THE DISTRIBUTIONAL IMPACT OF KIWISAVER INCENTIVES

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New Zealand's approach to retirement incomes profoundly changed with the recent introduction of KiwiSaver and its associated tax incentives. Previous policy reduced lifetime inequality but KiwiSaver and its tax incentives will increase future inequality and lead to diverging living standards for the elderly. In this paper we evaluate the distributional effects of these tax incentives. Using data from a nationwide survey carried out by the authors, we estimate the value of the equivalent income transfer provided to individuals by the tax incentives for KiwiSaver participation. Concentration curves and inequality decompositions are used to compare the distributive impact of these tax incentives with those for New Zealand Superannuation. Estimates are reported for both initial and lifetime impacts, with the greatest effect on inequality apparent in the lifetime impacts.

Keywords:

Distributive impact, KiwiSaver, Retirement saving, Tax incentives

JEL Codes: D31, H22, J26

I.   Introduction

New Zealand's distinctive approach to retirement saving profoundly changed on 1 July 2007, with the introduction of KiwiSaver and associated tax incentives. The previous approach, in place since 1990, provided a non-contributory flat pension to anyone who qualified by virtue of age and residency and then let people supplement that as they saw fit without favouring one particular savings vehicle over another (St John and Willmore, 2001). In contrast, many countries also promote a contributory (and often mandatory) savings scheme to supplement the basic pension and voluntary provision. Since the flat pension, NZ Superannuation (NZS), is paid to everyone at a standard amount unrelated to previous earnings, it helps to equalize lifetime incomes.[1] Scobie, Gibson and Le (2005) show that NZS places a floor under the income of retirees, so that even when some fall below a relative poverty line (60% of the median) the poverty gap is negligible. Additionally, Ginn, Street, and Arber (2001) describe it as a "women-friendly" pension because there are no earnings-related contributions, so women receive the same payments as men even though their average incomes are lower and they participate in the labour force for fewer years.

These same features are not present in KiwiSaver, which will instead increase future inequality in lifetime incomes and lead to diverging living standards for the elderly. Since KiwiSaver is mainly a workplace saving scheme, it will tend to amplify gender, ethnic, educational and other inequalities reflected in earnings and employment variations. Not only will wealth (and retirement income) gaps emerge between members and non-members, the differing levels of member and employer contributions and variation in the performance of KiwiSaver funds will also introduce inequality. While such inequalities might be considered an inherent feature of any saving scheme, they are likely to be compounded by the generous

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[1] O'Connell (2004) considers NZ Superannuation to be an example of a "Citizen's Pension" – a basic amount payable to all citizens.

taxpayer incentives provided to KiwiSaver members (Crossan, 2007). It is unclear whether there is a public mandate for policy to contribute to inequality in this manner.

The main incentives for KiwiSaver participation are the $1000 tax-free contribution on first joining (the "kickstart"), the matching contribution of up to $20 per week ($1043 per year) from the government for members aged over 18,[2] and the exemption from Specified Superannuation Contribution Withholding Tax (SSCWT) for employer contributions up to a maximum of four percent of the employee's gross pay. In addition, there is a subsidy for the purchase of a first home of up to $5,000 (subject to income and house price limits), a fee subsidy of $40 per year, and from 1 April 2008 employers will receive a tax credit of up to $20 per week to (partially) offset the cost of compulsory employer contributions into the accounts of employed KiwiSaver members. These employer contributions are set to rise from one percent of gross pay in 2008 to four percent by 2011. Existing superannuation schemes that become KiwiSaver-compliant can access many of these benefits, including the exemption from SSCWT for employer contributions and the matching government contribution of up to $1043 per year. The investment income earned within KiwiSaver schemes is also favoured by comparison with equivalent earned income. The highest paid members will have tax on fund earnings capped at 30 percent from 1 April 2008 which is lower than either of the two higher marginal rates of tax on earned income (33 percent for pay between $38,000 and $60,000 and 39 percent for pay above $60,000).

These tax incentives will have varying impacts on inequality. The effect of the kickstart incentive for joining KiwiSaver and the $1043 matching contribution will depend on how widespread is KiwiSaver membership. If it is mainly the rich who join, then despite the equal

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[2] While this is called a tax credit it has little to do with the tax system except as the source of the revenue for this grant. Thus, individuals who pay no tax, such as those out of the workforce, can still receive up to $1043 per year from the government into their KiwiSaver account if their own contributions match or exceed this level.

and capped nature of these payments, they may still cause inequality to rise. There is even greater likelihood that the exemption from SSCWT for employer contributions will increase inequality; since this is capped as a percentage of salary rather than a dollar amount, higher earners benefit more from this incentive than do lower earners (while non-earners and the self-employed do not benefit at all). Moreover, the SSCWT exemption will over time become a more important source of inequality, since it provides open-ended benefits every year until retirement, while the kickstart benefit is a one-off and the matching government contribution is capped. Finally, the growing KiwiSaver balances for the more highly paid will be favoured by the concessionary tax treatment of investment income. Hence, any tendency for KiwiSaver incentives to contribute to inequality can be expected to increase over time, especially once employer contributions to KiwiSaver become compulsory and increase each year from one percent of pay in 2008 to four percent in 2011.[3]

These likely effects on inequality should not be surprising. New Zealand experimented with tax-favoured saving schemes over two decades ago. These were found wanting since they encouraged shifts from non-tax favoured saving into tax-favoured saving with little evidence that saving actually improved overall but with large hidden cost to the Government in tax forgone that reduced public saving (St John, 2006). Moreover, Treasury at the time found that tax incentives largely favoured the better off, who can use tax-favoured schemes to avoid higher tax rates and who save the most anyway. Consequently, this previous experiment with tax breaks for saving schemes was ended in 1987.

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[3] The effect of the tax credit to employers is harder to evaluate, since its incidence, and the incidence of the implicit payroll tax in the form of compulsory employer contributions to KiwiSaver accounts, depends on the supply and demand elasticities in the labour market. However, a substantial fraction of the respondents to the survey discussed below believe that employers will give smaller wage increases in future, since they also will need to provide KiwiSaver contributions. If this occurs, non-members will effectively subsidise members by receiving lower wage rises, causing a further rise in inequality.

While a comprehensive evaluation of KiwiSaver is planned, it may be several years before standard data sources show impacts on inequality. The Survey of Family, Income and Employment (SoFIE) would be a natural source for such analysis since it collects information on financial assets like retirement savings schemes every second year and also allows a wide variety of distributional analyses based on demographic and economic characteristics. However, wave 6 of SoFIE went into the field in October 2007 without any questions on KiwiSaver so it will not be until wave 8 in 2009/10 when necessary data are collected. The processing lags in accessing SoFIE data make it likely that independent analyses will have to wait until 2012. By that stage, cumulative government expenditure on KiwiSaver incentives will likely have exceeded $6 billion and a large proportion of the population may be locked into this saving scheme.[4] Consequently it would be difficult to then make changes even if an evaluation indicated a failure of the scheme to achieve its objectives and a high risk of it causing diverging living standards for future retirees.

Therefore to provide more immediate data to help inform on-going appraisals of KiwiSaver and its associated tax incentives, we initiated a nationwide KiwiSaver survey in December 2007. Almost 400,000 people had joined KiwiSaver by this stage, requiring government expenditure of over $800 million in the first year alone, making an evaluation even at this early stage desirable. A major objective of the survey was to provide information that could be used to estimate the value of the equivalent income transfer provided to individuals by the tax incentives for KiwiSaver participation. In this paper we report on the results of this survey,

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[4] According to a Memorandum to Cabinet "Budget 2007: KiwiSaver Plus" (CAB (07) 136, 19 April, 2007) which is available from www.treasury.govt.nz the projected costs under the mid-estimate of a take up rate of 50% of the eligible population joining KiwiSaver after ten years rise from $299 million in 2007/08 to $1332 million in 2011/12 and have a cumulative nominal value of $4.5 billion. However, since take up rates appear to be much higher (Crossan, 2007) either the high take-up rate of 65% after 10 years or the fast take up rate of 50% after five years appear more realistic. Both of these scenarios imply cumulative costs of over $6 billion by 2012.

using tools such as concentration curves and inequality decompositions to compare the distributive impact of these tax incentives with those for New Zealand Superannuation.

This comparison is not meant to imply that KiwiSaver is necessarily an alternative to NZS, since it was designed to work on top of NZS rather than instead of it. There are, however, considerable fiscal risks with KiwiSaver and it is possible that future governments respond to these by adjusting NZS rather than KiwiSaver. For example, in just two years between Budget 2005 and Budget 2007 the forecast midterm (2016/17) cost of KiwiSaver incentives increased by a factor of 32 (Crossan, 2007), which indicates the ease with which governments can increase the generosity of tax incentives. It may be more politically difficult to roll these back in future, since a set of entitlements based on individual accounts has been created, than it is to adjust NZS, which is based on more of an implicit social contract between working-age and retired generations. Moreover, since NZS has been the dominant feature of retirement incomes policy for several decades, it provides an appropriate benchmark for evaluating the inequality effects of an innovation like KiwiSaver.

II.   The KiwiSaver Survey

The data used in this paper are from a nationwide postal survey carried out by the authors in December 2007 and January 2008. A simple random sample was drawn from the New Zealand electoral rolls, at a sampling rate of 1:2000 for all general electorates. A higher sampling rate, of 1:1000, was used for the Maori electorates since a sufficient number of respondents were needed to enable estimates of KiwiSaver incidence across different ethnic groups. A total of 1662 survey forms were sent out, with 604 completed responses. The response rate was 38 percent, after adjusting for almost 100 cases where forms were not delivered due to changed addresses. A set of sampling weights were derived to account for

both non-response and the higher sampling rate from Maori electorates and all results presented below are weighted to ensure that they are nationally representative of the population age 18 years and above.[5] These sampling weights range from 1370 to 13,800, with an average value of 4,810.

The survey included questions on knowledge and use of KiwiSaver, the level of contributions that individuals and their employer made to KiwiSaver accounts and the method of joining (auto enrolment, direct enrolment, and having an existing saving scheme become KiwiSaver compliant). These details facilitate calculation of the incentives that individuals are eligible for, which vary between KiwiSaver and KiwiSaver compliant schemes. Demographic and economic details on the respondents were based on questions copied from the Census, with additional questions to capture information on earnings, since KiwiSaver contributions are mostly based on the level of gross earnings.[6]

Table 1 reports descriptive statistics from the survey for several characteristics of interest, for six sub-groups. The first group is the full sample of those without either KiwiSaver or a KiwiSaver-compliant savings scheme, which also includes people, aged 65 and above, who are not eligible for KiwiSaver. The second group is the non-members just in the 18-64 age range. The next three groups are for those who (i) were auto enrolled in KiwiSaver, (ii) those

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[5] Specifically, we grouped responses into 36 cells, based on gender, two ethnicity categories (combining Maori and Pacific Islanders into one group and all other ethnicities into the other), three age groups (18-34, 35-54 and 55 and above) and three income ranges ($25,000 and below, $25,001 to $50,000 and $50,001 and above). The same grouping was applied to population totals derived from the New Zealand Income Survey, and the ratio of population in each cell to the number of KiwiSaver survey responses in the corresponding cell was used as the sampling weight. Ideally this procedure would have been carried out with the 2006 Census instead of the Income Survey, but the Census introduced the "New Zealander" ethnicity category which is not comparable with the ethnic groups specified in the KiwiSaver survey. We are grateful to Steven Stillman for assistance with this weighting exercise.

[6] The survey used the 14 income brackets from the 2006 Census, but the actual median income in each bracket rather than the middle of the range is then used in the calculations. This median is calculated from the 2006 New Zealand Income Survey, which obtains actual income levels rather than income ranges. We are grateful to Steven Stillman for providing these medians.

who enrolled directly via their employer or with a KiwiSaver fund, and (iii) those whose existing saving scheme became KiwiSaver compliant. The last column of the table is for the aggregate of all three of these KiwiSaver or KiwiSaver-compliant membership groups.

Table 1: Descriptive Statistics for Various Sub-groups in the Survey

	Non Members		Auto	Direct	KiwiSaver	All
	All Ages	18-64	enrolled	enrolled	compliant	KiwiSaver
Age 18-34	0.31	0.39	0.67	0.16	0.29	0.30
	[0.03]	[0.03]	[0.12]	[0.06]	[0.16]	[0.06]
Age 35-54	0.38	0.47	0.31	0.51	0.71	0.50
	[0.02]	[0.03]	[0.12]	[0.07]	[0.16]	[0.06]
Age 55-64	0.31	0.14	0.02	0.33	0.00	0.20
	[0.02]	[0.02]	[0.02]	[0.06]	[0.00]	[0.04]
Male	0.48	0.48	0.51	0.52	0.49	0.52
	[0.02]	[0.03]	[0.15]	[0.07]	[0.16]	[0.06]
Maori and Pacific Island	0.14	0.16	0.10	0.14	0.17	0.14
	[0.02]	[0.02]	[0.09]	[0.05]	[0.15]	[0.04]
5th Form qualifications or below	0.35	0.29	0.31	0.22	0.07	0.21
	[0.02]	[0.03]	[0.14]	[0.05]	[0.07]	[0.05]
6th or 7th Form, trade cert or diploma	0.45	0.49	0.45	0.46	0.56	0.48
	[0.02]	[0.03]	[0.15]	[0.07]	[0.15]	[0.06]
Bachelors degree or higher quals	0.20	0.22	0.24	0.33	0.37	0.32
	[0.02]	[0.02]	[0.10]	[0.06]	[0.14]	[0.05]
Home owner	0.69	0.63	0.30	0.77	0.76	0.66
	[0.02]	[0.03]	[0.11]	[0.07]	[0.15]	[0.06]
Owner of other property	0.20	0.19	0.04	0.34	0.07	0.24
	[0.02]	[0.02]	[0.04]	[0.06]	[0.07]	[0.05]
Income (annual, pre-tax)	33668	35930	32571	46375	56754	44626
	[1192]	[1426]	[4367]	[3649]	[11951]	[3091]
Sample size	505	384	16	71	12	99
Population	2463153	1968222	103948	280729	58570	443247
	[69722]	[79572]	[30266]	[35733]	[18264]	[48527]

Note: Standard errors of means in brackets

The survey estimates of KiwiSaver membership compare well with official data. Reports from the government indicate that there were a total of 381,000 KiwiSaver members by the end of December 2007 and 414,000 by late January 2008, not counting those in KiwiSaver compliant schemes. Approximately eight percent of these were under age 18 and so will not

show up in a sample based on the electoral rolls.[7] Therefore the relevant age group population is between 352,000 and 382,000 while our survey estimate of this population is 384,700.[8]

The breakdown between types of KiwiSaver members appears to be rapidly evolving, making it difficult to see how the survey compares with official data. The survey estimate of 280,700 direct enrollees is almost three times as large as the estimated number of auto enrollees, at 103,900. This same breakdown is not publicized when administrative data on total membership are released, but information supplied by the Inland Revenue Department indicates that by the end of December 2007 there had been 183,400 auto enrollees, of whom 58,000 had opted out, and 255,700 direct enrollees, giving a ratio of direct to auto enrolled members of just over 2:1. The same ratio in October had been 3:1.[9] It is plausible that this ratio will decline over time, since auto enrolments will continue to grow as people change jobs while direct enrolments will slow down since the people with the most incentive to join directly will have already have done so in order to capture as many of the tax incentives as early as possible.

The survey suggests that KiwiSaver members are older than non-members, are less likely to be Maori or Pacific Islanders but more likely to be male, to hold a degree or higher qualification, and to have higher incomes. Large differences are apparent between direct enrollees and auto enrollees, with 67 percent of auto enrollees below age 35 but only 16 percent of direct enrollees in this age range. This likely reflects the higher job turnover among the young raising their auto enrolment rate. For direct enrolments, older people have

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[7] Based on a report in the Beehive Bulletin of 12/10/07 that 8.6 percent of members are under age 20.
[8] Approximately two-thirds of our survey responses were received in December and one-third in January, so a weighted average of the administrative reports gives a population of 361,700, which is within 6% of our survey estimate.
[9] An Official Information Act request by the New Zealand Institute of Economic Research, with information provided on 4/12/07 for October 2007, shows that by that month there were 62,920 auto enrolled (a further 32,752 had opted out), and 188,816 direct enrolled.

an advantage since they can obtain the tax incentives with lower opportunity cost, since they do not have to lock up their own contributions for very many years before cashing in their KiwiSaver accounts at age 65. Substantial income differences are also apparent. While auto enrollees have annual incomes that are $3,000 below similarly aged non-members, direct enrollees have annual incomes that are $10,000 higher and members of KiwiSaver compliant schemes have annual incomes that are over $20,000 higher. These income differences between KiwiSaver members and non-members suggest that the KiwiSaver incentives will tend to raise inequality, even for the $1,000 kickstart and $1,043 annual government contribution payments, which are capped.

III. The Incidence of KiwiSaver Incentives

One way to consider the incidence of the KiwiSaver incentives is to see what share of the total accrues to various population sub-groups. A disaggregation into groups defined by age, gender, ethnicity, education, and income is reported in Table 2. Since only those aged less than 65 are eligible for KiwiSaver the comparisons are restricted to that group. Separate calculations are made of the incidence of the tax incentives in the first year and their lifetime incidence.[10] This lifetime incidence is the present value of the tax incentives received between 2007 and the year when members who had joined by December 2007 reach age 65.[11]

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[10] These calculations are just for members who had joined by the time of the survey. Other calculations based on projected membership once 50% of the age-eligible population have joined are reported below.

[11] Specifically we combine our survey data with 2006 Census average earnings and employment rates for age, gender and qualification cohorts and with life table data on survival rates for the same cohorts. The expected value of earnings at any future age, a is then the product of the cohort-specific employment and survival rates and the current earnings of people of age a with the same characteristics, allowing for real income growth at an assumed annual rate of two percent and variation of the respondent's idiosyncratic income from the cohort mean. The value of KiwiSaver contributions is then calculated, based on the assumption that individuals continue contributing at the same rate in the future as they reported in the survey, and that employer contribution rates stay the same if they are already four percent or above, and otherwise increase according to the KiwiSaver legislation, from one percent in 2008 to four percent in 2011. The values of the tax incentives in each year until age 65 are calculated once these member and employer contributions are known, assuming a continuation of the current rules. These predictions of the tax incentives in each year are then converted to a present value assuming a real discount rate of six percent.

The sub-groups who receive a larger share of first year KiwiSaver incentives than their population share would warrant are those above age 55, males, and especially those with Bachelors degrees or higher qualifications and high income earners (Table 2, columns (a), (b) and (d)). For example, in the first year of the KiwiSaver scheme, 34 percent of the value of the incentives is being captured by degree holders and above, despite this group being only 24 percent of the population. Similarly, 17 percent of the tax incentives go to those with incomes above $70,000 despite this group being just 11 percent of the population. Those with only Fifth Form qualifications or less, females, Maori and Pacific Islanders, and especially those with annual incomes below $30,000 receive only small shares of the value of KiwiSaver incentives in the first year relative to their population size.

Table 2: Shares of Population and KiwiSaver Incentives Accruing to Various Sub-Groups

	Share of population (a)	Share of First Year Incentive (b)	Share of Life-time Incentive (c)	Relative shares (b)/(a) (d)	(c)/(a) (e)
Age					
Age 18-34	0.374	0.284	0.462	0.759	1.234
Age 35-54	0.476	0.496	0.467	1.044	0.982
Age 55-64	0.150	0.219	0.071	1.461	0.473
Gender					
Female	0.511	0.432	0.407	0.846	0.798
Male	0.489	0.568	0.593	1.160	1.211
Ethnicity					
Maori and Pacific Island	0.159	0.113	0.101	0.707	0.635
Other ethnic groups	0.841	0.887	0.899	1.056	1.069
Education					
Fifth form qualifications or below	0.279	0.196	0.163	0.703	0.587
6th or 7th Form, trade cert or diploma	0.484	0.465	0.455	0.960	0.940
Bachelors degree or higher quals	0.238	0.340	0.381	1.430	1.606
Income Group					
Up to $30,000	0.456	0.227	0.143	0.499	0.314
$30,001-$70,000	0.439	0.600	0.666	1.365	1.515
$70,001 and above	0.105	0.173	0.191	1.654	1.825

Note: Estimates are weighted to reflect population totals for the resident New Zealand population age 18-64.
Lifetime value of KiwiSaver incentives are calculated using the procedure described in footnote 10.

The inequality across population sub-groups in the distribution of KiwiSaver incentives is even more apparent in the lifetime estimates. The highest income group receives over 80 percent more of the lifetime incentives than their population would dictate while the lowest income group receives less than one-third of their proportionate share (Table 2, column (e)). Similarly, Maori and Pacific Islanders, women and the least educationally qualified group receive an even smaller share of the lifetime value of KiwiSaver incentives than either their share in the first year or the share that their population size would predict. Age is the only characteristic where the incidence patterns vary between the first year and the lifetime, since the lifetime calculations give younger KiwiSaver members more time to accumulate incentives. This tendency for the unequal incidence of KiwiSaver incentives to strengthen over time reflects the growing importance of the SSCWT exemption as a source of benefit, and the diminishing effect of the one-off, $1,000 kickstart payment over a longer time horizon.

IV.   The Impact of KiwiSaver Incentives on Inequality

KiwiSaver incentives are unequally distributed, as Table 2 makes clear. So too, however, are many other rewards in both a market economy and from public transfers. Hence, what matters is how much KiwiSaver incentives contribute to inequality compared with other income sources. We therefore use a decomposition technique, developed by Lerman and Yitzhaki (1985), which shows the contribution of each income source to inequality in total incomes. In this decomposition, each source's contribution to the Gini coefficient for total income is the product of its own inequality (G), its share of total income (S), and its correlation with the rank of total income (R).

The results of this decomposition for the first year of KiwiSaver are shown in Table 3. All three of the KiwiSaver incentives considered (the \$1,000 kickstart, the \$1,043 matching contribution and the SSCWT exemption) act to increase inequality (based on their positive values for I – the share of inequality due to each source). The most unequally distributed of these three incentives is the SSCWT exemption, as seen from its very high Gini coefficient (0.98). Moreover, the SSCWT exemption is also the most highly correlated with the rank of total income ($R=0.84$), showing that this incentive accrues mainly to the rich. In fact, the contribution to inequality from the SSCWT exemption is twice its contribution to total income, as seen from the (I/S) ratio of 2.0, which is easily the highest of any income source. The contrast with New Zealand Superannuation is striking. The correlation of NZS with the rank of total income is negative ($R=-0.34$), so NZS acts to reduce total inequality, by approximately five percent ($I=-0.05$).

Table 3: Inequality By Income Source, Annual Income 2007/2008

	Share of total income (S)	Gini coefficient by source (G)	Correlation with rank of total income (R)	Share of income inequality (I)	Relative income inequality (I/S)
Income source					
KiwiSaver Tax Incentives[a]	0.0083	0.8693	0.4421	0.0078	0.9398
\$1000 kickstart	0.0037	0.8676	0.3087	0.0024	0.6486
\$1043/yr tax credit	0.0038	0.8696	0.4866	0.0039	1.0263
SSCWT exemption	0.0007	0.9774	0.8419	0.0014	2.0000
New Zealand Super	0.0696	0.8367	-0.3440	-0.0486	-0.6983
Earnings	0.7173	0.5716	0.8749	0.8690	1.2115
Other income	0.2047	0.8047	0.4306	0.1718	0.8393
TOTAL		0.4128			

Note: All values weighted by sampling weights, which are the expansion factors needed to gross the sample up to population totals, for the resident New Zealand population age 18 and above.
Income sources with a negative R and I act to reduce overall income inequality.

[a] Includes the fee subsidy of \$40 per year.

Since the SSCWT exemption will over time become a more important source of benefit, while the kickstart benefit is a one-off, a longer-term perspective would be likely to find that the overall impact of KiwiSaver incentives on inequality is even greater than what is shown in Table 3. This intuition is confirmed in Figure 1, which compares *concentration curves* for

KiwiSaver incentives in the first year and over the lifetime, with the concentration curve for NZS. These concentration curves show the cumulative percentage of KiwiSaver incentives (or any transfer) accruing to the poorest *x*% of the population. The horizontal axis measures percentiles of income distribution, from poorest to richest, and the vertical axis measures accumulated percentage of total transfers. If everyone, irrespective of income, received exactly the same value of KiwiSaver incentives, the concentration curve would be a 45^0 line from the bottom left-hand corner to the top right-hand corner, and this is the *line of equality*. Transfers and income sources with concentration curves above the line of equality (i.e, those with concave curves) reduce inequality, those below the line of equality increase inequality. If one concentration curve is below (more convex than) another, it indicates a more unequal distribution of this transfer or income source.
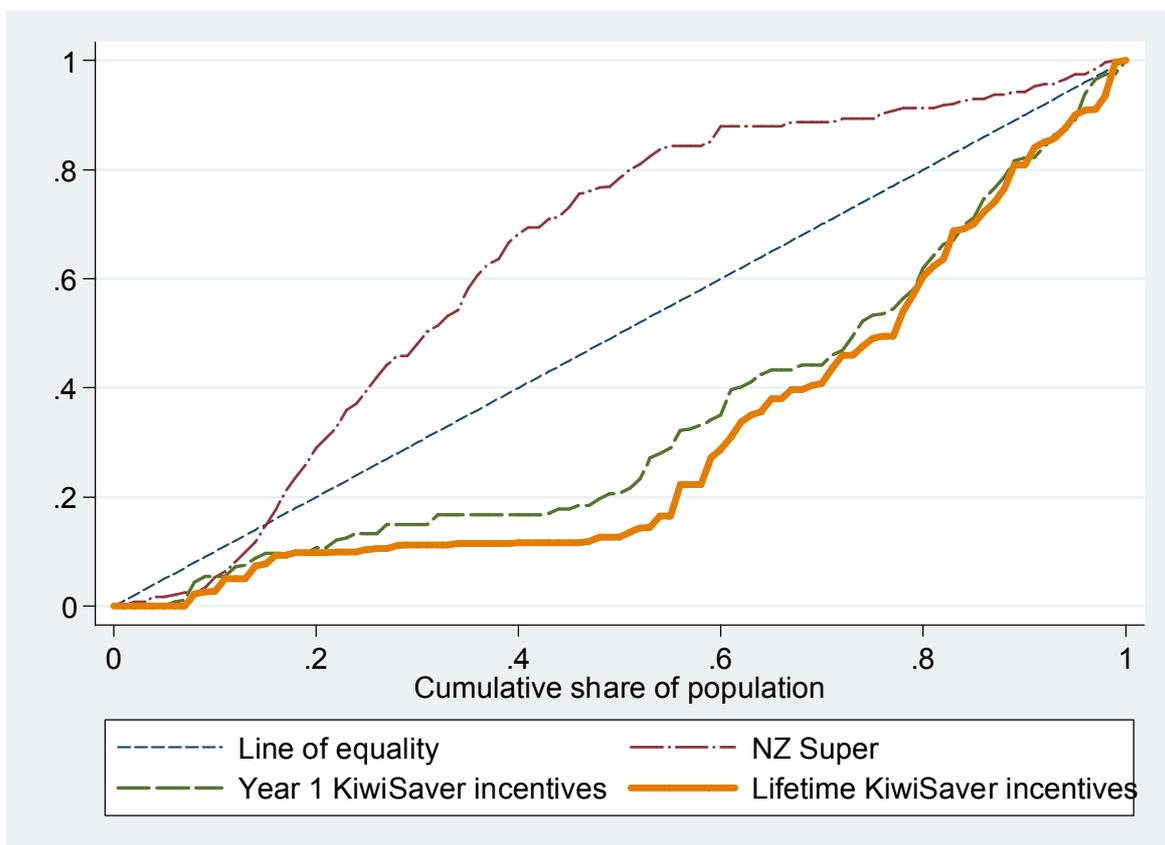
Figure 1: Concentration Curves for KiwiSaver Tax Incentives and NZ Superannuation

The concentration curve for the lifetime value of KiwiSaver incentives lies mostly below the concentration curve for the incentives in the first year. For example, the poorest 50 percent of the population (according to current incomes) receive just 13 percent of the lifetime value of KiwiSaver incentives (conditional on current membership levels) but over 22 percent of the incentives in the first year. Hence the KiwiSaver incentives are more unequally distributed in the long-run, as also shown in Table 2, and are therefore likely to produce a larger impact on lifetime inequality than the impact in the first year shown in Table 3. The effect of NZS in dampening inequality is also apparent in Figure 1, with the concentration curve for NZS being almost everywhere above the line of equality.

One potential concern with the results presented thus far is that they may provide a misleading guide to how KiwiSaver incentives will impact on inequality once more members have joined. At the time of the survey only about 15 percent of the relevant age-range population had joined, while government projections allow for either a "high" take-up rate of 65 percent after 10 years or a "fast" take-up rate of 50 percent after five years. Perhaps as more people join the impact on inequality is reversed?

To help assess the likely impacts of KiwiSaver incentives on inequality in the future when there are higher membership rates we first estimate probit regression models of whether or not a survey respondent is already a member. These models provide predicted probabilities of membership, based on characteristics like age, income and so forth, so that we can then simulate who would be a member in future, by assigning the non-members with the highest predicted probabilities into the simulated membership group. Since auto enrollees and direct enrollees have quite distinct characteristics (younger and poorer for auto enrollees versus older and richer for direct enrollees) we estimate separate models for these two membership categories. The results of the two probit models are reported in Table 4, and these show the

relevance of young age for auto enrollment, and high incomes, higher qualifications and older age for direct enrolment.

Table 4: Probit Regression Models Used to Simulate Future Membership of KiwiSaver

	Auto enrolment			Direct enrolment		
	Coefficient[a]	Standard error	P>|z|[b]	Coefficient[a]	Standard error	P>|z|[b]
Age						
Age 18-34	ref group					
Age 35-44	-0.018	0.015		0.066	0.052	
Age 45-54	-0.042	0.015	**	0.150	0.063	***
Age 55-64	-0.040	0.012	**	0.307	0.081	***
Gender						
Female	ref group					
Male	0.003	0.017		-0.007	0.028	
Ethnicity						
Maori and Pacific Island	-0.021	0.016		0.016	0.042	
Other ethnic groups	ref group					
Education						
Fifth form qualifications or below	ref group					
6th or 7th Form, trade cert or diploma	-0.024	0.023		0.068	0.034	**
Bachelors degree or higher quals	-0.016	0.019		0.144	0.058	***
Income Group						
Up to $30,000	ref group					
$30,001-$70,000	0.015	0.020		0.073	0.040	**
$70,001 and above	-0.009	0.018		0.084	0.050	*

Note: Number of observations = 481. The pseudo-R^2 for the auto enrolment model is 0.10 and for the direct enrolment model is 0.11. The Wald tests for the goodness of fit of the entire model are 12.52 for the auto enrolment model and 38.19 for the direct enrolment model. These are statistically significant at the 0.08 and 0.01 level with 9 degrees of freedom.
[a]The coefficients are transformed into marginal effects, showing the effect of a one unit change in the explanatory variable on the probability of being an auto or direct enrolled KiwiSaver member.
[b] *** = significant at 0.01, ** = significant at 0.05, * = significant at 0.1.

The predictions from the models in Table 4 are used to simulate a situation which may occur by about the year 2011, by which time 50 percent of the population may have been enrolled in KiwiSaver (assumed to be split between 20 percent auto enrolled and 30 percent direct enrolled, since the 3:1 ratio found in the survey will fall over time). Existing KiwiSaver and KiwiSaver compliant members are assumed to maintain their current status. We also assume that all of the direct enrollees will have joined prior to the year that is being simulated, since

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this group will want to enroll as quickly as possible to maximize the value of the tax incentives. One fifth of the auto enrollees are assumed to join in the year being simulated, since membership of this group should grow at a declining rate over time.[12]

The simulation also assumes that existing members and their employers maintain their current KiwiSaver contribution rates, except that where employer contribution rates are below four percent of gross pay these are raised in line with the schedule set out in the KiwiSaver legislation. The simulated new members are assumed to contribute four percent of their earnings, which is the same rate that their employer contributes. The other components of income (earnings, NZS and other income) are left at the same values used for the calculations reported in Table 3 so that the only factors changing are the expansion in KiwiSaver membership and the mandated rise in the rate of employer contributions.

The results of the inequality decomposition for the simulated situation in a year like 2011 are shown in Table 5. All of the KiwiSaver incentives still increase inequality even with one-half of the age eligible population enrolled. In total, the simulated KiwiSaver incentives contribute 1.5 percent to an annual income total that includes them as equivalent to an income stream, but they contribute 1.8 percent to the total inequality. In the simulation, the kickstart payment is a relatively minor part of the total incentive package, while the SSCWT exemption becomes almost one-third of the total (up from one-twelve in the first year). This tax exemption is, once again, proportionately, the largest contributor to inequality of any income source considered in Table 5, as seen from its (I/S) ratio of 1.6. The impact of KiwiSaver incentives in raising income inequality is therefore likely to be an enduring feature of their

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[12] While the rate of job turnover may be approximately constant over time, turnover will yield fewer new auto enrolments in future since a rising fraction of people starting new jobs will already have enrolled in KiwiSaver.

design, rather than simply a transitory byproduct that disappears once membership becomes more universal.

Table 5: Predicted Inequality By Income Source When One Half of Age Eligible Population are in KiwiSaver

	Share of total income (S)	Gini coefficient by source (G)	Correlation with rank of total income (R)	Share of income inequality (I)	Relative income inequality (I/S)
Income source					
KiwiSaver Subsidies[a]	0.0154	0.7010	0.6774	0.0178	1.1558
$1000 kickstart	0.0009	0.9694	0.1932	0.0004	0.4444
$1043/yr tax credit	0.0098	0.6610	0.6437	0.0101	1.0306
SSCWT exemption	0.0044	0.7986	0.8228	0.0070	1.5909
New Zealand Super	0.0691	0.8367	-0.3603	-0.0503	-0.7279
Earnings	0.7121	0.5716	0.8820	0.8672	1.2178
Other income	0.2032	0.8047	0.4187	0.1654	0.8140
TOTAL		0.4140			

Note: Calculations based on simulated membership estimated from the probit models in Table 4, assuming that 30% of the age eligible population are direct enrollees, 20% are auto enrollees, and 50% are non-members. Existing KiwiSaver and KiwiSaver compliant members (ca. December 2007) maintain their membership. The simulated members are assumed to contribute 4% of earnings and the employer contribution is also 4%. Existing members and their employers maintain their current contribution (employer contribution rates below 4% are raised to 4%). Direct enrollees are assumed to have joined KiwiSaver before the current year, while one-fifth of auto enrollees are assumed to have joined in the current year with the rest joining in earlier years.
For other notes, see Table 3.

Another way to consider the results from the simulation of 50 percent KiwiSaver membership is in terms of the incidence of the tax incentives. Figure 2 compares the population shares of various income groups with their shares of the tax incentives received in the first year, with the lifetime value of the tax incentives for first year members, and with the shares of incentives once 50 percent of the population are members. Both the lifetime impact for first year members and the simulated incidence in the year when membership reaches 50 percent are substantially more unequal than in the first year. For example, the richest group (those with incomes of $70,001 and above), receive 22 percent of tax incentives once membership reaches 50 percent (and employer contributions are raised to four percent), compared with only a 17 percent share of the incentives in the first year.
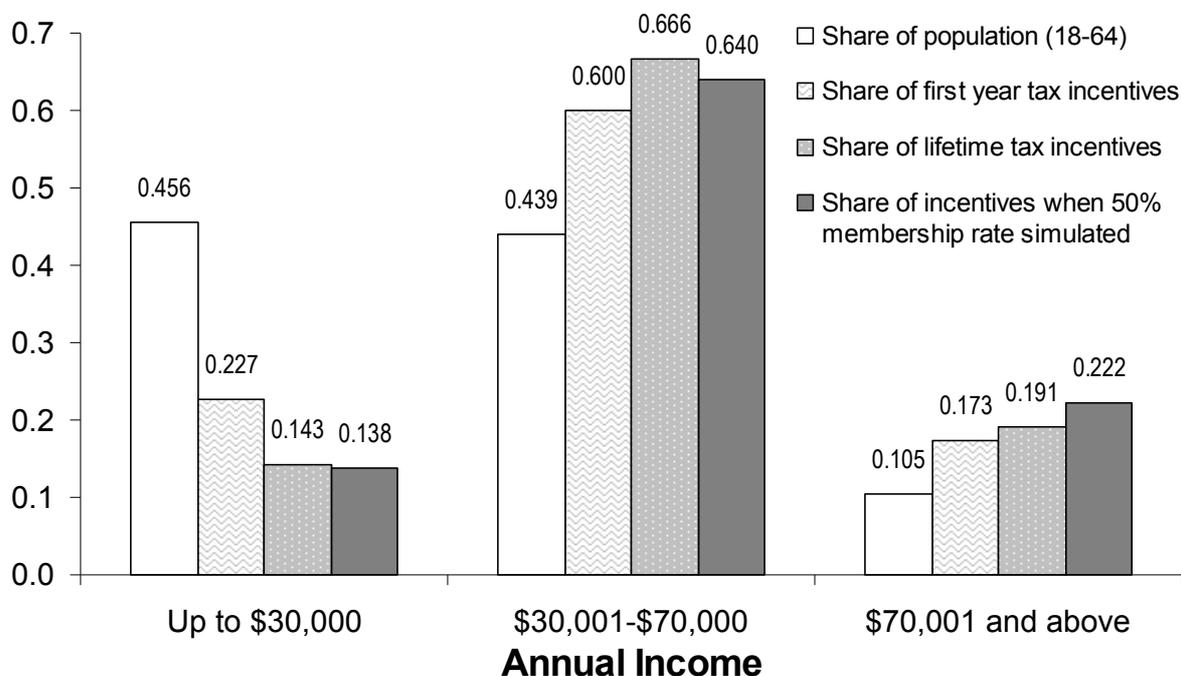
Figure 2: Incidence of KiwiSaver Tax Incentives in Several Time Periods and Simulations

V.   Conclusions

Recent changes to New Zealand's system of saving for retirement, with the introduction of KiwiSaver and its associated tax incentives, will increase future inequality in lifetime incomes and lead to diverging living standards for the elderly. Such inequalities might be considered an inherent feature of any saving scheme, since rewards partly depend on the amount of risk that is borne. However, it is unclear whether either proponents of the KiwiSaver scheme or the general public are aware of the likely impacts on inequality. This is especially because the most dis-equalizing component of KiwiSaver incentives is the SSCWT exemption, which was introduced in December 2006, with little fanfare and even less consultation (St John, 2006), outside of the main announcements in May 2005 for KiwiSaver and in May 2007 for the subsequent extensions of KiwiSaver incentives.

These increases in inequality might also be deemed as an acceptable cost, in order to obtain the benefit of higher household saving. However there are grounds for doubt about this as well, since both previous New Zealand experience and overseas evidence suggests that tax incentives for saving mainly encourage shifts from non-tax favoured saving into tax-favoured saving, with little change in overall saving but a large hidden cost to the Government in tax foregone. In a companion paper to the present study, we use the survey results to examine how much new household saving is being stimulated by KiwiSaver and how much is simply a reshuffling of money that would have been saved anyway. It appears that out of every dollar in KiwiSaver accounts only 9-19 cents is new saving (Gibson and Le, 2008). Whether this is sufficient to warrant the increases in inequality described here is a question which is relevant to all social policy analysts and practitioners interested in inequality and retirement living standards.

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