

Simon Chapple, Sean Hogan, Barry Milne,
Richie Poulton and Sandhya Ramrakha

Wealth Inequality among New Zealand's Generation X

Generation X, denoting the post-baby boom generation, is a term typically used to describe those born between the mid-1960s and early 1980s. The well-known Dunedin Multidisciplinary Health and Development Study cohort, born in 1972/73, are therefore near the middle of Generation X. The Dunedin cohort was born in fairly stable social circumstances. As children they experienced the social changes of 1970s New Zealand – the rise of sole-parent families, a deteriorating job market and a stagnating economy. They went through the economic reforms of the 1980s as high

school students, and attended university or entered the labour market during the recession of 1989–92. They were faced with user pays in the higher education system, first through full fees and then student loans. They face the prospect of being more reliant on their own resources for providing for their living standards during their retirement than previous generations. Whether this cohort has accumulated assets, and if so how, is therefore of great interest.

Simon Chapple, Sean Hogan, Richie Poulton and Sandhya Ramrakha are with the Dunedin Multidisciplinary Health and Development Study, University of Otago. Barry Milne is a senior research fellow at the Centre of Methods and Policy Application in the Social Sciences at the University of Auckland.

Table 1: Assets, liabilities and wealth (rounded to the nearest \$100)

Asset type	% with asset/ liability	Mean \$ value	Median \$ value	Maximum value
Home	60.3	\$282,800	\$240,000	\$4,500,000
Farm	1.1	\$4,900	0	\$1,496,700
Business	17.5	\$80,400	0	\$6,000,000
Holiday home	5.6	\$15,100	0	\$935,400
Rental property	17.1	\$87,000	0	\$5,411,100
Shares	18.5	\$13,000	0	\$1,600,000
Managed funds	45.0	\$21,200	0	\$1,082,400
Savings account	63.0	\$19,100	\$2,000	\$2,400,000
Term deposit	11.8	\$5,000	0	\$297,000
Car	88.5	\$16,900	\$10,000	\$198,000
Other	26.1	\$18,600	0	\$800,000
Gross assets	N/A	\$561,300	\$338,000	\$11,133,500
Liability type				
Mortgage	60.6	\$169,700	\$100,000	\$3,789,400
Bank loan	31.6	\$20,900	0	\$4,500,000
Student loan	19.6	\$3,800	0	\$258,000
Credit card	37.3	\$1,700	0	\$39,600
End-of-month debt	4.9	\$300	0	\$60,000
Other debt	16.4	\$600	0	\$59,400
Gross liabilities	N/A	\$197,100	\$116,000	\$4,520,000
Wealth				
	N/A	\$364,200	\$167,500	\$7,344,100

Wealth is how much one owns, as opposed to how much one makes. It reflects a total sum of deferred consumption. Wealth inequality, thanks to Thomas Piketty's recent work, is back in the news (Piketty, 2014). In New Zealand, the 2001 Household Savings Survey and the Survey of Family Income and Employment (SoFIE) have been used as sources of information on wealth and wealth distribution in recent times (Statistics New Zealand, 2008; Le, Gibson and Stillman, 2010). So what can the Dunedin study cohort tell us about wealth inequality for this generation of New Zealanders?

This article takes a largely descriptive consideration of wealth inequality using age-38 Dunedin study data. It will first look at the wealth distribution of the Dunedin study cohort, using the standard

distributional moments (including Lorenz curve and Gini coefficients), as well as considering average group differences. It will then consider accounting for observed wealth inequality in terms of several very simple multivariate models. Finally, it provides suggestions for further research on wealth inequality among this cohort.

There are two age-related notions with respect to wealth worth considering in the context of the data. One is the oft-encountered notion in the popular media that wealth inequalities arise largely because of different policy treatments and economic conditions facing different age cohorts. The second notion is that wealth inequality is all about the life cycle. People begin their working lives by having few assets, or even negative net wealth, which is, however, offset by human capital

accumulation in formal education. As they move into a career, applying their accumulated human capital and further acquiring on-the-job human capital, their incomes rise and they begin saving. Their net wealth peaks at retirement, and is drawn down to maintain living standards until the expected age of death. Thus, wealth inequality is driven by people's age (as opposed to cohort experiences).

The Dunedin study cohort has certain strengths for consideration of wealth inequality among Generation X. It is a large population sample of New Zealanders born in 1972/73. It includes New Zealanders who live offshore, which most of our surveys do not. The cohort has had considerable information collected about child and adult outcomes and traits, which other New Zealand studies of wealth do not. In addition, although the cohort was slightly socio-economically advantaged compared to the New Zealand-wide age cohort of the time, it captures the range of New Zealand socio-economic exposures. It also has certain limitations. In particular, due to its geographic structure it has an under-representation of Māori and other ethnic minorities, even compared to the New Zealand norms in 1972–73.

Describing and comparing wealth inequality for the Dunedin cohort at age 38

While the Dunedin study cohort has been clinically assessed as adults at ages 21, 26 and 32, age 38 was the first round of data collection where there was a complete picture able to be formed of all the assets and liabilities of the study members. Table 1 provides a basic description of asset and liability holdings for the cohort at age 38. Average net worth is \$364,000, considerably more than the median value of \$168,000, a pattern typical of wealth distributions, which have a strong rightward skew. The most common asset is a car, followed by a savings account and (closely) a home. All other types of assets are owned by a minority of the cohort. Overall, real estate accounts for well over two-thirds – 69% – of this cohort's asset holdings. This figure is considerably higher than the 51% for New Zealand as a whole taken from the SoFIE data for 2006 (Le, Gibson and Stillman, 2010, Table 1).

Not surprisingly, given the importance of real estate, mortgages dominate the liabilities, making up 85% of the total. Mortgages are the only liability owned by a majority of the cohort. One in five of the cohort still has a student loan. The overall average value of student loans is only \$3,800, indicating that such loans are not an especially important liability overall. Even for those who have a student loan, the overall average value is below \$20,000.

The composition of assets by different types at age 38 is shown in Figure 1. More than two-thirds of assets are in the form of homes (this figure misses some of the value of farms, which may also reflect a farmhouse, but the omission will be unimportant as there are relatively few farms owned). Businesses and farms (the latter mostly a business form) account for a further one dollar in every six of gross assets. Shares and managed funds account for only six cents in every dollar of assets. Other categories are even more minor.

Figure 2 presents the Lorenz curve for the 38-year-old Dunedin cohort. Wealth is clearly unequally distributed, a standard result. In net terms, the bottom 30% of the cohort owns nothing. The bottom 70% of the cohort owns 20% of the wealth. The top 20% of the cohort owns about 70% of the wealth. The top 10% of the cohort owns 50% of the cohort wealth and the top 5% owns over one third of the cohort wealth. These findings on wealth inequality pretty much match the more general New Zealand SoFIE findings, where the poorest 30% of the population have almost no wealth, 20% of total wealth is owned by the bottom 70% of the population, and the top 20% of the population owns around 70% of total wealth (Le, Gibson and Stillman, 2010, p.4).

Table 2 presents a variety of more detailed summary measures of wealth inequality for the Dunedin Generation X cohort and compares them to those of the New Zealand population as a whole. The measures are generally very similar. However, there is less inequality in the Dunedin cohort at the bottom end, as measured by the ratio of the 50th percentile to the 25th

Figure 1: The composition of gross assets at age 38

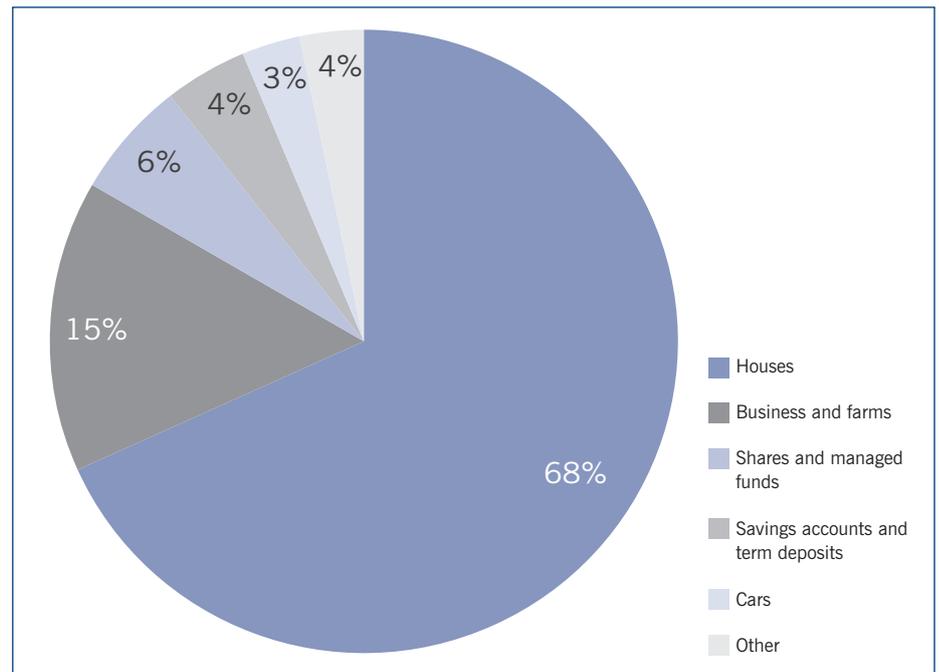
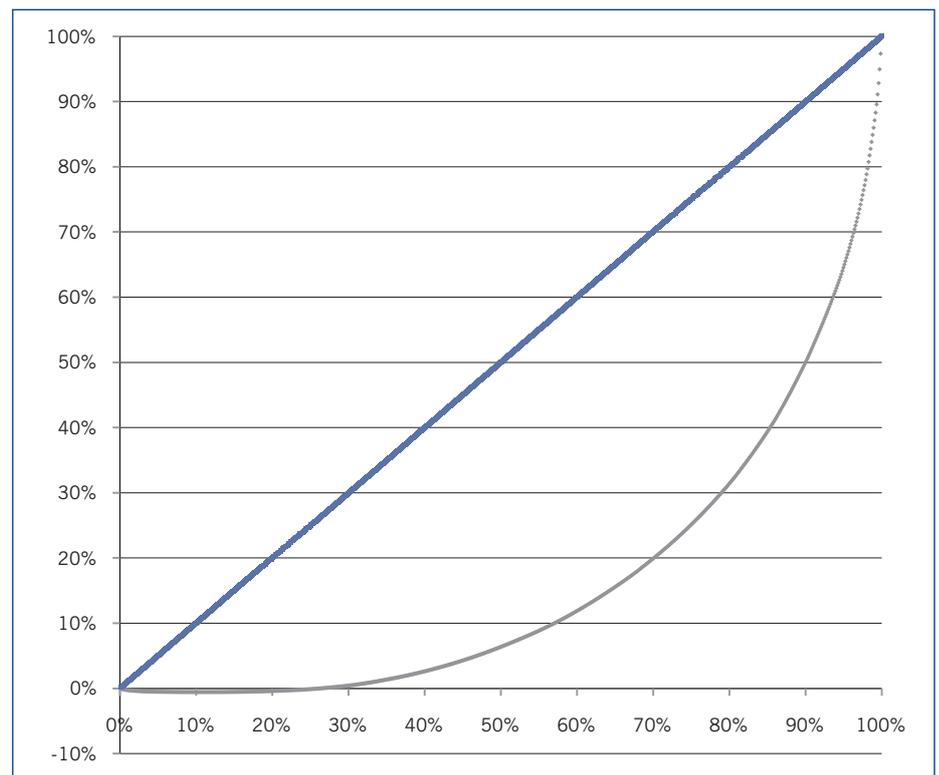


Figure 2: Lorenz curve for the Dunedin cohort



percentile. Additionally, there is rather more inequality at the top, based on the ratio of the 90th to the 50th percentile. In addition, the proportion with zero or negative net worth in the Dunedin cohort is higher than for New Zealand as a whole. It should be noted that the levels of wealth inequality among the Dunedin cohort, and indeed shown in the other

New Zealand data, are neither especially high nor especially low by world rich-country standards (see, for example, Piketty, 2014, Table 7.2).

Table 3 considers average wealth by various groups. Males in the cohort report over \$40,000 more in net wealth than females. The gender wealth gap is nearly 13% (and is very similar to that found in

Table 2: Net worth distribution in SoFIE 2006, all ages, and Dunedin age 38 compared

Measure	2006 SoFIE, all ages	Age 38 Dunedin
Mean to median ratio	2.3	2.2
P50/P25 ratio	7.5	5.7
P75/P50 ratio	2.5	2.5
P90/P50 ratio	4.9	5.2
Gini	0.70	0.68
Share zero or negative	6.9%	11.1%

Note: all age SoFIE data taken from Table 2 of Le, Gibson and Stillman (2010)

Table 3: Wealth by group in the Dunedin study

	Mean
Gender	
Male	\$386,000
Female	\$342,600
Partner status	
Partnered	\$458,800
Single	\$121,000
Male single	\$115,000
Female single	\$127,000
Location	
New Zealand	\$330,600
Australia	\$403,400
Other country	\$702,400
Parental SES to age 15	
Top 20%	\$464,300
Middle 60%	\$385,300
Bottom 20%	\$215,200
IQ	
110>	\$449,300
90-110	\$317,600
<90	\$256,300

SoFIE 2006). The gender gap in wealth is a considerably smaller percentage gap than the gender gap in annual incomes observed in the cohort at age 38. The wealth gap thus only proximately reflects lower female incomes.

Partnered people at age 38 (this includes both married and de facto relationships) report nearly four times more net worth than singles. It is possible, indeed likely, that when asked for the value of assets or liabilities, some study members include all assets held jointly with their partner. The fact that the difference is so large

(much more than double that of singles) strongly suggests that: (1) there is a strong degree of assortative mating for wealth; (2) partnerships are likely to be productive for wealth accumulation; or (3) relationship dissolution by age 38 reduces wealth accumulation. Obviously these explanations are not mutually exclusive.

Unlike other studies of wealth in New Zealand, which consider the wealth of those domiciled within the national boundary, both New Zealand and foreign-born, the Dunedin study gives a glimpse into the wealth of the New Zealand-born who leave the country. Study members living in New Zealand had over \$70,000 less in assets than those living in Australia. However, those in the cohort living outside Australia and New Zealand had considerably more than double the assets of those who remained behind in New Zealand. Of course, there is almost certainly a strong element of selection of the successful into emigration, as well as possible greater opportunities for wealth accumulation by living offshore.

Those who were brought up in higher socio-economic groups during their childhoods tend to have higher wealth. The group whose parents were among the top 20% had \$249,000 more wealth than those whose parents' socio-economic status placed them in the bottom 20%, and \$79,000 more than the middle. Lastly, those whose childhood average IQ was higher than 110 had \$193,000 more wealth than those whose IQ was less than 90, and \$132,000 more than those whose IQ was in the 90–110 range.

Explaining wealth inequality at age 38

In a proximate sense, there are a number of routes people may take to wealth at

age 38. (The fact that people are followed only to age 38 of course limits a complete treatment of wealth inequality over the life cycle.) The most self-evident route to wealth is spending less money than one is making ('saving'). Those with higher longer-term incomes have greater capacity for saving, and thus more wealth. Another route to wealth is the ownership of assets which rise in relative price ('capital gains'). Real asset price growth may arise via active entrepreneurship, which creates social as well as private value (such as developing a new business), or rent-seeking behaviours, which create private but not social value. Real asset price growth may also take place via more passive investment: for example, through buying shares or acquiring a house which rises rapidly in price.

Another pathway to wealth acquisition is direct transfers of wealth as a result of gifts or inheritance (or, very occasionally, a lottery win). *Inter vivos* transfers occur between the living, when wealth is transferred from, most often, parents, a spouse or other relatives. Piketty (2014) provides evidence of a considerable amount of wealth transfer from parents to children as gifts. As well as *inter vivos* transfers, wealth can be transferred through inheritance on death of parents, spouses and, much less often and significantly, other relatives.

In addition, marriage or partnering, under the law, means almost automatic wealth acquisition if one's partner has assets, at least after a certain amount of time has passed or the union results in children.

Several simple models of wealth are here considered to ascertain the influences on wealth formation to age 38. Among other things, the models allow an examination of the statistical significance of the group differences shown in Table 3 and the power of the model for explaining wealth inequality.

The first model is a very simple one, from which to assess and compare the others, and accounts for wealth in terms of people being partnered or not. This model encapsulates variation due to: (1) wealth mis-measurement due to partnered people potentially reporting shared wealth; (2) assortative mating on wealth or characteristics conducive to

the accumulation of wealth (such as a stronger shared future focus and a shared ability to delay gratification); and (3) sustained intimate partnerships as an efficient vehicle for the accumulation of wealth.

Those on the left of the political spectrum sometimes favour a simple model where a person's adult outcome is a function of a few aggregate macro group memberships – typically their sex (or gender) and the social class from which they come. This is our second model. By contrast, those on the right of the political spectrum sometimes favour an explanation of wealth inequality based on the merits of the individual. Following Murray and Herrnstein's well-known book (1994), it is often their position that merit can be measured by a single variable, intelligence. The intelligence, or IQ, model is our third model.

The models are shown in Table 4. The simple partnering model explains a small but significant amount of wealth variation: a little above 5%. The impact of partnering on wealth is large in absolute terms. At this point, we should note that wealth is likely to be measured with considerable error, probably more than gross income, as typically it involves recall of many more asset values, which may be held in common with a spouse. Hence, measurement error may play a considerable role in the relatively low explanatory power of various models.

The gender and class model explains much less variation in wealth, less than 2%. Only the class proxy – socio-economic status – is statistically significant. At age 38, someone whose parents are at the top end of the socio-economic scale is predicted to have \$360,000 more in assets than someone at the bottom of the scale. Each point in the socio-economic scale gets someone \$73,000 more in wealth at age 38. Gender has a relatively small effect that is not statistically significant. Some of the low explanatory power of the model may be due to measurement error in the social class proxy.

The childhood IQ model also explains a low amount of wealth variation: again less than 2%. But IQ is also statistically significant, with each extra IQ point

Table 4: Simple models of wealth inequality among the Dunedin cohort: \$ impact on wealth at age 38

Variable	Model 1	Model 2	Model 3
Partnered	\$337,800		
Female		-\$37,600	
Parental SES		\$73,200	
IQ (point)			\$5,600
R ²	0.052	0.016	0.013

Note: numbers in bold statistically significant at a 5% level

Table 5: Simple models annual personal income inequality among the Dunedin cohort: \$ impact on income at age 38

Variable	Model 1	Model 2	Model 3
Partnered	\$8,291		
Female		-\$38,700	
Parental SES		\$8,700	
IQ (point)			\$1,100
R ²	0.006	0.187	0.091

Note: numbers in bold statistically significant at a 5% level

gaining a person \$5,600 more wealth at age 38.

Unfortunately for the consideration of wealth inequality, we do not know which study members have been recipients of *inter vivos* or inheritance transfers of wealth from family members or ex-spouses at age 38, and what effect, if any, this would have in generating the levels of inequality we observe. Relatively few study members have both biological parents deceased at age 38, and these are the people most likely to inherit (if one parent dies, the other parent, not the child, is likely to inherit first): 17 study members for whom there is complete wealth information have two deceased parents at age 38. Their wealth averages \$223,300, compared to the \$367,800 in wealth of those who have one or more biological parents still living. (Multivariate consideration of the issue gives the same conclusion: parental death is not a positive factor in wealth accumulation by age 38.) Those who do have two dead parents at age 38 may be more likely to come from less wealthy backgrounds (because of a wealth gradient on mortality), and hence may be unlikely to inherit much.

The other key issue with inheritance is that those study members who are anticipating a large inheritance on their

parents' demise may have little incentive to save during their prime earning years. These people are, naturally, more likely to come from advantaged backgrounds. Their existence and the incentive inheritance gives them not to accumulate may be a further reason for the relatively low predictive power of socio-economic status for wealth at age 38. If such a channel were operative, we would expect a stronger relationship between wealth and socio-economic status to emerge as the cohort ages further into their forties and fifties and the adult children of the wealthy begin to inherit. A further factor which is harder to assess is inheritance which skips a generation: inheritance from grandparents, rather than parents.

The wealth models can be contrasted with consideration of the same models but in terms of income inequality in Table 5. Particularly noteworthy is that partnering is a stronger route to wealth than to income, and gender plays a much more important role in annual income formation (at this age many women are wholly or partly withdrawn from the labour market for child-care reasons, and this will be a major driver of their personal income shortfall). Also of great interest is the much higher explanatory power of variables generally for income as

compared to wealth. One reason for this finding is that wealth may be measured with more error than personal income.

Conclusions

This article has shown that there is considerable wealth inequality within Generation X by age 38. Indeed, there is almost as much wealth inequality within the age-38 generation as within the New Zealand population overall. The major causes of wealth inequality, therefore, need to be sought beyond the life cycle savings model and beyond the generational differences models discussed in our introduction.

As with the life cycle and generational differences notions, traditional models of inequality in wealth accumulation favoured by both the left and the right of the political spectrum do not account particularly well for wealth inequality among the cohort. While there may be

measurement reasons behind such a finding, and while there are good reasons to think these models may do rather better as study members age, we may also need to spread our intellectual net much more widely than the traditional models if we are to better understand why some people are wealthy and others are not.

The relatively low amount of inequality that we can explain may reflect some reporting error, especially in the wealth measure. But it is also likely in part to reflect the results of chance – we exist in a society and economy where wealth has a lottery-like character. If wealth is, at least in part, lottery-like, then taxation of wealth is much less likely to have harmful efficiency effects than it would if wealth accumulation was a function of productivity-related characteristics.

Earlier work on wealth in the study suggests the importance of childhood self-control, as opposed to intelligence

or socio-economic status, and this is a fertile direction for further investigation (see Moffitt et al., 2011). Future research could also examine the role of personality in wealth accumulation. Additionally, it would be of value to consider the relationship between people's wealth accumulation and their fertility decisions, both in terms of timing and in terms of numbers of children. Of course, issues of potential endogeneity of choices to have children or accumulate wealth become critical here. A consideration of the proximate role in lifetime income to age 38 in the context of assets accumulated by age 38 would be of a great deal of interest. Finally, a better understanding of the role of *inter vivos* and other transfers, both in terms of inheritance and partnering and separation, would be worth pursuing.

References

- Le, T., J. Gibson and S. Stillman (2010) *Household wealth and saving in New Zealand: evidence from the longitudinal survey of family, income and employment*, Motu working paper 10-06, Wellington: Motu Economic and Public Policy Research
- Moffitt, T.E., L. Arseneault, D. Belsky, N. Dickson, R.J. Hancox, H. Harrington, R. Houts et al. (2011) 'A gradient of childhood self-control predicts health, wealth, and public safety', *Proceedings of the National Academy of Sciences*, 108 (7), pp.2693-8
- Murray, C. and R. Herrnstein (1994) *The Bell Curve: intelligence and class structure in American life*, New York: Free Press
- Piketty, T. (2014) *Capital in the Twenty-first Century*, Cambridge, Mass: Belknap Press
- Statistics New Zealand (2008) *Family Net Worth in New Zealand*, Wellington: Statistics New Zealand

Appendix: Data detail

The original cohort of the Dunedin study was 1037 three-year-olds. By age 38, 33 of the original cohort had died. 954 study members responded to the asset question at age 38.

Study members were asked whether they owned the following assets (yes or no) and their approximate value:

- 1 The property where you live
- 2 A farm or farms
- 3 A business or businesses
- 4 A holiday house
- 5 A rental property or properties
- 6 Shares
- 7 Managed funds
- 8 Savings account
- 9 Term deposits
- 10 A motor vehicle
- 11 Other major assets.

This was followed by similarly structured questions on liabilities:

- 1 A mortgage or mortgages

- 2 A loan from a bank, finance company, family member or friend
- 3 Student loans
- 4 Credit card debt
- 5 Any other moneys you will not be able to pay by the end of the month
- 6 Any other debt.

756 people completed all asset values required to fulfil the asset module. In most cases the failure to fill out individual values was because people were not aware of the value of one or more of their assets or liabilities. The main non-response was on the value of managed funds. This question is likely to cover KiwiSaver. The high non-response rate may be because people did not know the value of their KiwiSaver accounts.

A considerable number of study members were overseas and responded to the assets question in a foreign currency. To allow a common currency comparison, asset values were converted into New Zealand dollars using power parity exchange rates taken from OECD.Stat.