Household wealth and saving in New Zealand: Evidence from the longitudinal Survey of Family, Income and Employment

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Trinh Le (NZIER), John Gibson (University of Waikato), Steve Stillman (Motu)

Abstract

This paper uses data from around 17,000 individuals in the Survey of Family, Income and Employment (SOFIE) to estimate household savings in New Zealand. Comprehensive data on wealth is collected biannually in SOFIE and we calculate household saving by examining how wealth has changed over time. We find that even the most conservative estimate of household saving was at least 18% of gross income during 2004-2006. On the other hand, the indirectly derived Household Income and Outlay Accounts indicate (net) household saving was -12.5% per year over the same period. These findings suggest that concerns about the lack of household saving in New Zealand are misplaced and that pro-saving policies, such as the New Zealand Superannuation Fund, the State Sector Retirement Savings Scheme and KiwiSaver, mainly serve to unnecessarily distort the saving decisions made by households. Given the current economic climate and the stated desire to stimulate consumption, the motivation for these policies seems particularly lacking.

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1. Introduction

Despite forceful counter-evidence and arguments, the belief that New Zealanders are bad savers remains deeply entrenched in policy debates. That belief has given rise to a series of controversial policies including the New Zealand Superannuation Fund, State Sector Retirement Savings Scheme and KiwiSaver.

Sound debates and policies have to be based on good data. Even though the theoretical definition of saving is straightforward, in practice data imperfections make household saving notoriously difficult to measure.

There are four approaches to measuring saving: micro flow approach (based on unit-record data on flows of income and expenditure), macro flow approach (based on aggregate data on flows of income and expenditure), micro stock approach (based on unit-record data on stocks of assets and liabilities), and macro stock approach (based on aggregate data on stocks of assets and liabilities).

In a paper reviewing methods and data on saving measurement, we noted that there were no data for estimating saving from the micro stock approach (Le, 2007). The first cut of those data are now available from the Survey of Family, Income and Employment (SOFIE), the first longitudinal survey in New Zealand to contain comprehensive data on households' assets and liabilities.

This paper uses data from waves 2 and 4 of SOFIE to estimate household saving. The availability of unit-record data allows us to study not only the level but also the distribution of saving across households.

Estimating household saving using the micro stock approach requires longitudinal data on assets and liabilities, which are available in few countries. Our results will be a useful addition to the existing evidence and will help inform debates and policy making.

The paper proceeds as follows. The next section briefly describes the data. Sections 3 and 4 respectively present estimates of net worth and saving. Section 5 compares estimates of saving from SOFIE with those from other data sources. Section 6 concludes with some policy implications.

2. Data

2.1 The survey

The primary data source in this study is SOFIE, a panel survey which started in October 2002 and is intended to run annually for eight years (hence 8 "waves" of data). SOFIE collects data on levels, sources and changes in income for New Zealand individuals and families. It also reports on major influences on income, such as employment and education experiences, household and family status and

changes, demographic factors and health status. Every two years (waves 2, 4, 6 and 8), information on assets and liabilities is collected to monitor net worth and saving. A health module is included in waves 3, 5 and 7.

The target longitudinal population for SOFIE is the usually resident population of New Zealand living in permanent, private dwellings on the main islands in the North and South Islands, including Waiheke Island as at the first wave of the panel (Statistics New Zealand, 2008). The survey covers over 29,000 individuals (22,000 aged 15 or over, hereafter 'adults' for short) from more than 11,500 households. The longitudinal sample represents over 3.9 million people in the population.[1]

2.2 The sample

The data on assets and liabilities used in this study come from wave 2 (which ran from 1 October 2003 to 30 September 2004) and wave 4 (1 October 2005 to 30 September 2006). These data are only collected from adults.

Calculating saving using a stock approach requires observation of assets and liabilities at two points in time. Our unit of analysis will be individuals because SOFIE tracks individuals, not households.[2]

There are two main weight variables for each household,[3] a longitudinal weight and a cross-sectional weight. Weights are adjusted each wave to account for changes in the sample (eg. attrition or the additions of respondents due to old household splitting).

Each weight variable has 100 replicate values, from which we compute an average weight value. In this paper we use cross-sectional weight in each weight for net worth analysis and wave 4 longitudinal weight for saving analysis. This is because net worth can be analysed as snapshots while saving is a temporal measure.

For each wave the longitudinal weight is only positive for those who were "eligible" in wave 1. These individuals are called original survey members (OSM). When a household splits, SOFIE follows OSMs and interviews people who are now living with OSMs. While those "new" respondents may have a positive cross-sectional weight, their longitudinal weight is zero. Hence, the extent of zero longitudinal weight increases over time. By wave 4, 25% of the sample carry zero longitudinal weights.

Our panel sample includes almost 17,000 people who were at least 15 in wave 2 and who remained in wave 4. These people were also interviewed in wave 1 (otherwise their longitudinal weight is zero, which means they are effectively excluded from the analysis).

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[1] The term 'household' saving is used to reflect the fact that this saving is made in the household sector, as opposed to the business or government sector.

[2] Carter et al (2009) provide a more detailed description about the survey.

[3] Individuals in the same household have the same weight.

Descriptive statistics of the sample is presented in Appendix Table 1. It can be seen that wave 2 sample and the panel sample share similar demographic characteristics on average.

2.3   Assumptions

The data on assets and liabilities contain several limitations, which we address using the following assumptions.

- Individuals were asked for the total value of each property and the number of other people who also own that property. We assume equal ownership shares among owners. For example, if a house worth $200,000 is owned by two people, each person is said to have $100,000 asset in the house.

- The total value of all mortgages is known, but there is no information on the number of mortgages or to which property the mortgages correspond. Since investment properties usually have a high loan-to-value ratio (for tax benefits), we allocate mortgage to investment properties up to their asset value, any remaining mortgage value is allocated to the owner-occupied property.

- The values for properties are rateable values (RVs). Some RVs are dated as far back as 1990. We bring all RVs to 2006 prices using the House Price Index (HPI) produced by Quotable Values.

- Due to wording errors in the questionnaire, there is evidence that the reported participation rates in pension schemes and values of schemes are markedly lower than indicated by other sources. Since the errors are complex and difficult to remedy, we accept the data as is, acknowledging that these errors understate total net worth by an estimated 2%.

3. Distribution of net worth

Table 1 reports mean and median values for each class of asset/ liability. The corresponding ownership rates can be found in Appendix Table 2.

In 2006 (wave 4), 40% of the population owned a home, X% owned a vehicle and X% had a mortgage. X% owned any asset while only X% had any debt.[4] Ownership rates tend to be slightly lower in 2004 (wave 2). The median value is zero for assets other than bank accounts, vehicles and household items, because less than half of the population own those assets.

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[4] It should be noted that these ownership rates pertain to individuals. Ownership rates across households would be higher, because a household is said to have an asset/ liability if at least one member has that asset/ liability.

Table 1 Means and medians of assets and liabilities

$ current prices

	2004 (wave 2)		2006 (wave 4)	
	Mean	Median	Mean	Median
Assets				
Home	85,853	0	103,689	0
Investment property	21,089	0	28,631	0
Workplace pension	2,501	0	3,172	0
Personal pension	1,417	0	1,523	0
Bank accounts	9,825	600	11,179	591
Life insurance	4,553	0	4,277	0
Mutual funds	4,258	0	4,577	0
Other financial assets	5,553	0	6,925	0
Business	37,979	0	49,618	0
Trusts	6,746	0	5,031	0
Vehicles	6,540	3,500	6,538	3,500
Leisure equipment	2,069	0	2,349	0
Household items	26,560	23,500	29,769	25,000
Inheritances	521	0	851	0
Other assets	1,283	0	1,612	0
Total assets	**216,746**	**122,570**	**259,740**	**141,480**
Liabilities				
Mortgage				
Bank accounts				
Credit cards				
Student loans				
Other liabilities				
Total liabilities	**31,472**	**2,900**	**36,333**	**3,000**
Net worth	**185,275**	**87,173**	**223,406**	**97,900**
Loan to value ratio		0.43		0.40

Notes: (1) Loan to value ratio is the ratio of mortgages to the value of properties. The ratio is considerably larger than 1 for a few individuals. We suspect these are data errors, hence we do not report mean ratios.

Source: SOFIE

Most of people's assets are in their homes. In 2006, the average home asset value was $103,700 per adult, accounting for 40% of their total assets ($259,700). Other major asset classes include businesses, investment properties and household items. Symmetrically, mortgage is the largest debt, accounting for X% total liabilities in 2006. The median loan to value ratio (for properties) was 0.4 in 2006.

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While debts rise over time (in nominal terms), assets increase at a faster rate. In 2004, average assets were 6.89 times higher than average debts, rising to 7.15 in 2006.

Net worth is calculated as the difference between assets and liabilities.[5] The distribution of net worth is skewed, as evident by the fact that the mean ($223,400 in 2006) is considerably larger than the median ($97,900).

The extent of inequality in net worth is displayed in Figure 1. The poorest 30% of the population have almost no wealth. 20% of total wealth is shared by the bottom 70% of the population. By contrast, the top 20% of the population own around 70% of the total wealth. Figure 2 presents average net worth for each decile in 2006.

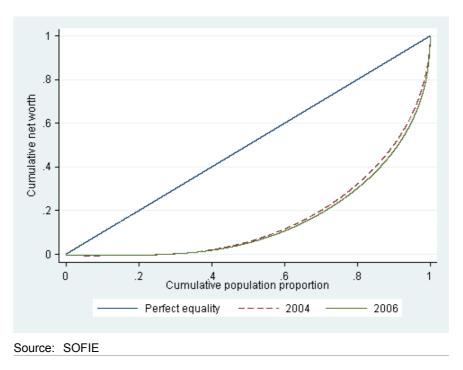### *Figure 1 Inequality in personal net worth*

Source: SOFIE

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[5] In this paper, net worth and wealth are used interchangeably.

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Figure 2 Average net worth across deciles (2006)
$ current prices

Source: SOFIE

As reported in Table 2, the mean to median ratio, inter-quartile ratio and Gini coefficient of net worth were higher in 2006 than in 2004. The Lorenz curve for 2006 lies below that for 2004 (Figure 1). This evidence indicates that inequality in net worth rises over time.

Net worth rises with age, peaking in the 55-64 age bracket, then declines (Table 3). Males have higher average net worth than females, while single individuals have less net worth than partnered people. Across ethnic groups, Pakeha is the wealthiest; their average wealth is 4-5 times higher than the average wealth for the poorest group (Pacific peoples). Home owners have higher net worth than renters, which is hardly surprising given the significance of homes in people's asset portfolios. The most striking observation is that Waikato is the richest region.

Table 2 Net worth distribution

$ current prices

	2004	2006
Mean	185,275	223,406
5th percentile	-3,150	-3,600
10th percentile	1,000	1,000
25th percentile	12,801	13,500
50th percentile (median)	87,173	97,900
75th percentile	221,739	255,500
90th percentile	426,589	492,139
95th percentile	665,577	777,520
99th percentile	1,553,100	2,046,377
Mean to median ratio	2.13	2.28
Inter-quartile ratio (p75/ p25)	17.32	18.93
Share with zero/negative net worth	5%	5%
Gini coefficient	0.67	0.70

Source: SOFIE

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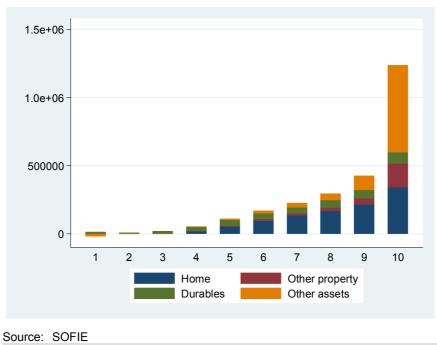### Table 3 Average net worth for different groups

$ current prices

	2004	2006
Age group		
15-24	13,620	11,068
25-34	79,154	91,682
35-44	190,216	217,808
45-54	297,503	350,148
55-64	**321,569**	**407,640**
65-74	273,376	351,196
75+	257,807	295,833
Gender		
Male	**198,703**	**239,313**
Female	172,668	208,506
Partnering status		
Single	112,418	134,774
Partnered	**229,899**	**278,703**
Prioritised ethnicity		
Pakeha	**213,116**	**256,871**
Maori	80,356	91,462
Pacific Islander	55,948	46,151
Asian	115,050	126,388
Other	113,705	203,997
Region		
Auckland	184,345	210,548
Waikato	**213,411**	**304,218**
Wellington	167,265	203,546
Rest of North Island	170,896	216,737
Canterbury	206,561	225,918
Rest of South Island	184,934	222,554
Home ownership		
Non-owners	84,304	107,931
Owners	**289,263**	**348,190**

Source: SOFIE

For the panel sample, the correlation of net worth in the two waves is 0.58, indicating considerable changes in net worth over 2004-2006.

While 59% (11.8 % out of 20%, see Table 4) of people who were in quintile 1 in 2004 remained in that quintile in 2006, 79% of the top quintile in 2004 remained so in 2006. Only 1% who were in quintile 1 in 2004 moved to quintile 5 in 2006 and vice versa.

Table 4 Net worth transition matrix

Percent of population

Quintile in 2004	Quintile in 2006				
	1	2	3	4	5
1	**11.8**	4.6	0.6	0.3	0.2
2	2.8	**10.5**	3.9	0.8	0.5
3	0.6	2.3	**11.6**	5.0	1.4
4	0.3	0.9	3.7	**12.1**	4.8
5	0.2	0.5	1.2	3.7	**15.8**

Source: Authors' calculation from SOFIE

4. Saving

4.1 Measures

Saving is deferred consumption. By definition, saving is calculated as income less expenditure. This is often referred to as the *flow* approach. But saving can also be inferred from change in wealth, which defines the *stock* measure.

Saving = Current income − Current expenditure (1)
Saving = Current wealth − Wealth in previous period (2)

Some commentators argue that stock measures exaggerate saving because they include capital gains, which are sizeable given the housing boom until recently. Thus, we compute another saving measure which excludes real capital gains (losses)[6] in properties. This measure is often termed *active* saving, while capital gains are *passive* saving. We also consider two more conservative measures, which exclude saving in the form of properties and durables.

We use the CPI to deflate 2006 wealth values to 2004 prices. The HPI is used to estimate capital gains (losses) in properties. Since the HPI tends to understate improvement in housing quality, it would overstate passive saving and understate active saving.

As reported in Table 5, total saving averaged $32,200 per person over 2004-2006. Almost half of that was capital gains in properties; the average active saving was only $17,000. Average active saving was $14,400 when saving in properties is excluded and $12,400 when saving in durables (vehicles, household items and leisure equipment) is further excluded. On average, people in the 45-64 age bracket, the group for whom retirement saving is critical, save more than the rest of the population.

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[6] Capital gains (losses) can apply to all types of assets but in this paper are confined to properties due to data constraints.

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Table 5 Household saving over 2004-2006
$2004 prices

	All		Age 45-64 only	
	Mean	Median	Mean	Median
Total saving	32,195	5,059	53,259	13,100
Active saving (2)	17,022	1,669	29,186	2,008
(2) excl saving in property (3)	14,424	1,272	27,848	1,827
(3) excl saving in durables (4)	12,392	0	26,748	107
Source: Authors' calculations from SOFIE				

The rest of the paper will focus on active saving, which is more conservative than total saving and is closer in spirits to saving estimated from the flow approach.

4.2 Distribution

As can be seen from Table 6, saving is much more unequally distributed than net worth. While mean net worth is just over twice the median, mean (active) saving exceeds the median by a factor of 10. The inter-quartile ratio for saving is negative, because the lower quartile value is negative.

Up to 46% of the adult population have negative or zero saving. This is by no means an indication of a saving crisis. Saving is deferred consumption – people save to spend. Over the life cycle, younger people borrow, middle-aged people save, while older people draw down on their saving.

Table 6 Distribution of active saving
$2004 prices

Mean	17,022
5th percentile	-215,425
10th percentile	-102,677
25th percentile	-20,856
50th percentile (median)	1,669
75th percentile	33,556
90th percentile	122,532
95th percentile	243,817
99th percentile	926,204
Mean to median ratio	10.2
Inter-quartile ratio (p75/p25)	-1.6
Share of population with zero/negative saving	46%
Source: Authors' calculations from SOFIE	

The best savers are in the 45-54 age group; averaging $42,400 per person (Table 7). Average saving is lower for ages 35-44 than for ages 25-34, probably due to the cost of child rearing. Median saving for ages 65-74 is negative, and both mean and

median saving for ages 75+ are negative. On average, partnered people save three times more than single people, while the difference across gender is negligible.

Table 7 Mean and median active saving for different groups
$2004 prices

		Mean	Median
Age group			
	15-24	3,395	813
	25-34	24,121	6,648
	35-44	15,046	4,837
	45-54	**42,363**	**3,095**
	55-64	11,367	578
	65-74	10,028	-3,712
	75+	-5,481	-5,260
Gender			
	Male	16,320	1,731
	Female	17,673	1,638
Partnering status			
	Single	7,852	902
	Partnered	22,435	3,398

Notes: (1)   Age and partnering status were as at 2004.
Source: Authors' calculations from SOFIE

5. Comparison with other saving measures

5.1   Macro flow measure

At the aggregate level, saving can be estimated as the difference between household disposable income and expenditures from the Household Income and Outlay Account (HIOA). The HIOA can be viewed as the household account for the nation or the sum of all individual household accounts.

The HIOA is the only institutional sector account published by Statistics New Zealand. It is labelled 'experimental,' because in the absence of a full suite of institutional sector accounts, there is insufficient confidence in the treatment and allocation of certain transactions between households and the other sectors (Statistics New Zealand, 2006). Despite its 'experimental' status, HIOA is the source of most frequently-cited household saving statistics. For example, the Minister of Finance who introduced KiwiSaver often claimed that "for every dollar households earn, they spend $1.15 on average" (Cullen, 2007). This figure comes from HIOA data.

HIOA data are also popular for international comparisons, because they are based on an international standard (System of National Accounts 1993) and because macro stock data are rarely available.

Two measures of saving can be computed, the difference lying in the treatment of consumption of fixed capital (ie. depreciation). When depreciation is deducted from household disposable income and saving, the household saving rate drops by 2-4 percentage points. There is a clear downward trend in the household saving rate based on these data. Net saving peaked at 6.2% of disposable income in 1988. It switched sign in 1994 and worsened rapidly, reaching -14% in 2006. The average saving rate was -12.5% over 2004-2006 and -2.1% over 1986-2006.

5.2 Micro flow measure

At the micro level, saving flows can be calculated from the Household Economic Survey (HES). The HES collects information on household income and expenditure, as well as demographic information on individuals and households. The survey was run annually from 1973 to 1998 (March year) and thereafter three-yearly. Between 2000 and 3000 households are interviewed each year. Even though the survey is not designed for measuring saving, it is the only source of micro data on income and expenditure in New Zealand. Therefore, HES data have been widely used for estimating saving flows.[7]

Contrary to HIOA data, HES displays a rising trend in the household saving rate. The net saving rate, where expenditures on durables, health and education are treated as current consumption, has been positve since 1991.[8] Estimates of saving based on the HES for 2004-2006 are not available because the survey was not carried out in 2005 and 2006.

5.3 Macro stock measure

Aggregate data on household assets and liabilities are constructed by the Reserve Bank of New Zealand (RBNZ). These data are sourced from financial institutions and exclude many components of the household balance sheet such as equity in farms, unincorporated businesses and unlisted incorporated businesses, consumer durables and overseas assets.

The saving rate can be calculated as change in net wealth relative to household disposable income. These data show a highly positve saving rate. The only record of

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[7] Some examples are Coleman (2006), Gibson and Scobie (2001), Scobie et al (2005), Claus and Scobie (2002).

[8] Expenses on health and education are arguably investment on human capital, hence treating them as consumption would produce very conservative saving estimates. Outlays on durables are similar to the cost of depreciation in HIOA data. This is because in the long run total acquisition costs of durables should be the same as total depreciation costs. If purchases are evenly distributed across time, then total acquisition costs and total depreciation costs for each year should also be equal. Hence, the HES 'net' saving rates are conceptually similar to the HIOA 'net' saving rates.

dissaving was for 1998, when a saving rate of -3% was observed. The average saving rate for 2004-2006 was 66.5% per year. Between September 2004 and September 2006, the HPI increased by 25.1%. When housing capital gains are removed, the average saving rate derived from RBNZ data would still exceed 50% per year.

5.4   Micro stock measure

Data from SOFIE suggest that on average people *actively* saved $17,000 over 2004-2006, or about 25% of their gross annual income per year. The saving rate as a percentage of disposable income would be higher. Even the most conservative measure, which excludes saving in the form of properties and durables, is still high (18% of gross income).

5.5   Comparison

Table 8 reports average saving rates over 2004-2006 from different data sources. When housing capital gains are removed from the RBNZ measure and disposable income used for the SOFIE measure, these two saving measures would be broadly similar. No HES saving estimates are available for 2004-2006, but the saving rate based on these data was 7.5% in 2001 and has been positive and rising since 1991. This suggests that the large negative saving rate from HIOA data is the "odd one out".

Table 8 Household saving rate over 2004-2006
Annual, average

Measurement approach	Data source	Saving rate	Note
Macro flow	HIOA	-12.5%	Net (excluding depreciation)
Micro flow	HES		Not available, see text for detail
Macro stock	RBNZ	66.5%	Including capital gains in properties
Micro stock	SOFIE	25%	Excluding capital gains in properties

Notes: (1)   SOFIE figure is based on gross income, while HIOA and RBNZ figures are based on disposable income.

6. Conclusion and policy implications

This paper reports estimates of the level, composition and distribution of personal wealth in 2004 and 2006 based on data on assets and liabilities from the SOFIE waves 2 and 4. Personal wealth averaged $223,400 per adult in 2006, a third of which was in owner-occupied homes. Wealth varies considerably across age groups, gender, partnering status and ethnicity.

If the pattern of wealth accumulation over 2004-2006 is not atypical, then people would be well equipped to cope with shocks given the considerable wealth they have.

Government interventions, such as the 'rescue' package for people who lose their jobs in the current recession, should only target low wealth people.

The paper also estimates saving as change in wealth between the two points in time. We found average saving to be $32,200 per adult over the two years. Excluding housing capital gains, average saving was $17,000, or 25% of gross income per year. The most conservative measure, which excludes saving in the form of properties and durables, was $12,400. These results indicate that people were already saving plenty before KiwiSaver.[9]

The saving estimates in this study should be useful for further research on household saving. For example, future studies could examine what influences people's saving behaviour. They can also be used for analysis of saving adequacy, where these 'actual' saving rates can be compared with 'required' saving rates to assess if an individual is saving 'adequately'.[10]

Although the current saving estimates are at odds with those from HIOA data, they are consistent with estimates from RBNZ and HES data. These results provide further evidence against the claim that New Zealand households are spendthrifts.

Policies like the New Zealand Superannuation Fund, the State Sector Retirement Savings Scheme and KiwiSaver, which were built on the belief that New Zealand has a household saving crisis, have always attracted considerable criticism. They are even more contentious in the face of the current recession.

The government operating balance, which was strongly positive until 2008 ($2.38 billion in 2008), is forecast to be -$9.3 billion in 2009 and to remain negative for a decade (Treasury, 2009). These deficits were first forecasts in the 2008 Pre-Election Economic and Fiscal Update, which shows that expense changes due to KiwiSaver costs that were not apparent in the May 2008 budget contribute 7% in 2011 and 10% in 2012 of the replacement of government surpluses (of the operating balance before gains and losses) with deficits (Treasury, 2008, Table 2.5, p. 30). The government still contributes to KiwiSaver, even though its operating deficits are large and debts are rising. Worse, households can not spend those contributions.[11] It is ironic that calls for households to save more are still made when stimulus measures are needed to counter-act the effects of weakening private spending.

There is surprisingly strong aversion to suspending contributions to the New Zealand Superannuation Fund and winding up the fund to pay down government debts. Borrowing to invest in the fund is not economically sensible. Equally irrational is

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[9] Wave 4 finished in September 2006, while KiwiSaver came into force in July 2007.

[10] In a study of saving adequacy, Le et al (2009) imputed 'actual' saving rates because estimates of those rates were not available.

[11] KiwiSaver members can only access their KiwiSaver saving when they turn 65 or 5 years after they joined, whichever comes later.

having the fund earning a lower interest rate than the interest rate on debts.[12] Yet political pressures make it hard to fix these problems.

Policy mistakes are costly. It is almost impossible to abolish a bad policy, especially if it benefits some vocal groups (at the expenses of others). Those costly mistakes would have been avoided if the policies were based on good data and thorough analysis. The findings in this study lend further support for the need for evidence-based policy making, not only in saving but also in other areas.

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[12] The fund's annualised rate of return since it was set up is 3.2%, about half of the risk-free rate. The fund aims to beat this risk-free rate by at least 2.5% over the long term (Weir, 2009).

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Appendix A Data

Appendix Table 1 Descriptive statistics
Percent of population in each category

	In wave 2 only	In both waves
Age group		
15-24		
25-34		
35-44		
45-54		
55-64		
65-74		
75+		
Average age (years)		
Male		
Partnered		
Ethnicity		
Pakeha		
Maori		
Pacific Islander		
Asian		
Other		
Region		
Auckland		
Waikato		
Wellington		
Rest of North Island		
Canterbury		
Rest of South Island		
Labour market status		
Employed		
Unemployed		
Not in labour force		

Source: SOFIE

Appendix Table 2 Ownership of assets and liabilities

Percent of population having each type of asset/ liability

	2004 (wave 2)	2006 (wave 4)
Home		
Investment property		
Workplace pension		
Personal pension		
Bank accounts		
Life insurance		
Mutual funds		
Other financial assets		
Business		
Trusts		
Vehicles		
Leisure equipment		
Household items		
Inheritances		
Other assets		
Any asset		
Mortgage		
Bank accounts		
Credit cards		
Student loans		
Other liabilities		
Any liability		

Source: SOFIE

NZIER – Household wealth and saving in New Zealand: Evidence from the longitudinal Survey of Family, Income and Employment

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