

Risk attitude, perceived returns and investment choice in New Zealand

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Why do New Zealanders invest overwhelmingly in housing and not in shares? This paper adopted a psychological approach to examine the question. Study 1 investigated whether the relatively high level of New Zealand ownership of housing might stem from risk aversion. A sample of New Zealanders was more likely to prefer housing investment than a Hong Kong sample, but there were no differences in Investment Risk Attitude although this variable was positively correlated with share investment in both samples. Study 2 looked at how New Zealanders perceived past rates of return on different investments and found a tendency to overestimate the returns from housing. They showed a similar pattern for their expectations of future returns. However, the estimates of returns were very variable and the estimates of returns from housing were not strongly related to investment choice.

Keywords: investment; housing; risk attitude; shares; perceived return

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New Zealanders save, overwhelmingly, by investing in housing. New Zealand economists who have looked at this pattern have concluded that it is not in the interests of the country or, most likely, that of the individual saver. It is also well-known that New Zealanders are reluctant to invest in shares (e.g. Bollard, 2004; Bollard & Smith, 2006; Scobie, Gibson & Le, 2004). Why does this pattern of investment occur?

Investment analyses generally isolate two variables as crucial for determining a good choice of investment: the riskiness of the investment and the rate of return that can be expected from it (e.g. Campbell, 1996; Wärneryd, 2001). Thus, it seems reasonable to examine whether New Zealanders' preferences for housing investments might be explained either by their attitude to risk or by their perceptions (or misperceptions) of the returns from different investments. Our first study examined the possibility that New Zealanders might be risk averse in investment matters, and we examined and compared the investment preferences and investment risk attitudes of samples from New Zealand and Hong Kong. The second study investigated how people perceived the movement of different asset in New Zealand prices over the previous ten years.

Although the underlying purpose behind the two studies was the same – examining why New Zealanders invest in housing and avoid shares – they draw on different backgrounds. For this reason, the rationales for the two studies are explained separately, and the background for the second study is deferred until later in the paper.

Attitude to risk is an important psychological variable to consider in regard to investment. Risk attitudes are well-known to influence people's investment behaviour, and those who are prepared to invest in shares have generally been found to be more risk tolerant – or alternatively less risk averse – than the average person (Hunter & Kemp, 2004; Kristjanpoller &

Olson, 2015; Lichtenberg & Seiler, 2014; Nasic & Weber, 2010; Wärneryd, 1996, 2001). Indeed, it is now common for people's investment risk attitude to be measured as part of the process of giving investment advice (e.g. Goldstein, Johnson, & Sharpe, 2008). An investment advisor will be reluctant to recommend to someone who is risk averse that they invest in shares, and much more likely to recommend some other form of investment. In Study 1 we used Wärneryd's (2001) Investment Risk Attitude Scale to measure people's attitude to investment risk.

Hong Kong seemed a good comparison with New Zealand simply because it is different. It is small and land is not for sale, and, although many people in Hong Kong own residential real estate, ownership is of apartments rather than houses. On the other hand, Hong Kong has a thriving share market and may have the highest ratio of share market capitalisation to GDP in the world, and certainly much higher than in New Zealand (e.g. The Global Economy, 2015). Thus we expected to find that a sample of people in Hong Kong invested or were more willing to invest in shares and less in residential real estate than people in New Zealand.

The key hypothesis, however, was that the differing patterns of investment might accompany differences in risk attitude. There are two aspects to this. Firstly, in line with previous research, we expected to find that, within both societies, risk tolerant people would be more likely to invest in shares, less likely to invest in term deposits and perhaps also less likely to invest in real estate. Secondly, if New Zealanders invest more in housing because they are risk averse, then we would expect to find that differences in actual investment between Hong Kong and New Zealand are reflected in difference in risk attitude. New Zealanders should be significantly less risk tolerant.

Study 1

Method

Questionnaire

The New Zealand version of the questionnaire was in English, the Hong Kong version in both English and traditional Chinese (as is commonly used in Hong Kong).

The English questionnaire began with the Investment Risk Attitude Scale (Wärneryd, 2001). This scale contains 6 items (e.g. "If I think an investment will be profitable, I am prepared to borrow money to make this investment"). Increasing scores on the scale indicate greater willingness to take investment risks. All items are answered on a 5-point scale anchored with "Strongly disagree" and "Strongly agree". Three items are reverse-coded. The scale has a potential range from 6 to 30.

Respondents were asked to imagine they had "inherited \$10,000 from a distant relative and you would like to invest it", and were asked to allocate the money among the four investment categories: term deposit, unit trust, shares and real estate. The next question asked the same allocation decision for the amount of \$100,000 (similarly inherited). Definitions of the investment types were given. (See Appendix 1.)

Four financial behaviour questions followed. Respondents were asked whether they or their partner currently owned a term deposit account, shares, a unit trust investment, or any residential real estate (including one they lived in). All were simply answered yes or no, except for the last where "yes, more than one property" and "yes, just one property" were options. The questionnaire concluded by asking the respondent's gender and age.

The Hong Kong questionnaire was similar to the English version but underneath the English wording (including the response labels) was a translation into Chinese. The translation was performed by one Chinese-speaking member of the research team, and then back-translated by another. There was one other important difference. The amounts of money were given in Hong Kong and not New Zealand dollars. At the time of the research the exchange rate was around NZ \$1 = HK \$6.20. To keep the amounts roughly comparable across the questionnaires and still make for a relatively straightforward task, the amounts for allocation in the Hong Kong questionnaire were chosen as HK \$100,000 and HK \$1,000,000.

Both questionnaires were available as both pen and paper and online (via Qualtrics), with the majority being answered online.

Procedure and respondents

For both samples, paid assistants distributed questionnaires (either pen and paper or online) to people they knew. No assistant recruited more than 20 respondents. The assistants were asked to recruit members of the general public with a special aim to recruit respondents who had investments of some kind.

The final samples contained 133 New Zealand (NZ; mostly Christchurch) and 130 Hong Kong (HK) residents. The NZ sample contained 45 males and had a median age in the range

35-44 years. Ninety respondents reported having partners, and 46 had dependent children. The HK sample had 66 males and median age in the range 35-44 years. Eighty-one were either married or had other stable relationships, and 51 had dependent children.

Results and Discussion

Table 1 shows comparative statistics for the different investment types. In order to make the data on the different allocation decisions comparable across samples and amounts, these data are given as percentages. (So, for example, the HK sample's average 37.1 % investment of the low sum in Term Deposits equates to an average investment of HK \$37, 100.)

As can be seen in the table, a greater percentage of the money was allocated to term deposits when the sum to invest was smaller ($F(1, 260) = 57.0, p < .001$; partial $\eta^2 = .18$), and this tendency was particularly true for the NZ sample (Interaction, $F(1, 260) = 9.83, p < .01$; partial $\eta^2 = .04$). There was no significant main effect of sample ($F(1, 260) = 2.44, ns$). The percentage of money allocated to a unit trust (which was, on average, small) was unaffected by sample ($F(1, 260) = 1.29, ns$), sum ($F(1, 260) = .82, ns$) or the interaction ($F(1, 260) = .1, ns$). The HK sample allocated a greater percentage to shares ($F(1, 261) = 25.6, p < .001$; partial $\eta^2 = .09$), and shares received a higher proportion of larger sums ($F(1, 261) = 17.6, p < .001$; partial $\eta^2 = .06$). There was no interactive effect on share allocation ($F(1, 261) = 1.97, ns$). On average, the NZ sample allocated more money to real estate than the HK sample ($F(1, 260) = 7.63, p < .01$; partial $\eta^2 = .03$); a greater percentage was allocated to real estate if the sum was large ($F(1, 260) = 115.7, p < .001$; partial $\eta^2 = .31$) and there was a tendency for the NZ sample to invest more in real estate when the sum was large ($F(1, 260) = 4.97, p < .01$; partial $\eta^2 = .02$). Overall, the most striking result is that, as expected, the Hong Kong sample was prepared to invest a higher percentage of either windfall in shares.

Table 1.
Average percentages of low (HK \$100,000 and NZ \$10,000) and high (HK \$1,000,000 and NZ \$100,000) sums of money allocated to four different types of investment. (Standard deviations shown in parentheses.)

	Low sum		High sum	
	HK	NZ	HK	NZ
Term deposit	37.1 (36.8)	49.8 (41.9)	26.6 (25.9)	24.7 (29.1)
Unit Trust	12.5 (24.4)	10.6 (22.6)	11.8 (17.1)	9.1 (16.0)
Shares	28.5 (36.1)	12.9 (25.9)	19.3 (21.1)	8.2 (13.9)
Real estate	22.1 (31.2)	26.7 (38.8)	42.5 (35.4)	58.1 (37.6)

The percentages of the two sample actually holding examples of the different types of investment at the time of the survey are shown in Table 2. In line with our expectations, the HK sample was more likely to own term deposits and shares and less likely to own real estate.

Table 3 shows the correlations of the two scales with various other measures in the survey. Results with each sample are largely as predicted; moreover the two samples behaved quite similarly. Those who hypothetically allocated more money to shares and less money to term deposits were more likely to be risk tolerant. Those who actually owned shares

or unit trusts were also more risk tolerant in both samples, although ownership of a term deposit was not associated with risk attitude. On the other hand, real estate investment, whether actual or hypothetical, did not relate to risk attitude.

Table 2.
Percentage of the two samples in Study 1 owning each of the four types of investment.

	HK	NZ
Term Deposit	75	48***
Unit Trust	32	23
Shares	64	31***
Residential real estate	55	89***
- 1 property	38	64***
- More than one property	18	26

*** Test of significance between two proportions, $p < .001$.

Table 3.
Pearson product-moment correlations between the Investment Risk Attitude Scale and hypothetical and actual investment preferences for the Hong Kong and New Zealand samples.

	HK	NZ
Smaller sum allocation		
Term Deposit	-.40*	-.30*
Unit Trust	.24*	.01
Shares	.31*	.25*
Real Estate	.08	.05
Larger sum allocation		
Term Deposit	-.47*	-.42*
Unit Trust	.13	.14
Shares	.32*	.22*
Real Estate	.19*	.11
Owning:		
Term deposit	.01	-.12
Unit Trust	.22*	.19*
Shares	.18*	.24*
Real Estate	.03	-.11

* $p < .05$; two-tailed test.

The HK ($M = 16.1$, $SD = 3.9$) and the NZ ($M = 15.1$, $SD = 4.9$) samples scored similarly on the Investment Risk Attitude Scale ($t(261) = 1.80$, $p = .073$). Thus, the differences in both hypothetical and actual investment behaviour between the two samples, could not be attributed to differences in investment risk attitude.

Study 1 found that people in Hong Kong were more likely to own or willing to invest in shares than New Zealanders and less likely to invest in real estate. Also, in line with previous findings, risk tolerant people in both societies were more likely to invest in shares. However, the key hypothesis – that the difference in investment pattern between the two societies is related to a difference in risk tolerance – was not supported.

An obvious limitation of the study is that neither sample was likely to be truly representative of possible investors in Hong Kong or New Zealand, and the possibility of some kind of cross-cultural bias in the sampling cannot be excluded. However, the samples were similar in age and, more importantly, differed in their actual investment choices in the same way as the larger populations. Moreover, at the least it can be said that the different patterns of investment choice between the samples were not associated with differences in risk tolerance.

It is also worth noting that two further studies have found national differences in investment preference not to be reflected in differences in risk tolerance: Hsaio (2013) found no difference in risk tolerance between New Zealanders and Taiwanese; Kemp, Chan, Chen, Fetchenhauer, Helton & Steiniger (2017) similarly reported no difference between New Zealand and German samples. Both studies used the same measure of risk attitude as Study 1; and both found cross-national differences in actual investment patterns. Moreover, these studies too showed only weak relationships between risk attitudes and housing investment preferences. Thus, the tentative conclusion is that, although differences in risk attitudes are related to differences in individual investment preferences and behaviour, they are not the explanation for why New Zealanders concentrate their investments in housing.

Study 2

Our second study examined New Zealanders' perceptions of the rate of return available from different investments. Braithwaite and Kemp (2007) found that New Zealanders did perceive that housing offered higher rates of return, but their study used simple rating scales. In the present study we asked people to estimate the actual rates of return from investment in housing, shares and term deposits over the previous ten years. The simple idea here is that people's estimates of the returns that were available in the past are likely to be important in their expectations for the future.

There are at least two reasons for believing that people's perceptions of, or memory for, past returns might not be very accurate. Previous studies of people's memory for past consumer prices have found that these are not well remembered or estimated (e.g. Kemp, 1987; Ranyard, Del Missier, Bonini, Duxbury, & Summers, 2008). The misperception of past prices is not restricted to consumers: a study of New Zealanders involved in the wool industry (for example, sheep farmers) found that they misremembered past wool prices in much the same way (Kemp & Willetts, 1996). Thus, it seems reasonable to question whether past rates of return for different investments would be accurately estimated.

Secondly, determining actual historical rates of return for different classes of assets can be quite difficult. It is well known that rates of return from housing and shares are very variable from year to year, and one should look for long-term rates. However, very few historical series seem to be available in New Zealand, and those that are (e.g. NZX, 2017; REINZ, 2017) proved quite difficult to locate. Moreover, while the estimates of the rates of return are reasonably comparable for shares and term deposits (NZX, 2017, Reserve Bank of New Zealand, 2017), the housing price index (REINZ, 2017) simply records average house prices and omits consideration of rents obtainable, mortgages, and house renovation and maintenance. (See Appendix 2 for more detail about the different series.) The last is a particularly significant omission because it is known that people underestimate the real cost of house renovation and are likely to underestimate past maintenance costs (Peng, 2011).

Thus, we anticipated that people would not estimate past

returns from housing, shares, and term deposits accurately, and most likely would overestimate the returns from housing. Given the difficulty of accessing reasonable data, we also anticipated substantial individual variation in the estimates. We also expected that people's preferred investment choices would reflect their misperceptions of the different rates of return.

Method

Questionnaire

The questionnaire began by asking respondents to imagine they had "inherited \$100,000 from a distant relative and you would like to invest it", and were asked to allocate the money among three investment categories: term deposit, unit trust, shares and real estate.

The next three pages asked respondents to estimate past or future returns for house prices, shares and term deposits. They were reminded that they were unlikely to have very accurate answers to the questions and to make the best guess they could.

The first of these pages asked respondents first to "consider an average house in New Zealand. Over the 10 year period from the end of 2006 until now, what do you think is the average yearly percentage increase in the value of the house in this period? (Note that the actual yearly increase will have been very different from year to year; we only ask you for the average.)" Similar questions asked for the average yearly percentage increases in the value of a mixed collection of NZ shares, and the average yearly interest paid on a term deposit over the same period.

On the next page respondents were first asked to consider that "\$100,000 was put into a house in New Zealand, which was then rented out. The owner received rent, but had to pay out for interest payments on the mortgage, rates, insurance, and maintenance. Any surplus rent was taxed, reinvested in improving the property, or paying off the mortgage. Taking all these factors into account, what do you think the current total value of the investment would be today?" Other questions asked for the current total value of \$100,000 share and term deposit investments.

The next page asked respondents to consider someone who invests \$100,000, and to estimate the value in ten year's time from investing it today in a house, shares and a term deposit. As for the preceding set of questions they were reminded to take into account taxes and other expenses.

The final page of the questionnaire asked yes/no questions about their current ownership of the three investment classes and about their parents' house and share ownership.

Procedure and respondents

Paid assistants distributed pen and paper questionnaires to people they knew. No assistant recruited more than 17 respondents. The assistants were asked to recruit members of the general public with a proviso that the respondents be New Zealand residents, over 18, and not current students. In fact, the vast majority of the respondents lived in and around Christchurch. Questionnaires were completed between

November 2016 and February 2017. (For later questionnaires, the dates supplied in the questions were slightly differently worded.)

The final sample of 115 people contained 48 men and 64 women (no information for 3). There were respondents in every 10-year age range from 15-24 (15) to 65 and over (10), with the median in the range 35-44. The majority of the respondents lived in Christchurch.

Forty-three percent of the respondents (2 missing) lived in a house they owned, sometimes with a partner; 24 % owned shares (2 missing); and 35 % had a term deposit (2 missing). Eighty-one percent had grown up in a house that their parents (or parent) had owned (3 missing or don't know); 41 % of them reported that their parents (or parent) had owned a house that was rented out to others; and 42 % reported that their parents had owned shares (41 % no; 16 % didn't know).

Results

Of the hypothetical windfall, respondents invested an average of \$38072 ($SD = \35878) in a term deposit, \$14594 ($SD = \20453) in shares, and \$47334 in housing ($SD = 35449$; $F(2,226) = 22.1, p < .0001$; partial $\eta^2 = .16$). As the size of the standard deviations indicates, the respondents were quite variable with many choosing to invest the full amount in one or other of the three asset classes. The hypothetical investments resemble both the results of Study 1 and the actual investments of the respondents in favouring housing strongly over shares.

The mean and median estimates of the average percentage yearly returns are shown in Table 4. Also shown are estimates of the actual average returns over the period. (Details of how these estimates were arrived at are given in Appendix 1.) Note, however, that these estimates themselves are themselves variable. (For example, house price increases varied markedly from area to area in this period; different share portfolios will have had different rates of return; term deposit returns vary unsystematically with the length of the deposit period.) Although the actual returns for the three classes of investment were quite similar, the respondents "remembered" a considerably greater increase for housing. It is also noteworthy that there was great variation between respondents.

Table 4.

Respondents' mean and median (also upper and lower quartile [Q]) estimates of the average yearly return (%) over 2006-2016 for three types of \$100,000 investment. Actual percentage returns are also shown.

	Mean (%)	Median (%)	Lower Q (%)	Upper Q (%)	Actual (%)
Housing	13.0	8.0	5	18	5.2
Shares	8.3	5.5	3.3	10	5.1
Term deposit	5.4	4.0	3	5	4.9

Table 5 shows the respondents' estimates of how much a \$100,000 investment made in 2006 was worth at the end of 2016, and how much they estimated an investment of \$100,000 made now would be worth in 2026. (No estimates of actual 2016 value were made as these would depend on

individual tax rates. Nor are there reliable data for house renovation and maintenance expenses.) As for the average yearly increase results, respondents generally believed that there had been a markedly higher increase in return from housing than the other asset classes, although again there was considerable variation between respondents. The future results show that respondents expect these differences to continue over the next 10 years, although they also generally expected a greater increase in value over the next ten years than the previous 10 years.

Table 5. Respondents' estimates of value of three types of \$100,000 investment after the past or next 10 years.

	Mean (\$,000)	Median (\$,000)	Lower Q (\$,000)	Upper Q (\$,000)
Over the past 10 years (end 2006-2016)				
Housing	184.3	150	120	200
Shares	151.5	140	120	180
Term deposit	131.1	130	110	150
Over the next 10 years (end 2016-2026)				
Housing	240.9	200	150	255
Shares	180.8	150	120	200
Term deposit	161.6	135	120	180

Notes. Friedman ANOVA showed a significant difference between the respondents' value estimates for the three investments for both the past ($\chi^2 [n = 109, df = 2] = 51.9, p < .0001$) and future ($\chi^2 [n = 106, df = 2] = 71.1, p < .0001$) periods. Sign tests showed significant higher estimates for the future than the past periods for all three investments (Housing, $z = 5.34, p < .0001$; Shares, $z = 4.22, p < .0001$; Term deposit, $z = 3.69, p < .0002$). Q = Quartile.

We ranked the perceptions of return for each individual for the three types of investment. For example, the respondent's answers might show housing (1) as giving the best return; then shares (2); then the term deposit (3). (Where the respondent perceived equal returns the number was split, e.g. first equal became 1.5.) We did this for both past and the future return questions. Table 6 shows – consistent with the other results – that most people thought housing returns had been and would continue to be better. The table also shows significant ($p < .05$) Pearson correlations between the ranks and the spending of the hypothetical windfall. Those who perceived shares as performing better allocated more of the hypothetical windfall to shares, but, interestingly, allocation of the windfall to housing is not so closely related to the perception of higher returns from housing. We also investigated (through a series of 15 t-tests) whether individuals who owned a type of investment or whose parents owned a type of investment were also more likely to rank the returns from that investment higher but no significant (uncorrected $p < .05$) effects were found.

In summary, although nominal actual returns on the three types of investment have been fairly similar over the previous ten years, the respondents generally perceived that returns from housing had been considerably higher. However, as the quartiles show, there was considerable individual variation, perhaps reflecting the lack of readily available data. Future returns for all investments were expected to be higher than those over the previous ten years, possibly reflecting the occurrence during the previous ten years of the Global Financial Crisis (e.g. Turner, 2015), possibly reflecting optimism

bias (e.g. Baker & Nofsinger, 2002). Finally, although perception of higher returns from shares is associated with a greater preference for hypothetical share investment, there is only a weak relationship between perceiving higher returns from housing and preference for investing in housing.

General Discussion

As Study 1 shows, the New Zealand preference for housing investment does not appear to be the result of risk aversion. Although New Zealanders were more willing to invest in housing and less willing to invest in shares than people from Hong Kong there was no significant difference in risk tolerance between the samples. Although risk tolerance predicts a liking for shares, risk tolerance is only weakly related to housing investment preference.

The respondents of Study 2 perceived actual past rates of return for different investments variably and overestimated the rates of return available from housing. However, this result cannot be taken as simply indicating that New Zealanders invest preferentially in housing because they misperceive the returns from housing as greater than they are. The respondents in Study 2 were often aware that they did not know the actual answers – indeed, given the dearth of publicly available data it is hard to see how they could have known. It is also noteworthy (see Table 6) that for only one of the housing rate or value questions was there a correlation with windfall spending on housing and that people who owned houses did not perceive greater returns than those who did not. These results suggest that people do not make heavy use of their perceptions (or misperceptions) of the returns from housing in investment choices.

Table 6. Percentage of the sample of Study 2 perceiving each of housing, shares and term deposits as the best (or equal best) returning asset for the three question types. Also shown are significant ($p < .05$) Pearson correlations of the rankings with the amount allocated from the hypothetical windfall.

Hypothetical windfall:		Housing (r)	Shares (r)	Term deposit (r)
Perceiving best return (% of sample)				
Average yearly return questions				
Housing	66			
Shares	28		-.28	.22
Term deposit	14			
Value in 2016 of a \$100,000 investment made in 2006				
Housing	63	-.24		
Shares	26		-.27	
Term deposit	17			-.25
Value in 2026 of a \$100,000 investment made in 2016				
Housing	73			
Shares	20		-.31	
Term deposit	14			-.25

Individual investment perceptions are likely to differ in large part because individual experiences differ. An obvious source of difference with respect to housing, for example, is that in recent years the rise in housing prices has been considerably greater in the Auckland region than in the rest of New Zealand, and the Study 2 sample was recruited in Christchurch. But even within a given city there have been considerable differences in the rate of increase between

different suburbs. This is not just an issue with housing: There can be great differences in the performance of different share portfolios. Moreover, fast rates of past increase in a particular housing area or type of share are not at all guaranteed to continue into the future.

Although looking at risk and return perception seems a logical place to begin the search for why New Zealanders invest so much in housing, the question must be seen as remaining largely unanswered. Previous research (Kemp et al. 2017) also shows that there is little relationship between investment choice and overall economic trust, although there is some evidence of a weak relationship between one's own investments and those of family and friends. The present Study 2 indicates that the preference is not based on an accurate perception of differing rates of return. However, many other possibilities remain. For example, housing investment may be preferred because it is supported (and to some extent underwritten) by the government. There also remain many other unexplored psychological factors.

Finally, we comment on an unexpected feature of our results. To date most research into investment choice has concentrated on share investment and there are some reasonably well-established results from this research – for example, the relationship between share investment and risk tolerance replicated in our Study 1. By contrast the factors underlying investment in housing have been less studied (see, for example, Braithwaite & Kemp, 2007; El-Attar & Poschke, 2011), although, worldwide, most present-day investment is actually in real estate (e.g. Turner, 2015). What the pattern of results in both the present Studies 1 and 2 suggests, however, is that the factors underlying investment in housing are not simply the reverse of those underlying investment in shares. Instead they appear to be quite different.

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Appendix 1. Descriptions of investment types used in Study 1.

Term deposit. You can invest your money in a term deposit that offers an annual rate of return on your money through interest calculated on every dollar in your account. For you to receive financial returns from this option, you have to leave your money in the bank and not 'touch' it for the agreed length of time. In order for this option to deliver your financial returns, the bank will lend your money to people at a higher rate and give part of the profit to you.

Unit trust. You can invest your money in a unit trust with an investment company which offers an annual rate of return on your money depending on the performance of the investment. Investing in a unit trust entails buying shares or securities in a fixed portfolio decided by the investment company.

Shares. You can invest your money in the stock market. The shares you buy will sometimes pay out a portion of the company's profits as dividends. You invest in shares that you expect to increase in value. You may buy and sell shares to make a profit.

Real Estate. You can invest your money in residential real estate. You invest on your own or with members of your family, and the decision to purchase the house is yours. If you take out a mortgage you must make repayments until the house has been paid for. You are responsible for financing maintenance, repairs and renovations.

Appendix 2. Actual returns on housing, shares, and term deposits for the period 2006-2016.

The Real Estate Institute of New Zealand produces a housing price index that dates back before 2006 (REINZ, 2017). This index was at 3000 (accurate to within 100) at the end of 2006 and 5000 at the end of 2016, giving a cumulative increase of 66.7 % and a compounded yearly average of 5.24%. The index is based simply on the average sale prices of houses. The index rose more rapidly in the later years. Over this period there has been an unusually marked regional variation in house prices (Kendall, 2016).

The New Zealand Stock Exchange (NZX, 2017) maintains an historical series of the gross index of the 50 leading shares in the market. This assumes that all dividends are taken and reinvested. The index stood at 4188.89 on December 31 2006 and 6881.22 on December 31 2016 giving a cumulative return of 64.7 % and a compounded annual return of 5.09 %. The increase was noticeably sharper from 2013.

The Reserve Bank of New Zealand (2017) has an historical series of retail rates on term deposit rates. We took the interest rates available from December 2006 to December 2016, which gave a cumulative return of 60.8%, and a compounded yearly average of 4.87% (assuming reinvestment of interest and capital). The index is only available for 6-monthly term deposit rates and other terms would give lower or higher rates. Interest rates were higher in the period 2006-2008 than later.

Note that the housing index is not strictly comparable to the other two. Using different time periods or assumptions (e.g. different periods for term deposits) would produce different results. However, very few historical series of New Zealand assets are available.