the year ended March 2013.

The results in Table 2 and Figure 1 show that by far the majority of one's balance at age 65 is attributable to returns on investment rather than to contributions (see Figure 1), demonstrating the power of compound interest.

Its power is also evident with regard to the loss attributable to tax paid on the investment return. Every dollar that is paid in tax is a dollar that is not reinvested and so foregoes any future compound returns. This indirect tax effect is larger than the tax directly paid – see Figure 3. It means that the effective tax rate on investment returns for someone on mean income is 47.8%, compared to the statutory PIR tax rate for this group of 17.5%, although someone on mean income is tipped into the next PIR tax rate of 28.0% for most of the last 10 years of saving, which is when investment returns are highest.

The same shifting of tax brackets can occur for people on median income or on the minimum wage, although tax rates for the latter group tend to be more stable. Someone in the middle of decile 10 (the top 10% of income earners) is already in the top tax bracket and so cannot move into a higher bracket irrespective of the size of their investment returns. However, for this group the effective tax rate is over 55%.

The concept of compounding loss also applies to fees not re-invested. However, in some cases the amount is quite small. This is because the payment of fees reduces the investment return which can shift an individual into a lower tax bracket.

Table 3: 2013 Incomes and Tax Rates

	Annual $	Marginal income tax rate	KiwiSaver fund PIR tax rate*	Effective KiwiSaver fund tax rate
Mean	$54,600	30.0%	17.5%	47.8%
Median	$46,900	17.5%	10.5%	41.0%
Minimum Wage	$28,200	17.5%	10.5%	26.1%
Decile 10	$159,500	33.0%	28.0%	55.6%

Sources: SNZ, Infometrics estimate for mid-point of decile 10.

* These are the PIR tax rates that prevail at the start. Except for someone in income decile 10 investment returns typically push people into the next PIR tax bracket. See http://www.ird.govt.nz/toii/pir/workout/

The related graphs for median income, the minimum wage and decile 10 income are shown in the Appendices.

Figure 1: Where does the money come from?
(Conservative portfolio 4.0% return for mean income, contribution rate 13.1%)

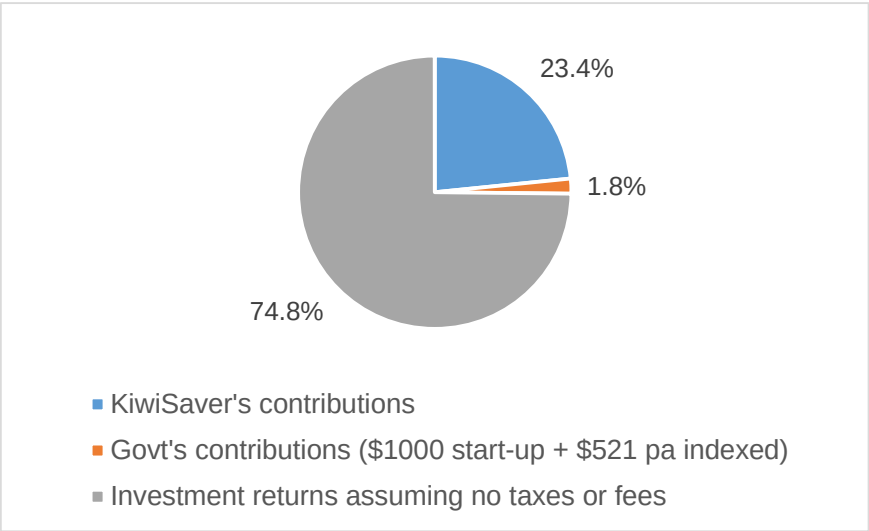


Figure 2: Where does the money go?
(Conservative portfolio 4.0% return for mean income, contribution rate 13.1%)

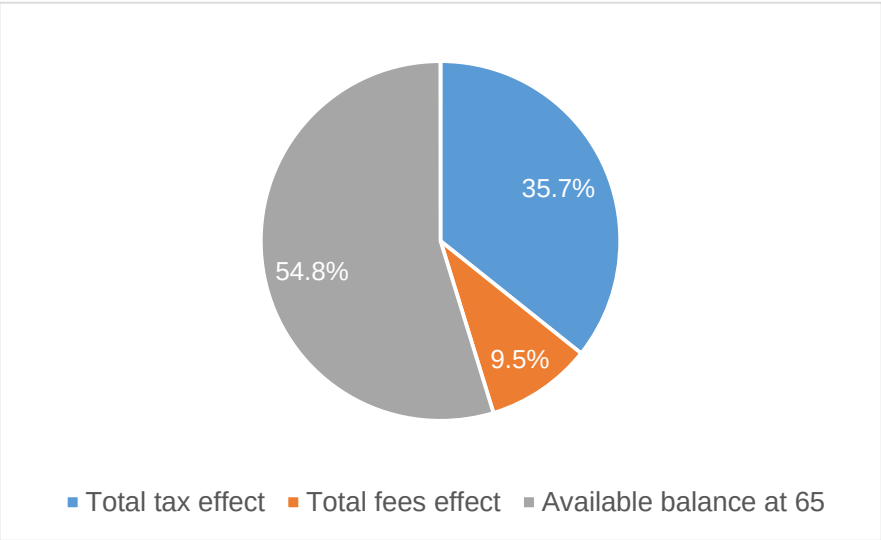


Figure 3: Components of Tax Effect

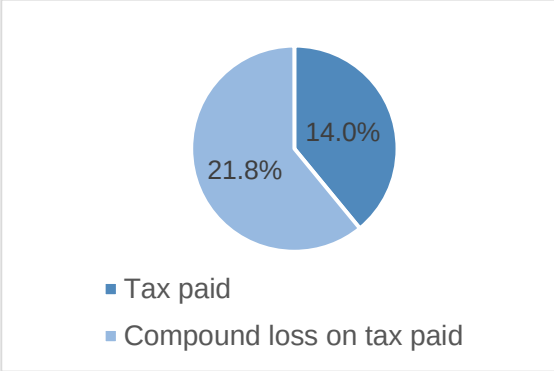
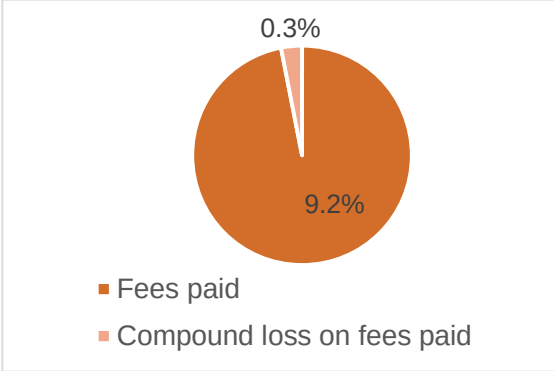


Figure 4: Components of Fee Effect



3. Scenario E: Balanced Portfolio

Table 4 is analogous to Table 3 except that it relates to a Balanced Portfolio as defined in *Can We Fund a Comfortable Retirement for Most New Zealand Employees with a 7% Contribution Rate?* The Member Tax Credit (MTC) is removed and the PIR tax rates are reduced to compensate – refer Table 1. It is assumed that everyone utilises the full value of the MTC, albeit we know that this is not true, especially for many savers on modest incomes. The $1000 up front government contribution remains.

Table 4: Decomposition of Scenario E*

(Balanced portfolio 6.0% return for mean income, no MTC but $1000 up front remains, contribution rate 7.6%)

	Mean	Median	Minimum Wage	Decile 10
	$'000	$'000	$'000	$'000
Income level in 2013	54.6	46.9	28.2	159.5
Where does the money come from?				
Kiwisaver's contributions over 40 years	226	194	117	660
Government's contribution ($1000 start-up)	1	1	1	1
Total investment returns if no tax or fees paid	1051	905	551	3035
KiwiSaver balance at age 65 if no tax or fees paid	**1278**	**1100**	**669**	**3696**
Where does the money go?				
Tax paid at proposed PIR rates on investment returns	96	85	30	479
Loss of compounding investment returns from tax payments not able to be reinvested	211	139	44	648
Combined tax loss effect	307	224	74	1127
Fees actually paid	110	96	62	291
Loss of compounding investment returns from fee payments not able to be reinvested	80	98	73	233
Combined fee loss effect	191	194	135	524
Actual KiwiSaver balance available at age 65 after impact of tax and fees	**780**	**682**	**460**	**2045**
Effective tax rate on investment returns with proposed PIR tax rates on KiwiSaver funds	29.2%	24.8%	13.4%	37.1%
Proposed starting PIR tax rates on KiwiSaver funds	8.0%	8.0%	4.3%	15.0%
Current effective tax rate on investment returns	47.8%	41.0%	26.1%	56.6%
Starting current PIR tax rates on KiwiSaver funds	17.5%	17.5%	10.5%	28.0%
Marginal income tax rates	30.0%	17.5%	17.5%	33.0%

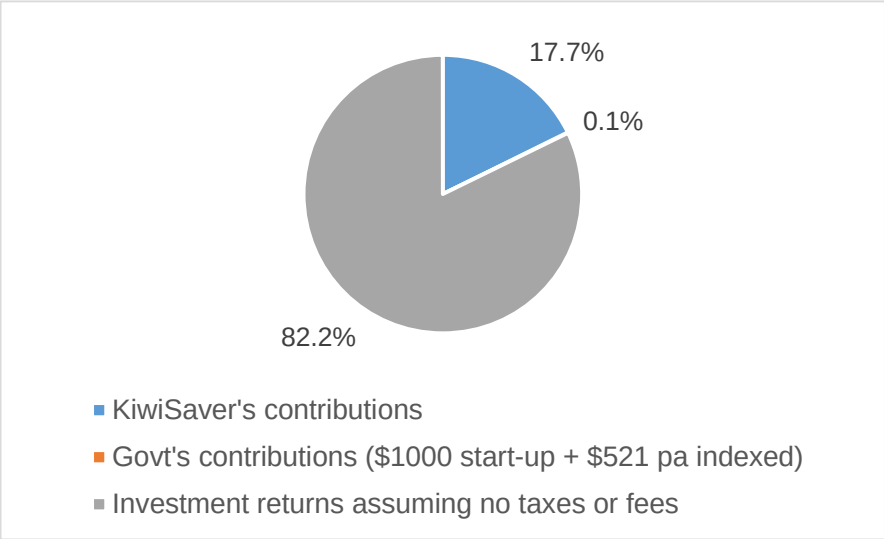
* Relative effect sizes are not independent of the order in which they are calculated.

The contribution rate is reduced to 7.6%, which is the rate required for someone in longitudinal income decile 2 to meet the savings target under the balanced portfolio scenario. (That is, the rate required for someone in longitudinal income decile 2 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 – refer Figure 1 above).

Because the higher rate of return applies to the portfolio as it is being accumulated and as it is being drawn down (that is during retirement), the balance at age 65 can be less than under Scenario A. As shown in Table 4, for someone on the mean income the balance is only $780,000 compared to $911,000 in Table 3. Less saving is needed as it earns a higher return.

Not surprisingly, with a higher rate of return more of one's balance at age 65 is generated by investment returns, at the same time as less has to come from personal KiwiSaver contributions – refer Figures 1 and 5. By assumption the only government contribution is the $1000 enrolment subsidy.

Figure 5: Where does the money come from?
(Balanced portfolio 6.0% return for mean income, no MTC, contribution rate 7.6%)



Mirroring the higher returns, the total tax wedge is smaller than in Scenario A, falling from 35.7% to 24.0%. However, the loss of compound returns through tax payments not being reinvested is now a higher proportion of the total tax effect – Figures 3 and 7. This is a natural consequence of the higher rate of return under a balanced portfolio.

The effective tax rate on investment returns for someone on mean income is 29.2% compared to the proposed PIR tax rate for this group of 8.0%. For someone in decile 10 the effective tax rate is 37.1% and the proposed PIR tax rate is 15%. So even with the proposed lower PIR tax rates the effective tax rate for someone in decile 10 is still higher than the existing statutory marginal income tax rate of 33%.

Figure 6: Decomposition of Scenario E
(Balanced portfolio 6.0% return for mean income, no MTC but $1000 up front remains, contribution rate 7.6%)

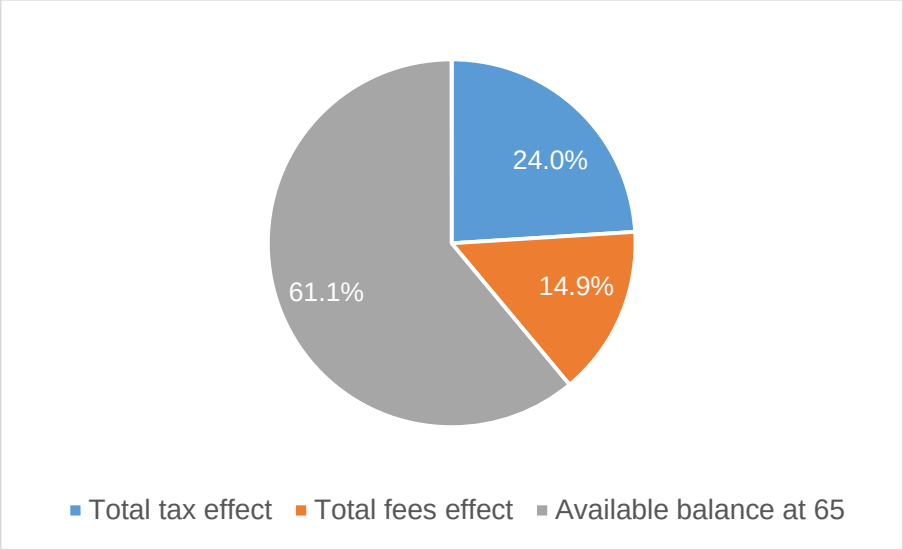


Figure 7: Components of Tax Effect

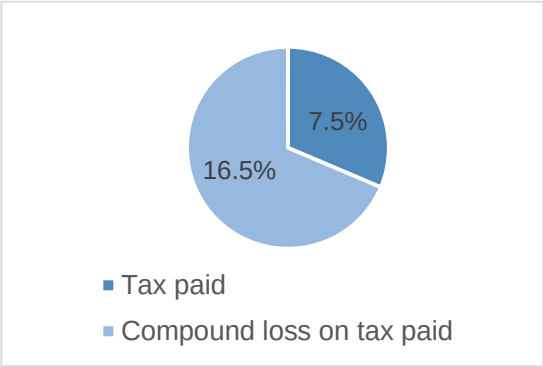
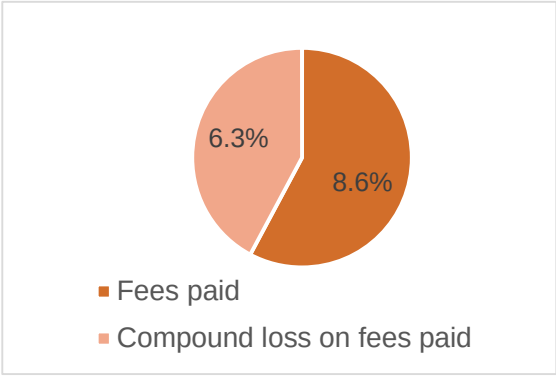


Figure 8: Components of Fee Effect



Similar graphs for median income, the minimum wage and decile 10 income are shown in the Appendices.

4. Scenario E: Growth Portfolio

Scenario E was also examined with a Growth Portfolio rather than a Balanced Portfolio. This lifts the rate of return after fees and tax to 6.6% from 6.0% for someone on mean income. The contribution rate required for someone in longitudinal income decile 2 to meet the savings target is 6.1%. Table 5 and Figures 9-12 show the results. They are largely a continuation of the changes observed between the Conservative and Balanced portfolios. Effective tax rates are somewhat higher than under the Balanced scenario as the higher rate of return increases the opportunity cost of paying tax.

Table 5: Decomposition of Scenario E*
(Growth portfolio 6.6% return for mean income, no MTC but $1000 up front government contribution remains, contribution rate 6.1%)

	Mean	Median	Minimum Wage	Decile 10
	$'000	$'000	$'000	$'000
Income level in 2013	54.6	46.9	28.2	159.5
Where does the money come from?				
Kiwisaver's contributions over 40 years	181	156	94	530
Government's contribution ($1000 start-up)	1	1	1	1
Total investment returns if no tax or fees paid	1082	933	570	3114
KiwiSaver balance at age 65 if no tax or fees paid	**1264**	**1089**	**665**	**3645**
Where does the money go?				
Tax paid at current PIR rates on investment returns	96	85	30	470
Loss of compounding investment returns from tax payments not able to be reinvested	233	163	50	735
Combined tax loss effect	329	247	80	1205
Fees actually paid	108	94	62	283
Loss of compounding investment returns from fee payments not able to be reinvested	96	112	86	269
Combined fee loss effect	205	206	147	552
Actual KiwiSaver balance available at age 65 after impact of tax and fees	**730**	**636**	**437**	**1888**
Effective tax rate on investment returns with proposed PIR tax rates on KiwiSaver funds	30.4%	26.5%	14.1%	38.7%
Proposed PIR tax rate on KiwiSaver funds	8.0%	8.0%	4.3%	15.0%
Current effective tax rates on investment returns	47.8%	41.0%	26.1%	56.6%
Starting current PIR tax rates on KiwiSaver funds	17.5%	17.5%	10.5%	28.0%
Marginal income tax rates	30.0%	17.5%	17.5%	33.0%

* Relative effect sizes are not independent of the order in which they are calculated.

Figure 9: Where does the money come from?
(Growth portfolio 6.6% return for mean income, no MTC, contribution rate 6.1%)

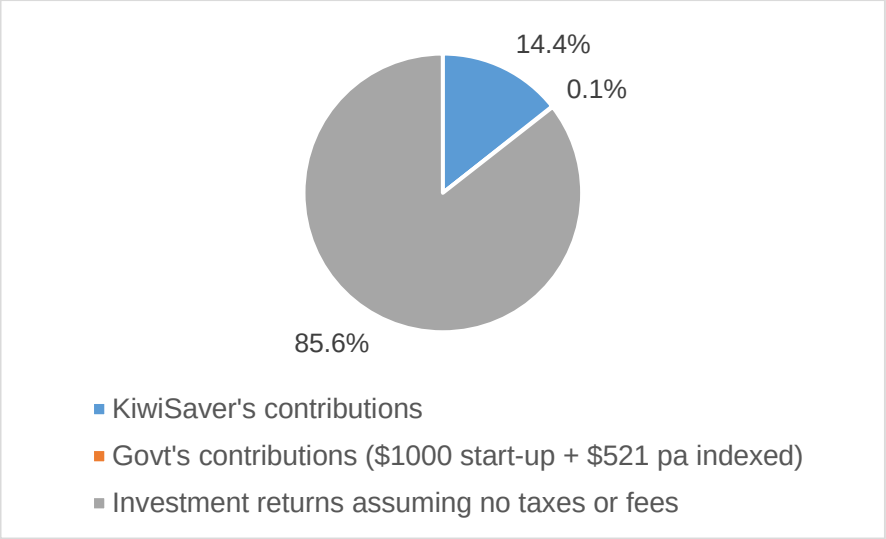


Figure 10: Decomposition of Scenario E
(Growth portfolio 6.6% return for mean income, no MTC, contribution rate 6.1%)

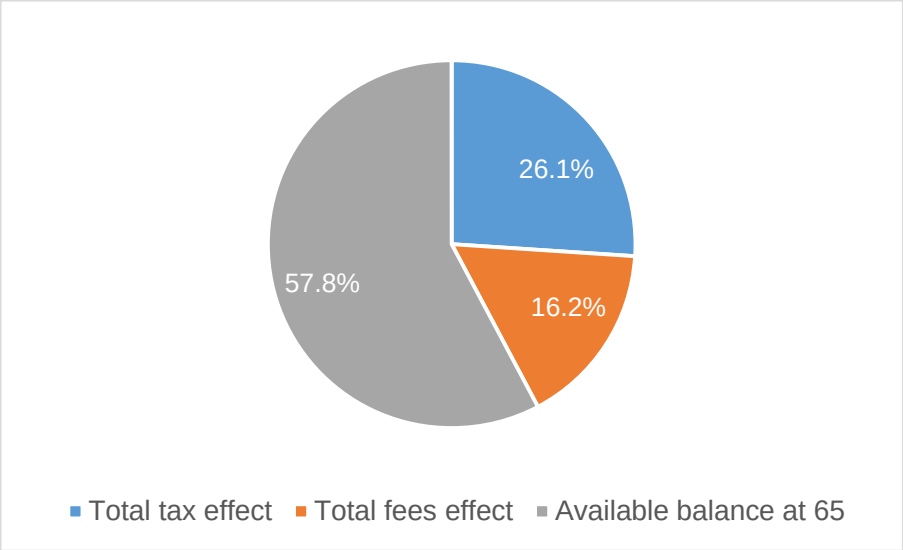


Figure 11: Components of Tax Effect

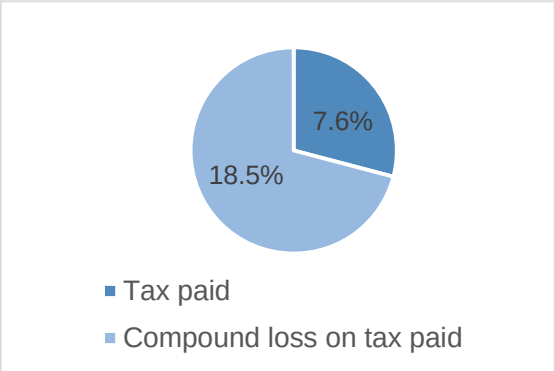
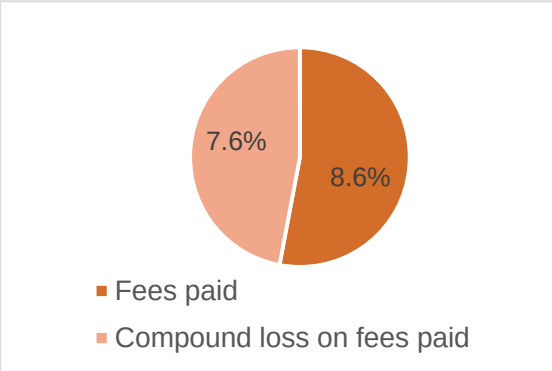


Figure 12: Components of Fee Effect



5. Comparison

Table 6 shows the difference in contributions, tax and fees effect when moving from the Conservative portfolio under Scenario A to the Scenario E variants with either a Balanced or Growth portfolio, for someone on mean income.

The largest gain is in moving from a Conservative to a Balanced portfolio which reduces required contributions by $164,000 (42%) over a 40 year saving period. A Growth portfolio reduces required savings by another 11%.

The only area where costs increase is with regard to the loss of compounding investment returns from fee payments not reinvested. This is a direct result of the small change in fees and the higher post-tax rates of return achieved under the Balanced and Growth scenarios (from both higher pre-tax rates and lower tax rates), which raises the opportunity cost of paying fees.

Tables 7 and 8 show similar pictures for someone on median income, on the minimum wage and for decile 10 income.

Table 6: Scenario Comparison for Mean Income

	Scenario A Conservative	Scenario E Balanced	Difference from A	Scenario E Growth	Difference from A
	$'000	$'000	$'000	$'000	$'000
KiwiSaver's contributions	390	226	-164	181	-208
Tax paid	232	96	-136	96	-136
Compounding tax loss effect	362	211	-152	233	-129
Total tax effect	595	307	-288	329	-265
Fees paid	153	110	-43	108	-45
Compounding fees loss effect	5	80	76	96	91
Total fees effect	158	191	32	205	46

Table 7: Scenario Comparison for Median Income

	Scenario A Conservative	Scenario E Balanced	Difference from A	Scenario E Growth	Difference from A
	$'000	$'000	$'000	$'000	$'000
KiwiSaver's contributions	335	194	-141	156	-179
Tax paid	208	85	-123	85	-124
Compounding tax loss effect	235	139	-96	163	-73
Total tax effect	444	224	-219	247	-196
Fees paid	134	96	-39	94	-40
Compounding fees loss effect	61	98	37	112	51
Total fees effect	195	194	-1	206	11

Table 8: Scenario Comparison for Minimum Wage

	Scenario A Conservative	Scenario E Balanced	Difference from A	Scenario E Growth	Difference from A
	$'000	$'000	$'000	$'000	$'000
KiwiSaver's contributions	201	117	-84	94	-108
Tax paid	88	30	-58	30	-58
Compounding tax loss effect	92	44	-48	50	-42
Total tax effect	180	74	-106	80	-100
Fees paid	93	62	-31	62	-31
Compounding fees loss effect	63	73	10	86	23
Total fees effect	156	135	-21	147	-8

Table 9: Scenario Comparison for Decile 10

	Scenario A Conservative	Scenario E Balanced	Difference from A	Scenario E Growth	Difference from A
	$'000	$'000	$'000	$'000	$'000
KiwiSaver's contributions	1138	660	-478	530	-608
Tax paid	928	479	-449	470	-458
Compounding tax loss effect	1027	648	-379	735	-292
Total tax effect	1955	1127	-828	1205	-750
Fees paid	382	291	-91	283	-99
Compounding fees loss effect	65	233	168	269	204
Total fees effect	447	524	77	552	105

Appendices

The following graphs for median income, minimum wage and decile 10 income are analogous to those in the preceding sections for mean income.

Median Income

Figure A1: Scenario A (Conservative) Where does the money come from?

Figure A2: Scenario A (Conservative) Decomposition of Scenario E

Figure A3: Scenario A (Conservative) Components of Tax Effect

Figure A4: Scenario A (Conservative) Components of Fee Effect

Figure A5: Scenario E (Balanced) Where does the money come from?

Figure A6: Scenario E (Balanced) Decomposition of Scenario E

Figure A7: Scenario E (Balanced) Components of Tax Effect

Figure A8: Scenario E (Balanced) Components of Fee Effect

Figure A9: Scenario E (Growth) Where does the money come from?

Figure A10: Scenario E (Growth) Decomposition of Scenario E

Figure A11: Scenario E (Growth) Components of Tax Effect

Figure A12: Scenario E (Growth) Components of Fee Effect

Minimum Wage

Figure B1: Scenario A (Conservative) Where does the money come from?

Figure B2: Scenario A (Conservative) Decomposition of Scenario E

Figure B3: Scenario A (Conservative) Components of Tax Effect

Figure B4: Scenario A (Conservative) Components of Fee Effect

Figure B5: Scenario E (Balanced) Where does the money come from?

Figure B6: Scenario E (Balanced) Decomposition of Scenario E

Figure B7: Scenario E (Balanced) Components of Tax Effect

Figure B8: Scenario E (Balanced) Components of Fee Effect

Decile 10 Income

Figure A1: Where does the money come from?
(Conservative portfolio 4.0% return for median income, contribution rate 13.1%)

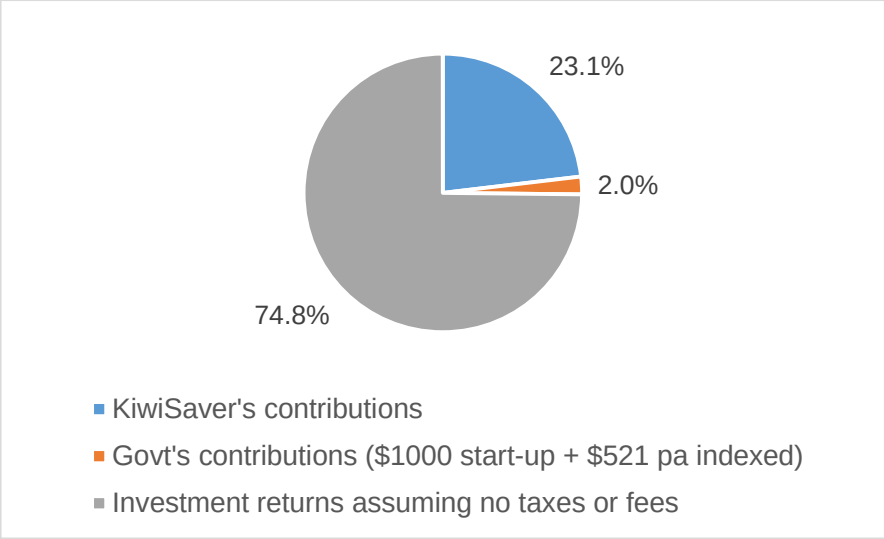


Figure A2: Decomposition of Scenario A
(Conservative portfolio 4.0% return for median income, contribution rate 13.1%)

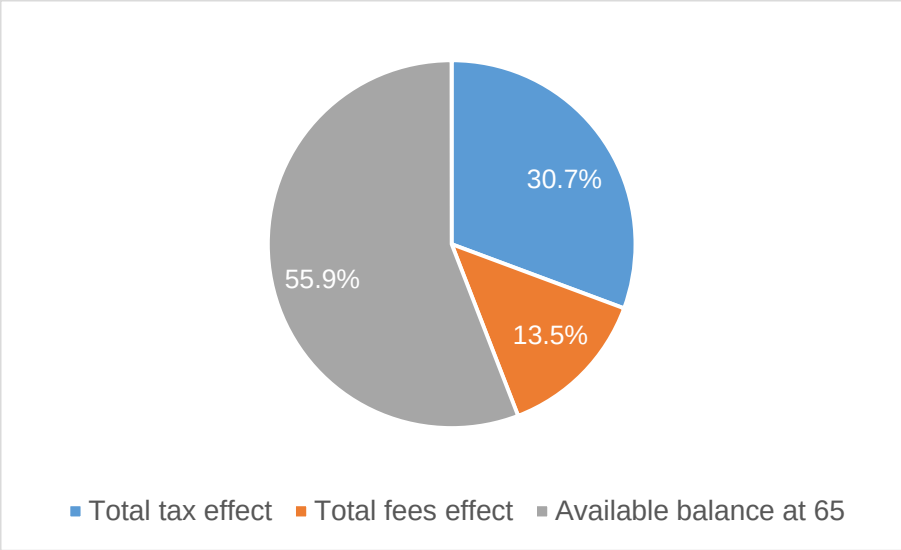


Figure A3: Components of Tax Effect

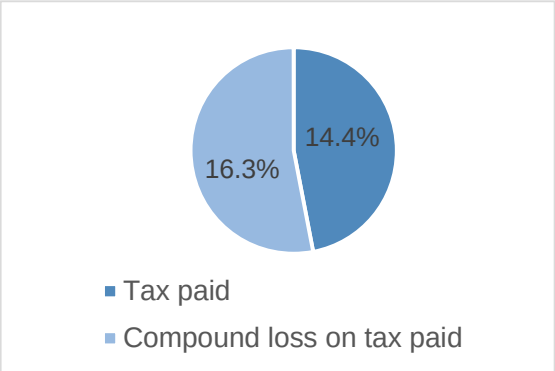


Figure A4: Components of Fee Effect

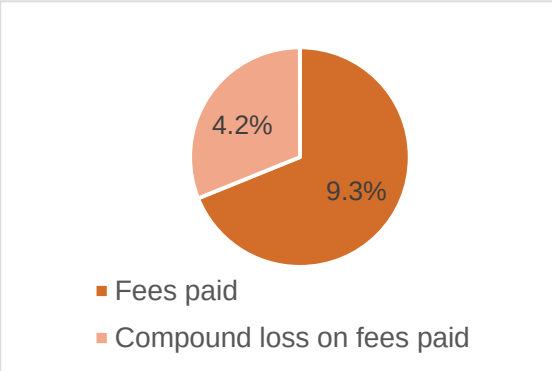


Figure A5: Where does the money come from?
(Balanced portfolio 6.0% return for median income, no MTC, contribution rate 7.6%)

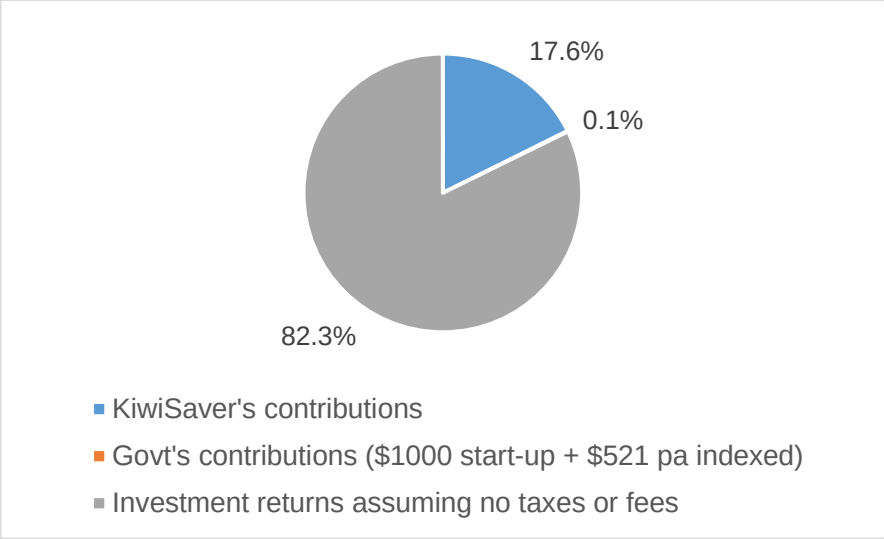


Figure A6: Decomposition of Scenario E
(Balanced portfolio 6.0% return for median income, no MTC, contribution rate 7.6%)

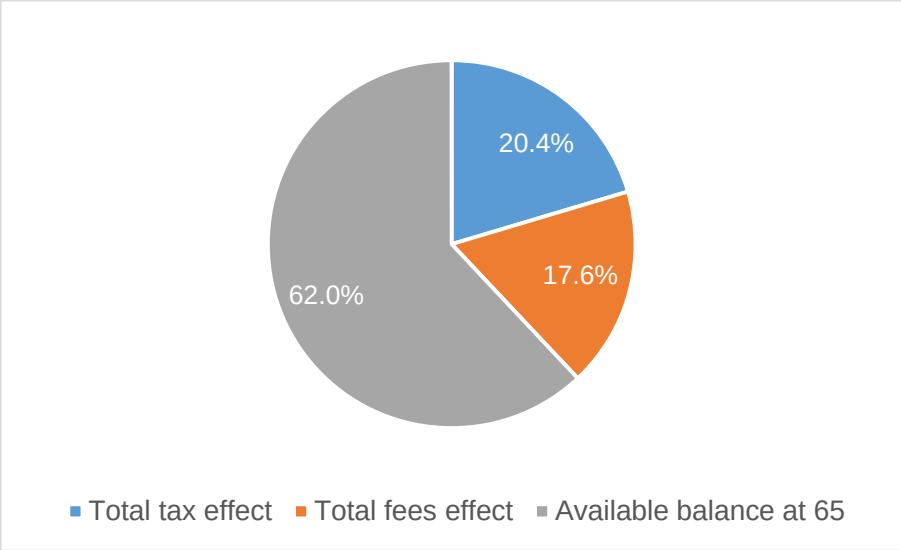


Figure A7: Components of Tax Effect

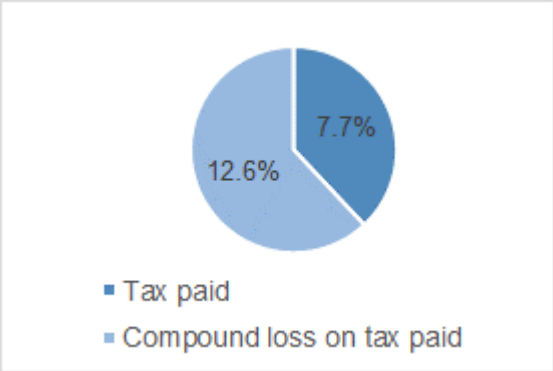


Figure A8: Components of Fee Effect

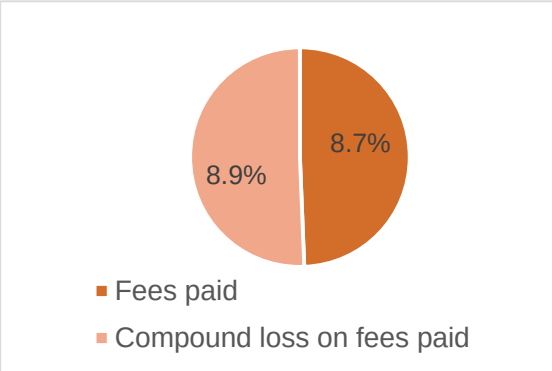


Figure A9: Where does the money come from?
(Growth portfolio 6.6% return for median income, no MTC, contribution rate 6.1%)

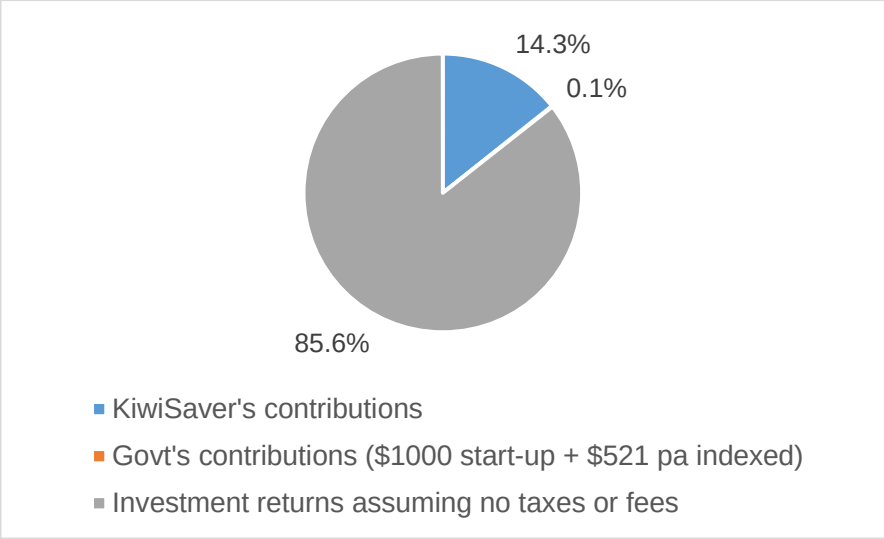


Figure A10: Decomposition of Scenario E
(Growth portfolio 6.6% return for median income, no MTC, contribution rate 6.1%)

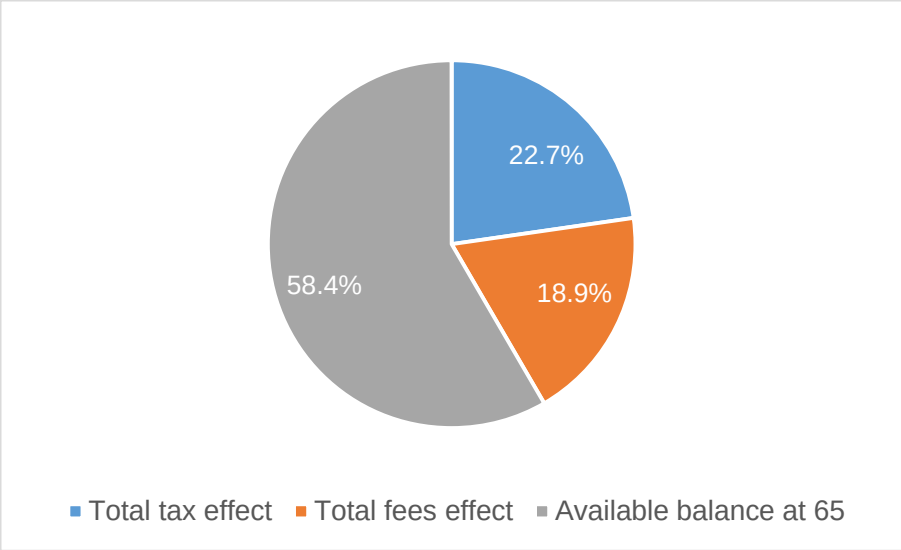


Figure A11: Components of Tax Effect

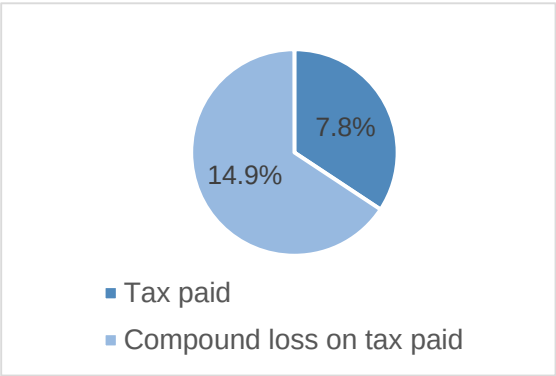


Figure A12: Components of Fee Effect

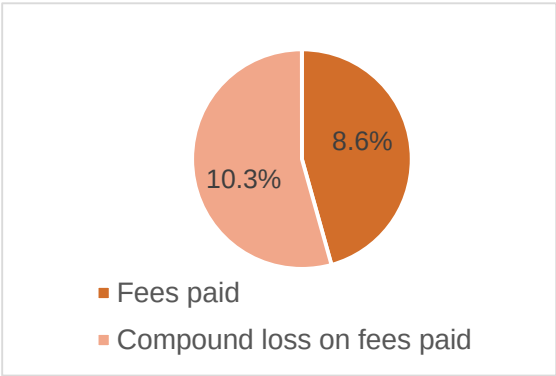


Figure B1: Where does the money come from?
(Conservative portfolio 4.5% return for minimum wage, contribution rate 13.1%)

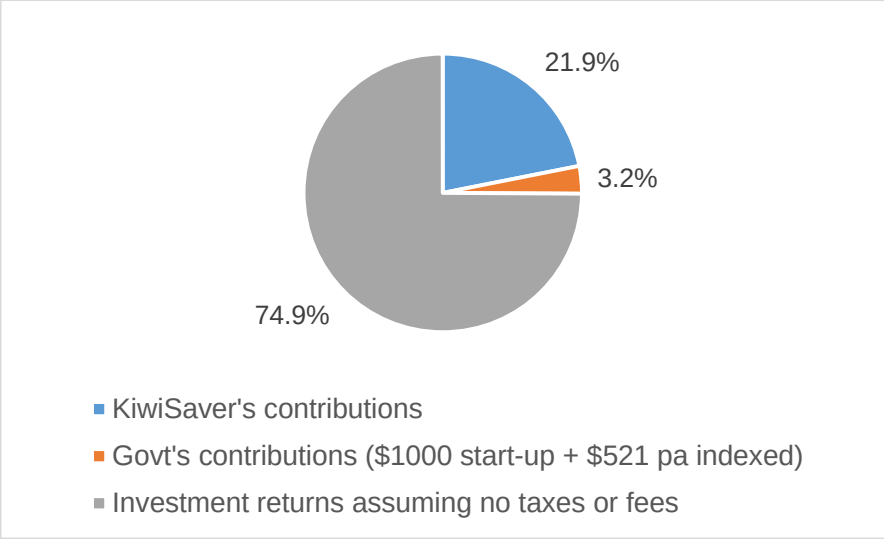


Figure B2: Decomposition of Scenario A
(Conservative portfolio 4.5% return for minimum wage, contribution rate 13.1%)

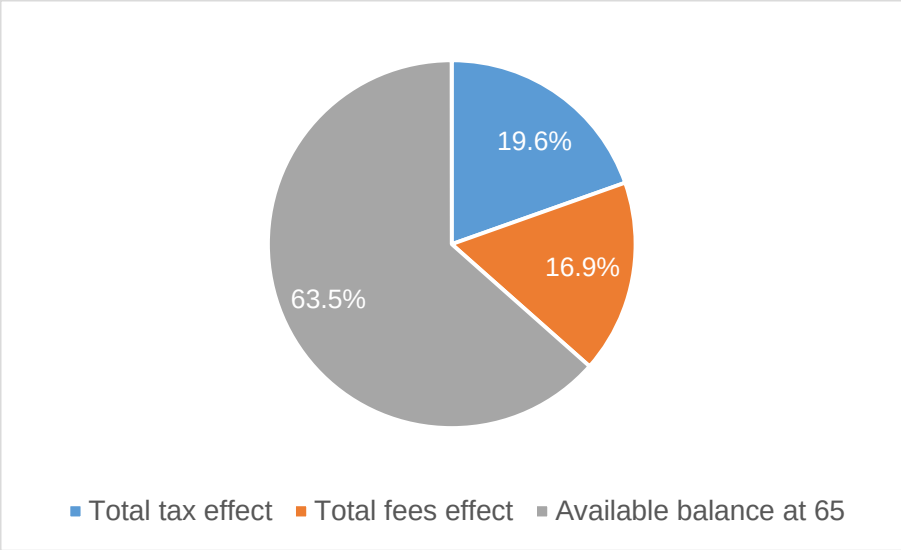


Figure B3: Components of Tax Effect

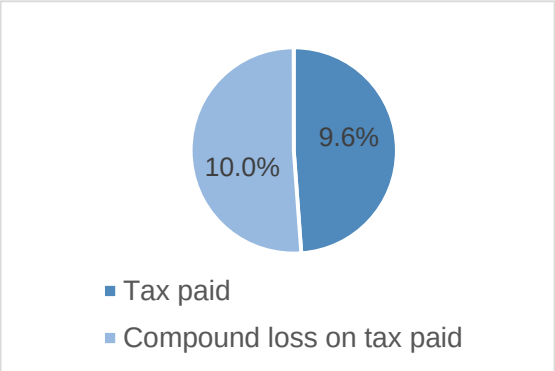


Figure B4: Components of Fee Effect

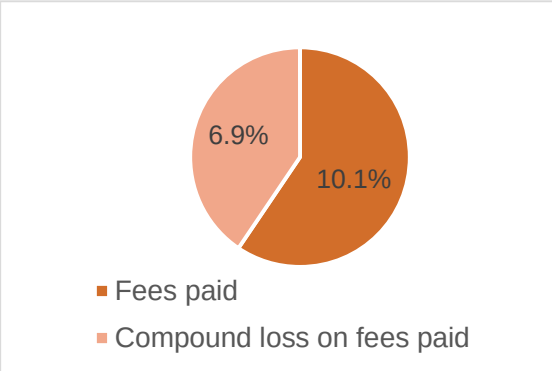


Figure B5: Where does the money come from?
(Balanced portfolio 6.3% return for minimum wage, no MTC, contribution rate 7.6%)

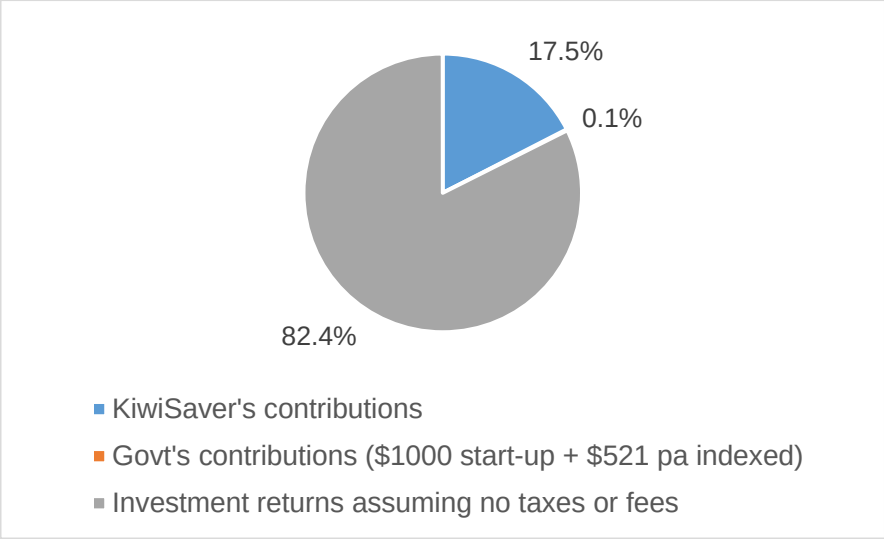


Figure B6: Decomposition of Scenario E
(Balanced portfolio 6.3% return for minimum wage, no MTC, contribution rate 7.6%)

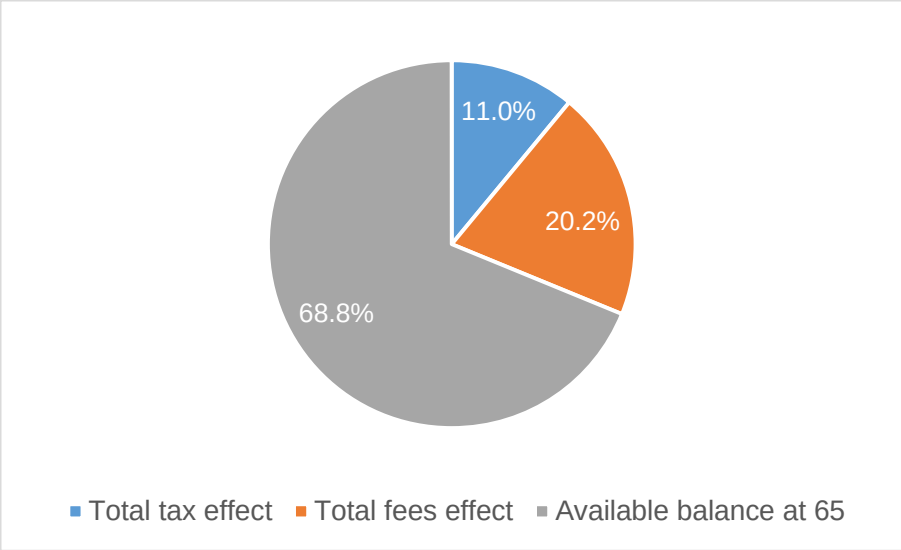


Figure B7: Components of Tax Effect

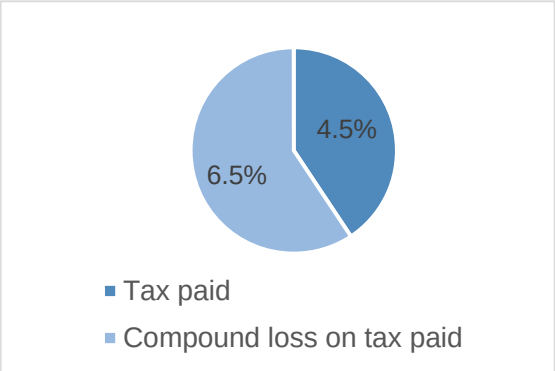


Figure B8: Components of Fee Effect

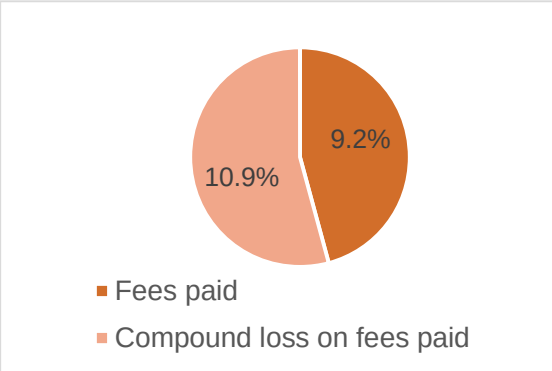


Figure B9: Where does the money come from?
(Growth portfolio 7.0% return for minimum wage, no MTC, contribution rate 6.1%)

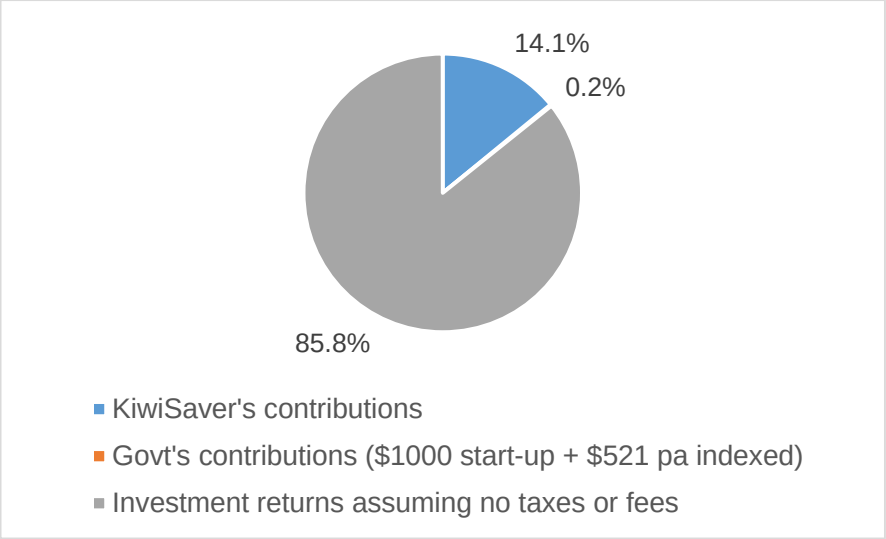


Figure B10: Decomposition of Scenario E
(Growth portfolio 7.0% return for minimum wage, no MTC, contribution rate 6.1%)

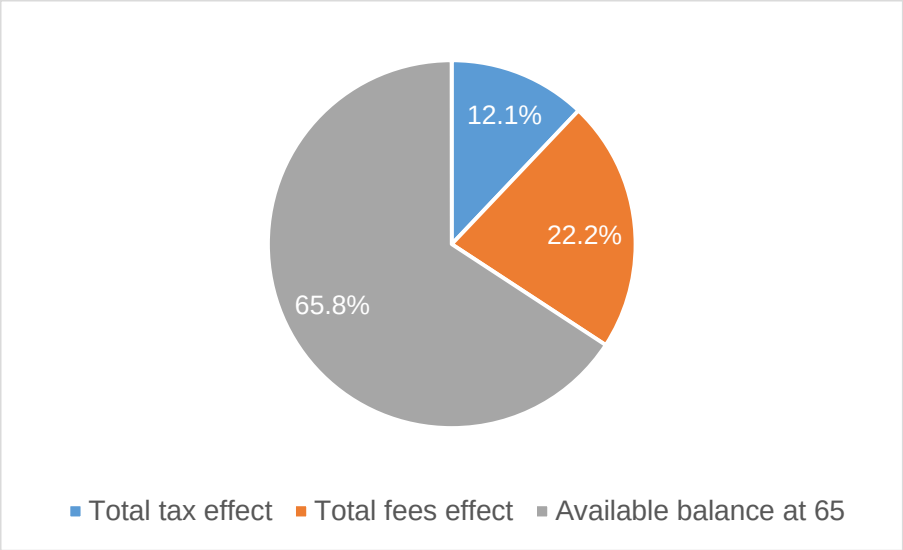


Figure B11: Components of Tax Effect

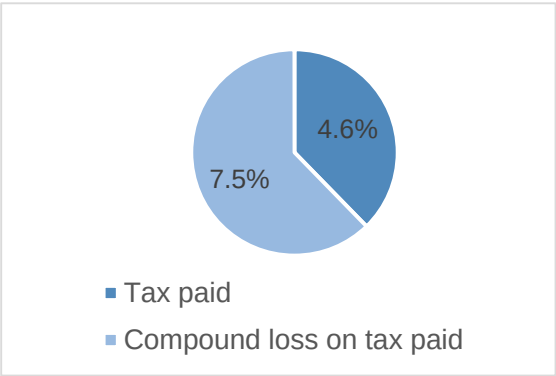


Figure B12: Components of Fee Effect

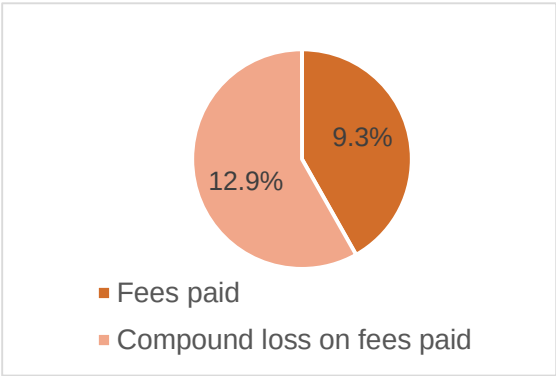


Figure C1: Where does the money come from?
(Conservative portfolio 3.2% return for decile 10 income, contribution rate 13.1%)

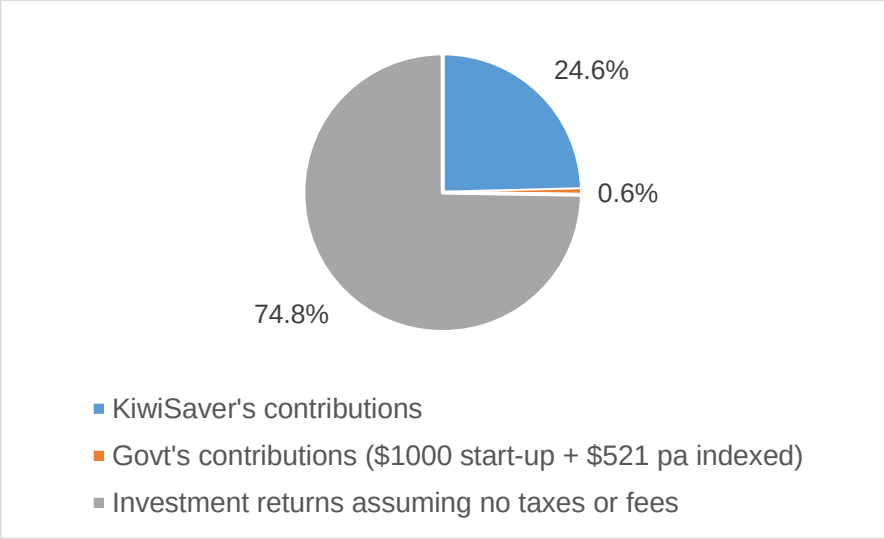


Figure C2: Decomposition of Scenario A
(Conservative portfolio 3.2% return for decile 10 income, contribution rate 13.1%)

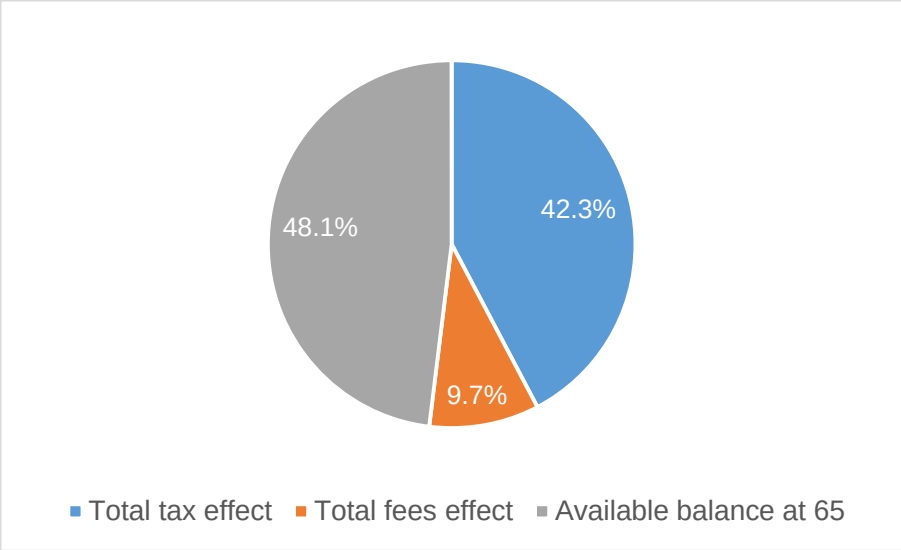


Figure C3: Components of Tax Effect

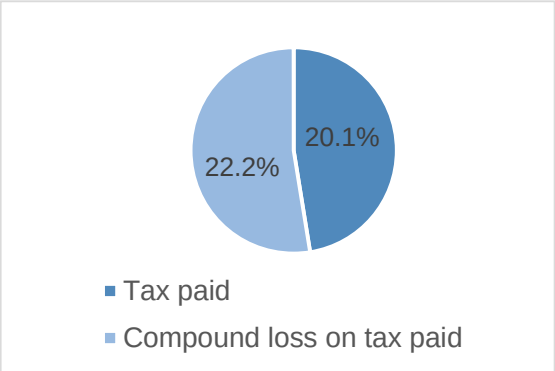


Figure C4: Components of Fee Effect

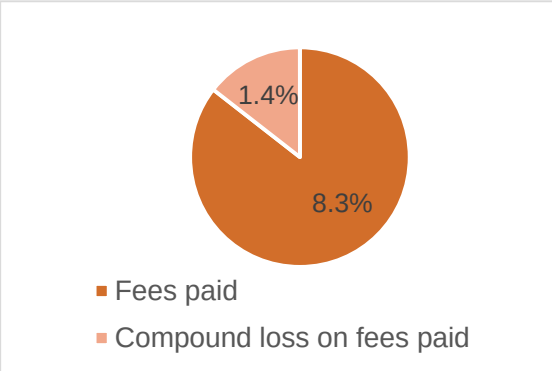


Figure C5: Where does the money come from?
(Balanced portfolio 5.4% return for decile 10 income, no MTC, contrib. rate 7.6%)

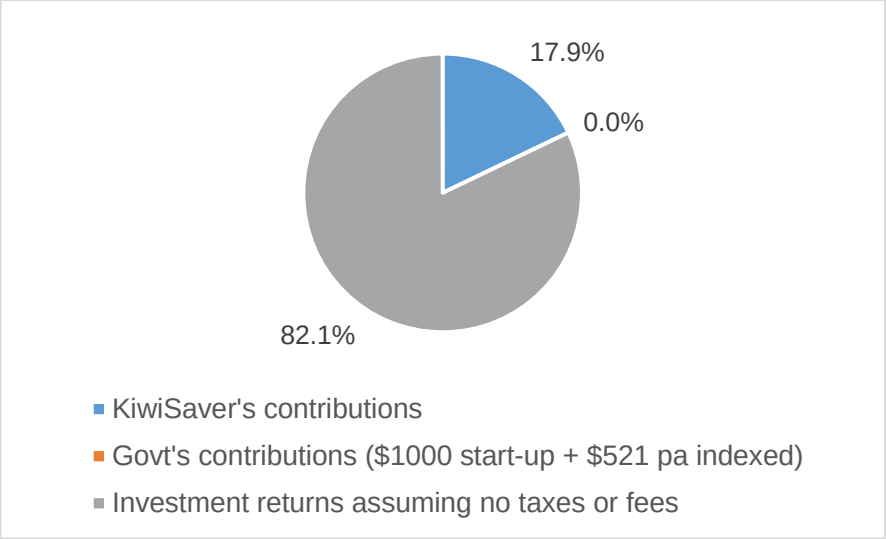


Figure C6: Decomposition of Scenario E
(Balanced portfolio 5.4% return for decile 10 income, no MTC, contrib. rate 7.6%)

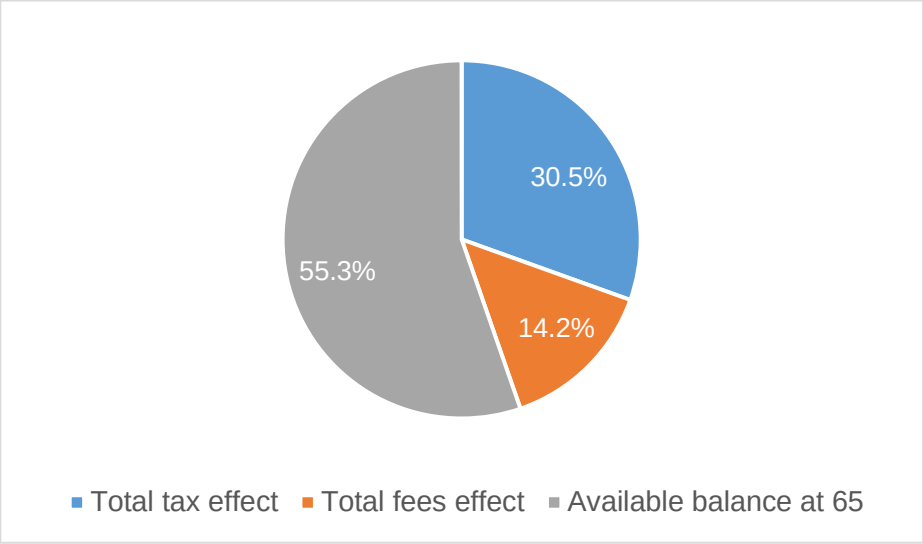


Figure C7: Components of Tax Effect

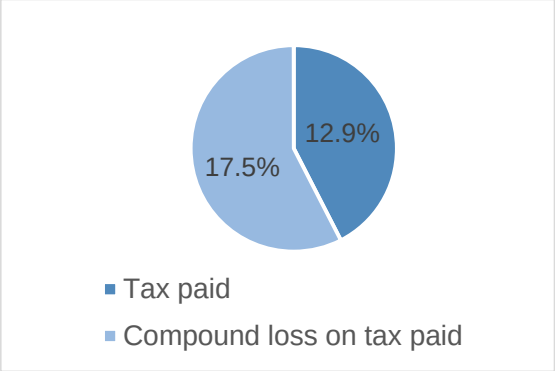


Figure C8: Components of Fee Effect

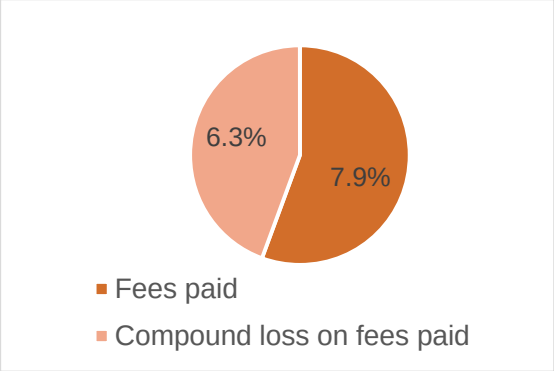


Figure C9: Where does the money come from?
(Growth portfolio 6.0% return for decile 10 income, no MTC, contribution rate 6.1%)

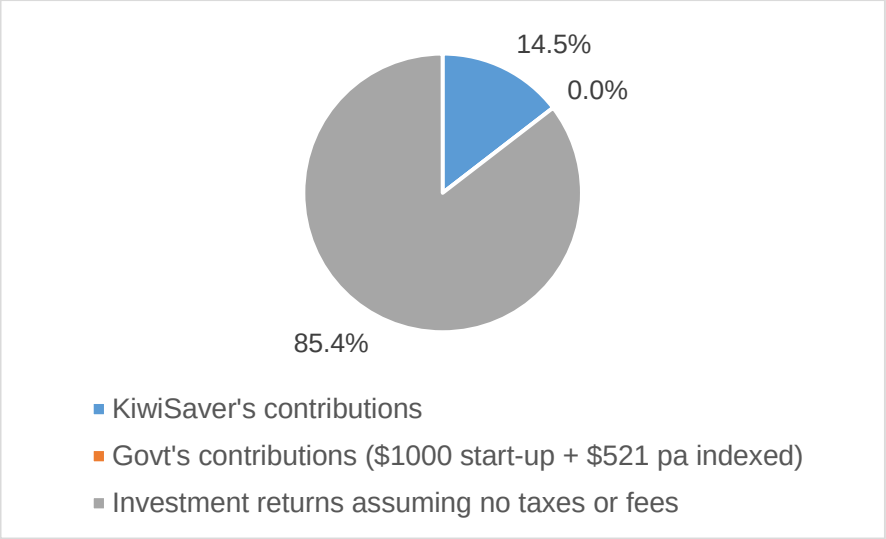


Figure C10 Decomposition of Scenario E
(Growth portfolio 6.0% return for decile 10 income, no MTC, contribution rate 6.1%)

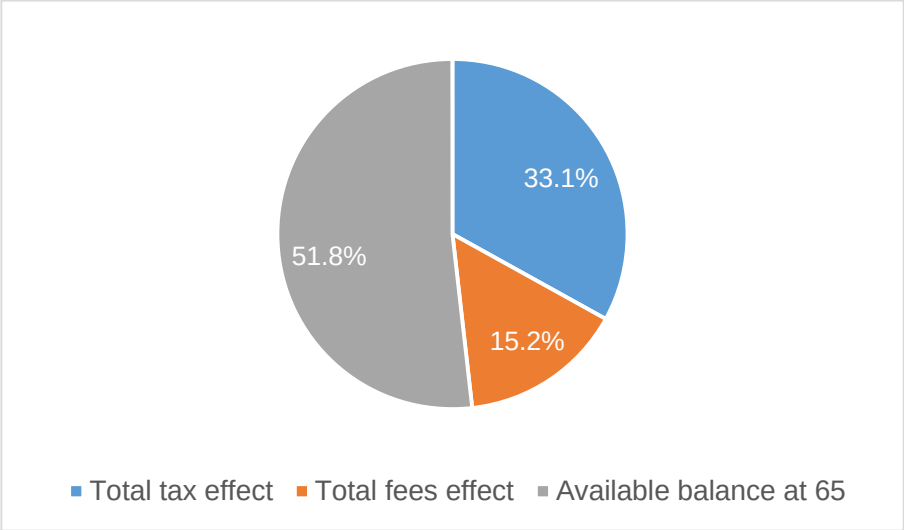


Figure C11: Components of Tax Effect

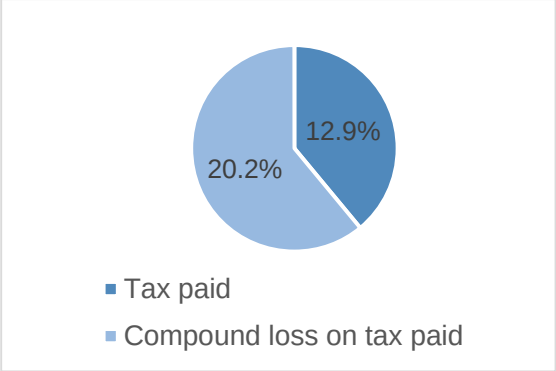


Figure C12: Components of Fee Effect