# TREASURY WORKING PAPER 99/9

# Saving Rates and Portfolio Allocation in New Zealand

## Joint Working Group
### Government officials and ISI

**ABSTRACT**

This paper explores readily available data up to 1996 on New Zealand's saving rates and the level of savings, and examines the portfolio allocation of savings. It finds that New Zealanders' household saving rates are low, whilst above average public saving rates leave national saving rates closer to OECD average levels. Whilst New Zealand has lower net wealth per household than many of its OECD counterparts, a good portion of this is associated with differences in per capita incomes. New Zealanders hold a higher proportion of their savings in housing than people in many other countries, as would be expected given our lower per capita incomes. Even given this, New Zealand has above average home ownership rates and housing space consumption is high by world standards. Historically, the returns on different domestic asset classes suggest that the risk adjusted real return on housing has been relatively high.

## 1. INTRODUCTION

In September 1998 Treasury commenced a project with the Investment Savings and Insurance Association (ISI) to study the data available on New Zealand levels of saving and patterns of investment. The aim of this work is to identify and fill gaps in our knowledge in order to assist in future policy development.

The project was planned to be undertaken in the following manner:

*Phase 1*: Collection of data from pre-identified sources.

*Phase 2*: Initial analysis of data collected in Phase 1.

*Phase 3*:   Part A – detailed analysis of the data.
             Part B – improving the data.

The current document is the result of phase two of this saving research project. Central questions in this stage are: What patterns have emerged from the data? What looks interesting/unusual and therefore warrants further work? What gaps are there in the data that we would like to fill?

### a) Background

In June of 1998 the Investment Savings and Insurance Association (ISI) published a report aimed at contributing to the debate on the appropriate retirement policy for the future. As a result of the report, the Minister directed officials to research some central questions from the ISI report on retirement saving "A Wakeup Call" [1998]. The particular issues of concern were:

*"6.3 Factors influencing the quality of investment and saving decisions*

*Much of the analysis of retirement income issues to date has focused on the adequacy of savings from a quantitative point of view, rather than at the quality of saving and investment decisions which offer returns that reward savers for foregoing immediate consumption.*

*More research could usefully be undertaken on the distribution of saving and investment decisions which offer returns that reward savers for foregoing immediate consumption.*

*6.4 The role of housing as a vehicle for retirement saving*

*New Zealanders have historically had a strong preference for home ownership as a means of retirement saving. The debate on the merits of this preference has focused on whether the regulatory, taxation and legal frameworks encourage an over-investment in home ownership.*

*There would be considerable value added to this debate by looking at the reasons why individuals seek home ownership and what role this should ideally play in a retirement savings strategy. Regard must be given to the risks of having residential property as the primary asset in a savings portfolio. It would also be useful to compare a typical New Zealand savings portfolio with the optimal portfolio choice."*

This paper is structured around two questions: does New Zealand save enough, and is this wealth invested optimally? The remainder of this paper commences with a brief description of saving. Following this we summarise historical saving behaviour for New Zealand and then compare this to other OECD countries. The composition of New Zealand's portfolio of assets is then presented followed by the historical returns that four main asset classes have experienced. Some factors which have typically been suggested as affecting saving rates have been summarised in the Appendix.

**b)    Measures of the level, mix and returns to different types of saving in NZ**

*i)     Measurement of the Level of Saving*

"Saving" is a term that is commonly used in several ways, *e.g.* (a) a household's net worth, or (b) a change in its net worth, or (c) national aggregates of these two. Economists use the term "saving" to mean the annual flow measure of saving and "savings" are the stock measure. We attempt to follow this convention below.

Aggregate household saving is measured as a residual of household income minus outlays, from the System of National Accounts household income/outlay account. There are several problems surrounding this measurement of saving, not the least of which is the fact that it is usually computed as the residual of two flows. Since this residual is typically much smaller than either income or outlays, its measurement is prone to large errors.

An alternative measure of annual national saving to that provided in the System of National Accounts could be measured as the growth in the country's stock of net worth from one year to the next. This would accurately include capital gains on housing[1] and shares, which are excluded from the flows method. The disadvantage is that stocks of assets and liabilities (of which net worth consists) are not commonly measured in New Zealand's official statistics. Hence studies usually rely on the less accurate flows approach which is likely to underestimate saving given that there is likely to be some positive level of capital gains.

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[1] Saving is the portion of income that is not consumed. This amount can then be invested into housing. In this manner, paying principal on a mortgage is an investment decision involving the reallocation of saving rather than saving itself. The portion of a housing investment which does represent saving is any capital gains that the household does not offset with increased expenditure as these will represent an increase in the wealth of the investor.

For the purpose of analysis, it would be preferable if statistics on saving rates by age groups were available. Aggregate measures reflect the saving or dis-saving of generations approaching or already in retirement. By comparing differences between the saving rates of different age groups we could evaluate how changing factors are influencing saving decisions for different demographic groupings.

## 2.   NEW ZEALAND'S SAVING RECORD

National annual saving flows in New Zealand can be broken down into contributions by sectors such as households, business and Government. The statistics that are available demonstrate that the patterns of these types of saving over recent years have been quite different.

As can be seen in Figure 1 below, there has been a decline in the level of annual household saving since the latter half of the 1980s, and to a lesser extent the early 1990s. It is interesting to note how this trend compares with the trend in Government sector saving. During the 1994–1996 period when the annual household saving fraction was at its lowest it can be seen that Government saving was significantly larger. The net result is that total national saving as a percentage of GDP is relatively constant during the 1994–1996 period, despite the large fluctuations in the constituent series. National saving did decline significantly during the early 1990s, as both household and Government saving declined. This is likely to be at least partly a business cycle effect, as New Zealand experienced a recession during that period.

**Figure 1: National Saving and its Components**
% of GDP
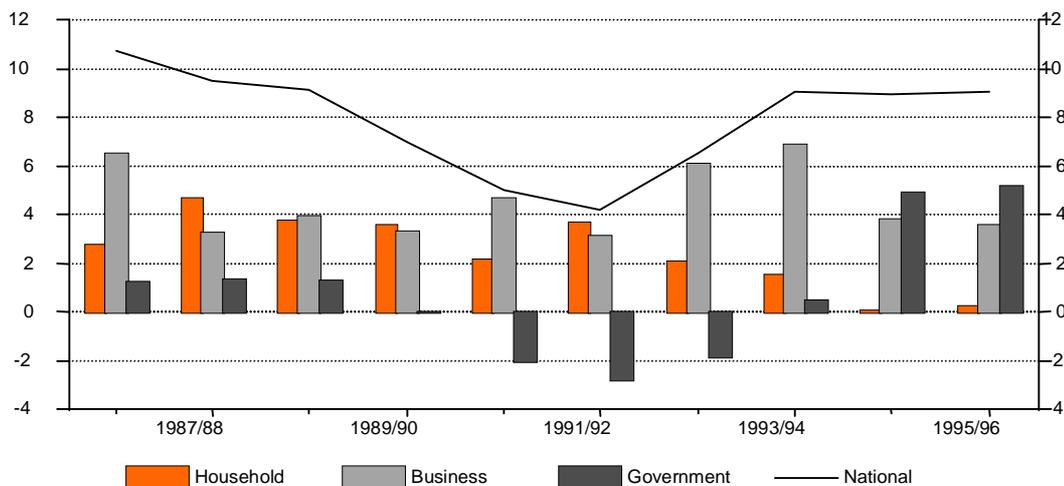


*Source: Statistics New Zealand*
Note that only the Government saving statistic is considered to be an official statistic.

Explanations offered for these movements in saving rates include:

•   The recent increase in house values has raised households' net worth. As a result, households do not save as much, because they do not need to in order to achieve a given future level of consumption. These effects are probably stronger in Auckland than elsewhere. Note that capital gains (such as those resulting from increased house prices) are not included in

the flow measure of household saving. Hence, the actual total level of household saving is higher than the statistics indicate.

- A Ricardian Equivalence argument: higher government saving leads people to expect that tax rates will be lower in the future, thus encouraging them to save less in the current period. Also, when people perceive the government to be saving by spending less on education and health care, individuals respond by spending more on those items themselves, resulting in lower measured household saving, though, of course, human capital may be accumulated.

Sebastian Edwards [1995] finds that while government saving depresses private saving, this does not happen at a one to one rate: an increase in government saving of one per cent is associated with a decline in private saving of about 0.55 per cent, causing national saving to rise by 0.45 per cent. A stable political and institutional environment is found to be a strong promoter of government saving.

Edwards notes that the less than perfect negative correlation between government and private saving can be explained by the fact that government saving is affected by political stability whereas private saving responds to demographic variables and social security expenditures. Both are affected by real growth and by the current account balance or foreign saving.

It should be noted that, for an open economy with good access to foreign capital, it is not obvious that there is an optimal level of national savings, as any lack in domestic savings can be covered by an inflow of foreign savings. This, however, could become significant if the foreign borrowings are not invested for a sufficient return and the level of foreign debt becomes unsustainable.

## 3.  INTERNATIONAL COMPARISON OF SAVING LEVELS

All studies considered in the course of this project conclude that the gross level of annual national saving in New Zealand is at a level comparable to that of other OECD countries.  International comparisons, however, are complicated by the fact that not only is household saving difficult to measure, there are definitional differences among countries as well. As a result, comparisons can be only indicative.

Asset prices, both individually and collectively, behave very differently between countries[2].  This affects the ratios of individual asset values to the total portfolio in each country.  Each type of asset value behaves differently from other assets in the course of a country's business cycle.  Not only that, there seems to be very little correlation between the prices of broad classes of assets between countries.  We do not have rates of return data by asset for different countries.  These being the facts, comparisons of, say, housing wealth as a fraction of households' wealth or of GDP between countries are limited in what they reveal about the efficiency of the household portfolio in a particular country.

Dean, Durand, Fallon, and Hoeller [1990] from the OECD, report that the correlation between national saving and national investment has generally become much looser since 1980 due to the liberalisation of financial markets, and resulting much larger international capital flows. Also, most OECD countries have seen a significant fall in national saving and gross national investment, with the fall in saving exceeding the fall in investment. In Dean et al., the level of national saving in New Zealand does not look out of the ordinary compared with that in other OECD countries.

The most thorough international comparison relating to saving in New Zealand can be found in Savage [1997a].  Savage notes that net *household* annual saving as a proportion of disposable income in New Zealand is low by comparison with other OECD countries, particularly during the early 1990s.  Net *national* saving as a proportion of GDP, however, which includes the Government and business sectors, is comparable to other OECD countries particularly during the early 1990s when Government saving was strong.

Savage notes that the main difference between the flow and the stock method (defined on page 2) for measuring saving is that the flow method omits the capital gains from housing and shares. As this could be significant, the following graph has been constructed using the stock method.  The OECD has compiled relative net worth measures (as a percentage of disposable household income) for some major OECD countries. These data, complemented by numbers from Statistics NZ and the Westpac-FPG household financial data[3] for New Zealand, produced Figure 2. Again, due to difficulties with the data these comparisons should only be treated as indicative.

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[2] Borio, C, Kennedy, N and Prowse 1994

[3] Data compiled by Westpac.FPG from surveys of deposit institutions.

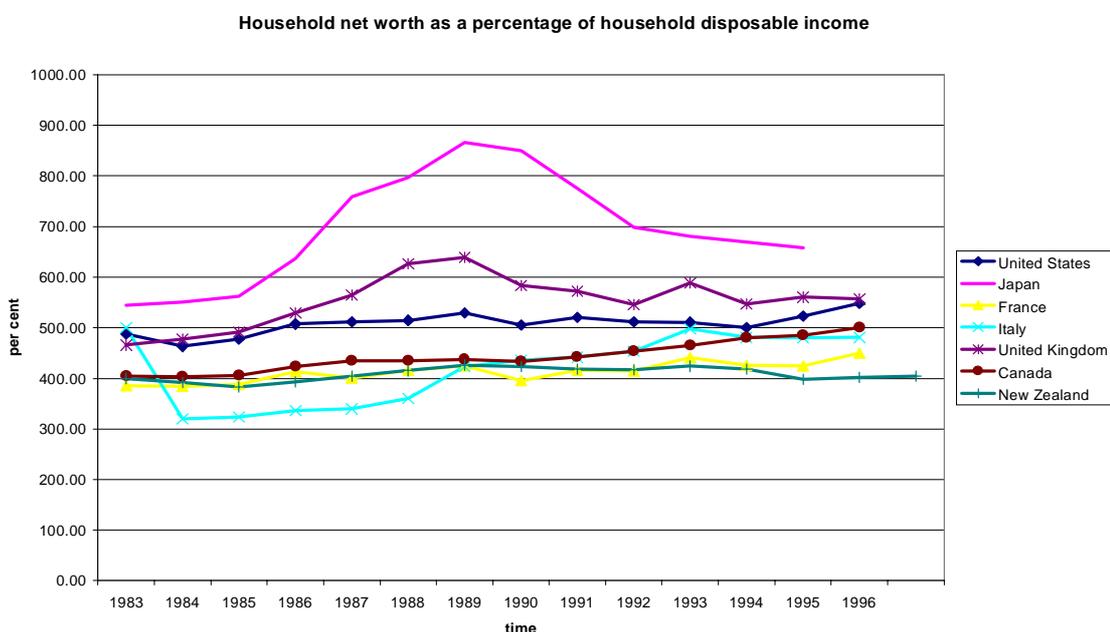**Household net worth as a percentage of household disposable income**

**Figure 2: International Comparisons[4]**
Source: OECD, Statistics NZ, Westpac FPG

Net worth as a percentage of disposable income in New Zealand has consistently been around 400%.  This is at the lower end of the scale in terms of the levels of other OECD countries.

One issue that should be considered is that these figures are going to be affected by the relative wealth levels of the countries concerned.  Unfortunately, it has been difficult to locate data on the OECD countries with a similar level of GDP per capita.  The bar graph below provides the context for considering the net worth data.

For example, the USA and Japan have much higher GDP per capita than New Zealand and this probably explains a large proportion of their additional saving. The country most comparable to New Zealand in terms of income is the United Kingdom.  Despite this broadly comparable level of income, the United Kingdom has a much higher average level of net worth as a proportion of disposable income.

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[4] Author's Note:  Following the completion of this report it has become apparent that the data used for individual countries to create this figure are not completely comparable. The series for New Zealand, Japan, and France do not include durable goods in the measurement of wealth, thus understating their net household wealth against the other series which do include durable goods.  Therefore care should be taken when drawing conclusions from these statistics.

This relative income aspect of the comparison is one area where further research should be undertaken during stage three of this project. Data on comparable countries should be located and a more detailed analysis of the wealth effects on saving undertaken.

**Figure 3: Countries' per capita GDP as fractions of U.S. GDP**

**GDP Per Capita**
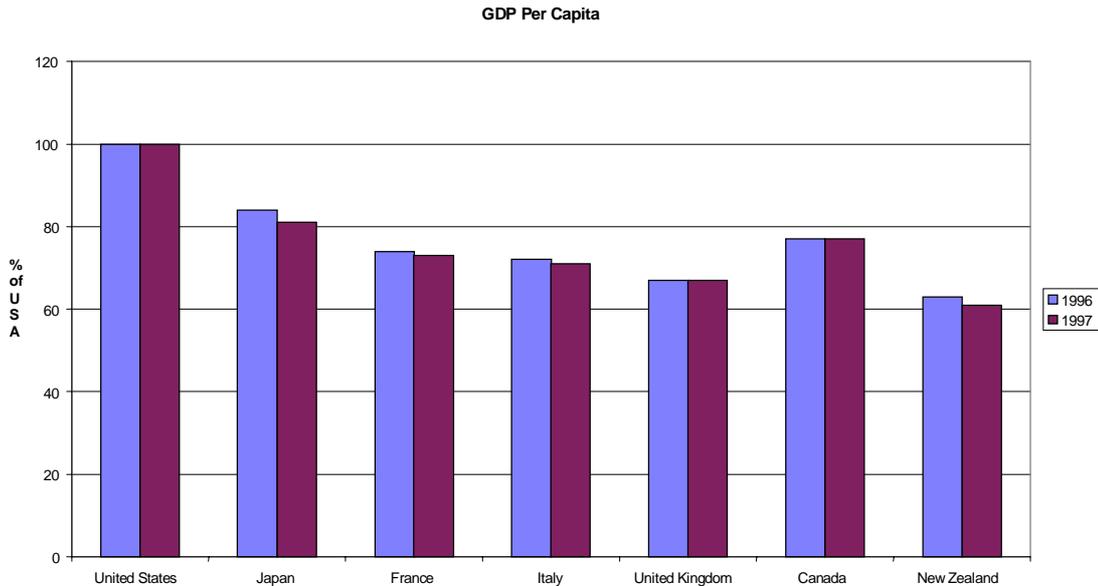


Source: OECD

## a) Comparison of New Zealand Housing Investment with Other Countries

The following graph displays housing as a proportion of total investments for a range of OECD countries. It clearly displays that New Zealanders do hold a greater proportion of their net assets in housing than other OECD countries.

**Figure 4: International Comparison of Housing Asset Holdings**

Housing assets as a Proportion of Total Assets
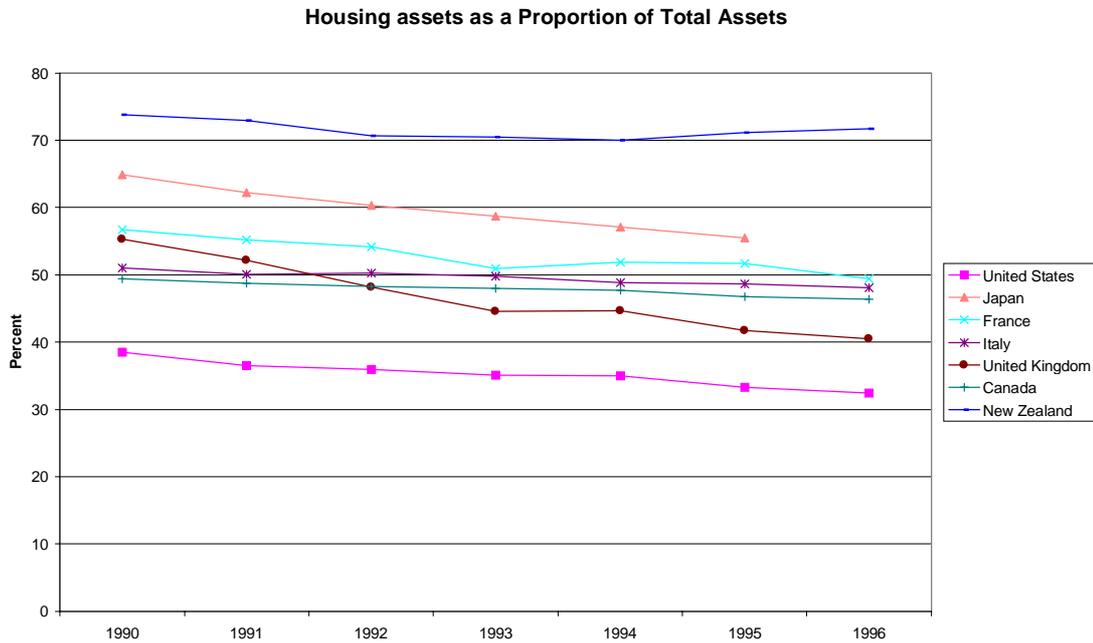


Source: OECD

To fully interpret this result, however, it is valuable to use home ownership proportions, presented below.

**Table 1:  Home Ownership Ratios**

| Country | Homeowners as a Proportion of the Household Population (%) |
|---|---|
| Japan | 75.6 |
| New Zealand | 73 |
| United Kingdom | 66 |
| United States | >60 |
| Italy | 60 |
| Canada | 60 |

Home ownership ratios are quite consistent across countries and generally fairly large.  New Zealand's ratio is higher than most but smaller than Japan's.  These ratios increase according to the age of the grouping concerned.  For example, in the US home ownership for people aged under 30 is generally less than 30%. This ratio rises consistently, however, until it reaches a peak of 83% for those aged 51 – 55 years.  Similar patterns occur for other countries.[5]   This implies that some international differences may be due to the respective demographics of those countries.

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[5] Poterba 1994

Let us compare the figures for New Zealand and the United States. New Zealand's home ownership ratio is about 10% greater than that for the US. However, when comparing housing investment as a proportion of total investment the difference is markedly larger. Housing represents approximately 70% of total net assets for New Zealand households while it represents only about 30% of US total net assets. Why is this difference so much larger?

One explanation for these figures could be that investment behaviour exhibited by individuals from the different countries is broadly similar but the cost of housing as a proportion of disposable income differs. For example, one hypothesis could be that individuals may be following a rule of investing in housing virtually as soon as their circumstances allow, with subsequent investment in other assets being made only with surplus funds after housing financing costs.

This rule would explain the difference in the NZ and US statistics if US houses cost a smaller proportion of US disposable income than for NZ. This does not discount other factors, such as total saving effort, but it seems that the purchasing power of disposable income may be having a significant effect. Financing costs may also have an effect. As financing costs rise, the incentive to pay off debt increases causing average equity levels households have in housing to increase.

A greater saving effort may be the explanation for the Japanese case where their home ownership ratio is higher than that for New Zealand but housing assets make up a smaller proportion of their total portfolio. This is supported by the fact that the average household net worth in Japan is nine times disposable income while New Zealand's is four.

Some of the difference in housing assets held may also be a result of changes in New Zealand's social structure, such as decreases in average household size. One study has suggested that the amount of housing space per person has been increasing in New Zealand and now exceeds virtually every other country in the world. The dwelling occupancy rate in New Zealand has fallen from nearly 3.6 persons per dwelling in 1951 to just over 2.7 in 1991. Similarly housing space consumption has increased from 1.34 rooms per person in 1951 to 2.45 in 1991.[6]

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[6] Philip S. Morrison, "Housing Occupancy and the Changing Size of Households and Dwellings in New Zealand 1951-1991", New Zealand Population Review 20 (1&2) 1994.

## 4.   TYPES OF INVESTMENTS HELD BY NEW ZEALAND HOUSEHOLDS

It is regarded as common knowledge that most of New Zealand's household wealth is tied up in housing. The numbers we have studied suggest as much. Table 2 represents data from Westpac-FPG Household Savings Indicators for 1989 and 1998. It should be noted, however, that these data have some shortcomings which make thorough quantitative analysis impossible. First, they do not cover all forms of assets (and liabilities) held, but concentrate on the ones most easily measured. Therefore, these indicators will tend to understate actual levels of net worth in New Zealand.

**Table 2: Main asset and liability types held by households**

|  | $billion | % of assets held | |
| --- | --- | --- | --- |
|  | 1998 | 1989 | 1998 |
| Housing | 207.7 | 71.7 | 68.1 |
| Funds held in M3 institutions | 42.7 | 11.3 | 14.0 |
| Superannuation funds | 26.5 | 8.3 | 8.7 |
| Life insurance surrender value | 11.3 | 3.4 | 3.7 |
| Private share holdings | 4.3 | 1.9 | 1.4 |
| Unit trusts, group inv. Funds | 5.2 | 0.4 | 1.7 |
| Other financial assets | 7.3 | 3.6 | 2.4 |
| Total Liabilities | 60 |  | 19.7 |
| of which mortgages are | 54 |  | 17.7 |

Source: Westpac-FPG Household Savings Indicators

In the table, "other financial assets" include private holdings of government securities, solicitors trust accounts, private portfolios, trusts, estates, and life insurance bonds. Omitted from the figures in the table are a number of important assets which could be held directly by households, such as rental property, commercial property, capital equipment, and equity in a business (such as a farm). Exclusion of such assets from consideration seriously understates actual net worth. Equity in agribusiness, for example, has been estimated to amount to some $39 billion, approximately the same as all saving in superannuation funds.[7]

Of the approximately 1.3 million households in New Zealand about 73% own their own home while the remainder rent.  This would imply that the market value for rental property, omitted from the figures for housing above, could be as high as $70 billion.  Similarly, an estimate of households' equity in businesses could also be a very large figure given the significant number of small businesses in New Zealand. Human capital is excluded as well.

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[7] John Savage's "Savings in New Zealand: A Background Paper" [1995].

Overall, it is quite possible that more than $100 billion in assets has been omitted from the table above.  This is very significant as it will significantly alter our estimate of the proportion of assets New Zealand households have invested in housing and thus affect our ability to draw conclusions regarding the investment behaviour of New Zealanders.  This point should form part of the context in which the remainder of this paper is read and improving this data should be one of the main focuses of phase three of this project.

## a)    Returns

A portfolio of assets is said to be an efficient one if the risk-adjusted post-tax rates of return on the different assets in it are equalised.  If the rates of return were unequal, income could be increased by selling a low yielding asset and using the proceeds to buy a higher yielding asset.

This does not imply that risk is undesirable, indeed some risky assets in the portfolio are desirable, especially if they produce good returns in years when other assets are not. Phase 3 of the project will compare the risk-adjusted rates of return to different assets in a way that properly allows for this beneficial effect of risk.

This section is preliminary because it examines the rates of return to several assets without adjusting for their different risks. We compare real returns from the stock market through the gross NZSE40 index with those from housing as measured by the house price index as well as some bond yields and deposit rates.   For the NZSE40 we have used the gross measure, in which dividends are assumed to be reinvested in the same share.

## i)    *Adjustments to the Housing Series*

Unfortunately, the returns to housing series that we obtained omits the imputed rental income for owner-occupied housing.  Imputed rent is the rent owners occupying their own house would otherwise be paying.  This income in kind is the equivalent of dividends from shares and could represent a significant component of the overall return to housing, depending on the relative size of imputed rental income and housing related costs.

As an illustration, according to Statistics NZ, imputed rent and other rents in 1997 were equal to $12.17 billion.  This is a substantial sum, about 12% of GDP. Household maintenance services amounted to approximately $490m resulting in a net return of $11.68 billion.  If the total housing stock is worth approximately $250 billion this represents an additional nominal return of about 4.6%.   This is very significant as it substantially increases the returns to housing.

An additional problem with the data is that no adjustment has been made for additional investments in housing, such as improvements to existing houses.  For example, if homeowners invest an additional $20,000 in renovating their

home, the series would only catch the resulting increase in house price. This increase would be overstated as there was an additional cost of $20,000. We have tentatively estimated the value of home improvements at around 2% per annum. Improvements in the quality of new houses also affects the index and should be adjusted for.

Taking these various factors into consideration we have adjusted the nominal returns to housing series upwards by 2.5% per annum. Note that this adjustment is based as much on estimates as it is on data and the reader should keep this in mind when interpreting the preliminary results presented below. The data on real returns for the four assets, including the housing adjustment, is summarised in the graph below.

**Figure 5: Annual Real Returns to Different Assets**
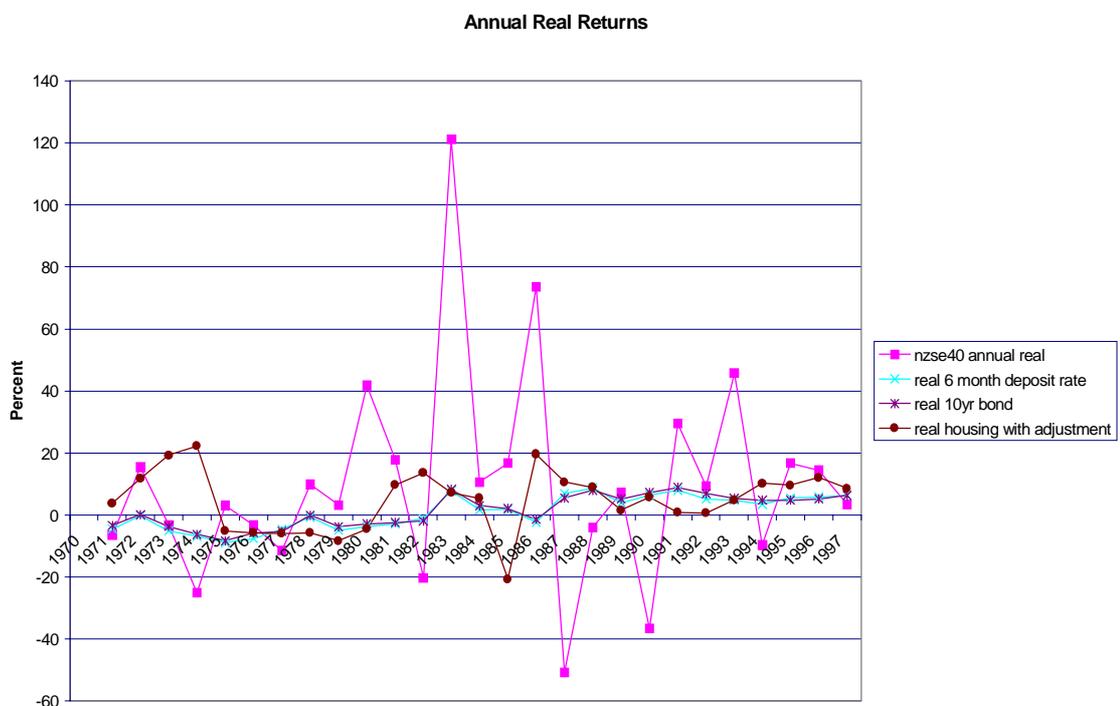


Source: Westpac FPG

Note: These returns are not adjusted for risk.

As can be seen from the graph, the stock market has been an unreliable (risky) performer, short and long term interest rates have been relatively stable, and house prices have mostly been somewhere in between. Phase three of this project will include a risk adjustment of the asset returns.

Note that during the high inflation, interest rate control period of the 1970s real returns from fixed interest investments, and to a lesser extent from housing, were negative. Table 3 displays the average annual real return and the effective annualised real return for the whole period for the four assets.

**Table 3: Returns for New Zealand Asset Classes**

| Asset | Average Annual Real Return (1970-1998) % | Effective Annualised Real Return for 1970-1998[8] (%) |
|---|---|---|
| NZSE40 | 9.97 | 5.54 |
| Housing | 4.83 | 4.38 |
| 6 month deposit rate | 0.86 | 0.72 |
| 10 year Government Bonds | 1.36 | 1.23 |

One point to note is that even if average annual returns from shares are larger than that for housing it is not immediately obvious that investing in housing is sub-optimal as it is quite logical for an investor to accept the lower return on housing if they do not consider the extra return from the stock market to be sufficient to compensate for the additional risk and effort.

The effective annualised return of the assets provides another perspective of their relative merits as it shows the effect of the differing variances of returns. The greater volatility of the sharemarket results in its effective return falling the most from its average rate of return. Interestingly, the consistency of the housing returns leads to its return improving relative to the sharemarket's return. Graphically, this is shown in the following cumulative returns graph.

**Figure 6: Cumulative Real Rates of Return on Different Assets for the Period, 1970-1997.**



Source: Westpac FPG

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[8] Shows the compound annual real rate of return for an investment made in 1970 and held until 1998 whereas the other column shows the arithmetic average of annual returns.

Phase 3 of the project will standardise the returns from the different assets by appropriately correcting for their risk premiums. Figures 5 and 6 as well as table 3 are for New Zealand as a whole. The regional experiences of housing returns may differ from one another. It is proposed to investigate the regional housing experience in Phase 3.

A further feature of a housing versus shares comparison is that individuals typically hold completely undiversified housing portfolios, that is they have one house in one region. It is possible to estimate risk and return for the share and housing indexes but the figures for the share index are likely to be a far better proxy of the figures facing the average investor than those from the housing index as investors can easily hold a diversified share portfolio (eg by investing in an index fund). Therefore, despite the fact that the share index may be more volatile than the housing index it cannot be assumed from this that the typical individual's housing holdings are less risky than their share holdings. An implication of this is that a risk adjusted return for housing based on these indices will be overstated for the average individual.

### ii) *Cumulative Returns for Different Time Periods*

The 28 year period chosen for the graphs above relates to the period for which we have been able to obtain data. This period, however, does not necessarily coincide with the returns data which most people would consider relevant when attempting to forecast future returns. In this case, the data from the last 5 to 10 years could be expected to be more influential to peoples' investment decisions. This is important as the starting point matters when making cumulative return comparisons. This can be seen in figure 7 using the last ten years of data.

**Figure 7: Cumulative Real Rates of Return on Different Assets for the Period, 1987-1997**.



Source: Westpac FPG

Over this ten year period the sharemarket was outperformed by all of the other three assets, primarily due to the significant losses it made in the 1989-90 period. Notice that the graph starts at 1987, so would already incorporate the stock market crash that occurred in that year.

## 5.    THE IMPACT OF TAXATION ON INVESTMENT DECISIONS

Table 2 above displayed the data available on New Zealand households' investment portfolios. One of the variables likely to affect New Zealanders' investment decisions is tax. If taxation alters the relative returns from the various asset classes it can be expected that taxation also alters the investment decisions of individuals, thus leading to investment patterns that are privately optimal but socially sub-optimal.

Data on the marginal returns <u>expected</u> from the various asset classes is either non-existent or unsuitable. Therefore, the analysis of pre- and post-tax returns that follows is more illustrative than factual. In some places we will use historical data, while illustrative numbers will be used otherwise.

**Table 4:  Effect of Taxation on Asset Returns**

| Asset | Nominal Pre-tax return (%) | Nominal Post-tax return (%) |
|---|---|---|
| Housing | 13.96[9] | 12.96[10] |
| Funds held in M3 institutions | 9.5[11] | 6.37 |
| Private share holdings | 27.4[12] | 18.34 |
| Passive Investment Fund | 27.4 | 18.34 |
| Managed Fund | 27.4 | 14.27[13] |

The return to housing and interest on M3 institution funds are the average over the last 28 years. The last three assets in Table 4 represent fully diversified portfolios of New Zealand shares differing only in the manner in which they are held. In a no-tax world we have assumed that the rate of return is equal to the average rate of return displayed by the New Zealand stock market index over the last 28 years grossed up to reflect company tax already paid before it is reflected in the share price or dividends. Therefore, the figure in the pre-tax column for diversified share holdings is 27.4%, representing the after tax average return of 18.34% grossed up for the 33% tax rate.

The working behind the share portfolio returns is as follows. The profit or earnings performance of the companies in the stock market index is such that if

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[9] Average annual nominal return (1970 – 1998) for residential New Zealand housing including an estimate of 2.5% per annum for implicit rental minus maintenance and capital improvements.

[10] Although capital gains and imputed rents on owner-occupied housing are not taxed, local government rates are still payable (assumed to be 1%) and no deductions for interest expense or maintenance are allowed. This return figure could be lower for rental housing as rental income would be taxable, but deductions would be allowed for interest expenses, maintenance and depreciation.

[11] Average six month deposit rate (1970 – 1998).  Interest income taxable at 33%.

[12] Average return for the NZSE40 (and previously Barclays Index) for 1970-1998, including dividend returns, and grossed up to reflect the effect of tax on company earnings.

[13] Fund manager may be able to delay payment of tax until assets are sold.

they retained all that income, untaxed, within the firm, the stock price would increase 27.4%. They then pay 33% tax reducing the return to 18.34%. The firms decide to pay 6% (say) of this to investors as dividends and retain the remaining portion, thus generating an appreciation in the share price of 12.34%.

The private investor and the passive fund are unaffected by any further taxation as the dividend they receive is fully imputed and the share price appreciation is not taxed. The managed fund, however, does have to pay tax at 33% on the share price appreciation, thus generating its lower return of 14.27%.

The returns to housing figure drops by 1% to reflect local government rates but any capital gains and imputed rent are not taxed. Also, no tax deductions for interest expenses or maintenance costs are allowed for owner-occupied housing. These reduce the attractiveness of housing investment, particularly if mortgage financing is used.

In the pre-tax world, individuals would be indifferent between investments in passive or managed funds, depending on their beliefs regarding the ability of a fund manager to beat the market. If they had sufficient capital to form a diversified portfolio privately, they would also be indifferent between belonging to a fund or holding shares privately. The weights of assets that investors held between housing, fixed interest and share investments would depend on the relative riskiness of those assets and the individual's risk preference profile.

Following tax being imposed, a number of changes occur in an individual's investment behaviour compared to the pre-tax world. Shares are now less desirable compared to housing as the relative returns have been altered by tax. Within share investments, managed funds have been the most adversely affected. For an investor to receive an equivalent return between passive and managed funds, the return on a managed fund now has to be up to 50% more than that of a passive fund. Fixed interest is the asset class next hardest hit while owner-occupied residential housing is least affected by tax considerations so becomes relatively more desirable in a post-tax world.

To a certain extent the significance of these statistics depends on the characteristics of investors in New Zealand. For example, many people may be prepared to invest in shares but do not wish to do so on their own account as they either do not possess the skills to do so successfully or they do not have sufficient capital to purchase a diversified portfolio. In this case, the lower post-tax return for managed funds could make them opt for housing instead of a managed fund.

The tax advantage, or disadvantage, of other assets over housing is not always clear cut. It depends on the circumstances of the particular comparison being made. We illustrate this complexity by comparing the tax status of an investment in passive funds with the tax status of investment in housing.

Certain "passive funds" have a tax advantage over other financial investments in that the distributions of their capital gains are not taxed[14]. The tax treatment of their capital gains is similar to the tax free status of capital gains on housing. These passive funds can claim deductions for expenses earned in the production of taxable income. These deductions provide the funds with a partial tax advantage over home ownership because the home owner cannot claim tax deductions for interest and other expenses.

Some features of the tax system can favour passive funds while other features favour housing. For example, passive funds are disadvantaged compared with housing because the passive fund must pay tax on their other income less costs and the tax therefore reduces their disposable income. The home owner does not pay tax on the surplus of imputed rentals less ownership costs. The disposable income from that surplus is not reduced by tax. Consequently, this feature, of itself, provides home ownership with a partial tax advantage over investment in passive funds, even though neither pays tax on capital gains and only the passive fund can claim tax deductions for costs.

By contrast, the following feature of the tax system may reverse this, placing home ownership at a partial tax disadvantage when compared with commercial investment. Business losses from one period can be offset against taxable income in future periods, lowering later tax liabilities. Sole traders can offset business losses against other income.

Home owners cannot use any deficit in imputed rents less interest and other house costs either as an offset against other income or against future taxable income. Early interest costs under a table mortgage are high and could exceed imputed rents, involving imputed losses on the housing asset. Home ownership is at a partial tax disadvantage compared with commercial investment as a result of this. A house owner experiencing imputed losses early in the life of a table mortgage is offsetting them against any capital gains and is waiting for the long term benefits that arise when the interest payments under the table mortgage is small.

In general, the net effect of the tax system is that when housing has a surplus of imputed net rents home ownership has a tax preference compared with a passive fund incurring a trading profit. However, when both are in loss[15] the passive fund has the tax benefit of losses carried forward. The size of the cost and revenue items involved for the house and the fund determine where the tax advantage lies in each comparison of the tax status of different assets.

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[14] These are certain Group Investment Funds with category B income.

[15] A housing investment may well be in a loss early in a table mortgage.

## a) Leveraging Investments

The leverage in a house purchase can be defined as the ratio of the mortgage to the downpayment. This leverage ratio has subtle effects through table mortgages, where principal repayments are initially low but rise through time, and vice versa for interest payments.

The interest commitments of a mortgaged owner-occupier are met from other income. This is one of the self-limiting features of leverage, an individual cannot increase the leverage on a house without limit. The amount that can be borrowed is constrained by market income. The greater is the leverage ratio, the greater are the interest payments involved in the purchase of a given house. These interest payments are a burden on the homeowner. Repayments of mortgage principal reduce this burden but also involve a cost because the amounts repaid are not available to buy assets that would yield the market rate of return. Lower mortgage interest payments are to be set off against market income foregone as capital payments are made. The difference between the mortgage rate and the financial funds rate of interest is therefore important.

New Zealanders typically leverage themselves quite aggressively to purchase real estate. As an example, it is now possible to obtain 95% financing from some banks. For comparison, note that the minimum deposit typically required in Japan to purchase residential housing is 30%, thus allowing only 70% financing.[16]

On the other hand, it appears to be relatively rare for New Zealanders to leverage themselves for the purpose of investing in the share market. In addition, credit institutions are prepared to lend more aggressively against housing than against shares due to the differing volatility of the prices of the assets and consequent security of the collateral.

The main reason people borrow to purchase housing is that housing is an expensive item that they do not have sufficient capital to afford. They are required to borrow in order to spread payment over a long period. While this may be the main reason for leveraging the investment, the level of borrowing does have an effect on the risk and return on the housing purchase. In phase three of this project we shall estimate a risk-adjusted rate of return for a leveraged housing investment.

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[16] Poterba 1994

## 6. FURTHER RESEARCH

Stage three of this project is to involve more detailed research into areas of interest or hypotheses identified during stage two. Further work has been identified as follows:

- Locate data on assets and wealth that have been omitted from the available statistics on household wealth holdings to ensure that comparisons can be accurately undertaken.

- Locate saving and household net wealth data on countries which have similar GDP per capita levels to New Zealand in order to be able to make more meaningful saving comparisons.

- Investigate methods for improving the returns to housing data by better incorporating rent and imputed rent into the returns series rather than the approximation that we have used, and investigate regional housing price indices.

- Risk-adjust the rates of return from the four main asset classes used in this paper.

- Undertake more sophisticated analysis of international saving rates after adjusting for income levels, drawing on OECD work

- Test the hypothesis that investment behaviour with respect to housing is similar across countries and confirm the factors driving this investment behaviour.

- Undertake a more sophisticated analysis of the effective tax rates on different forms of investment to assess how the tax system is affecting New Zealand's investment behaviour.

## 7. CONCLUSIONS

This project summarises the current state of our knowledge on saving behaviour in New Zealand and makes some comparisons with the saving statistics available for other countries.

Historical rates of return for the main asset classes in New Zealand appear to indicate that housing has been a strong performer in comparison to stocks and fixed interest investments. While average rates of return are higher for the stock market, if imputed rents and other rental income from housing are included, housing has compared favourably over the last thirty year period. Additional factors such as taxes and leveraging behaviour may be emphasising this trend.

Internationally, the statistics we have been able to gather appear to indicate that New Zealand annual household saving as a proportion of household disposable income is low by comparison with other OECD countries, but annual national saving is broadly comparable. Net worth as a percentage of disposable income is also within the range of international comparison but generally on the low side. One concern is that the available statistics make some serious omissions which could be significantly affecting the international comparisons. Stage three of the project will include attempting to improve the statistics on household assets, particularly including items such as rental housing, commercial property, and equity in non-listed businesses including agribusiness.

Statistics indicate that the perception that New Zealand has a high proportion of home ownership compared to other OECD countries is true. The interesting feature of the housing statistics, however, is that differences in home ownership ratios across most OECD countries are generally small but the proportion of total net assets represented by housing assets is far greater in New Zealand than elsewhere. This result is sensitive to the possible statistical omissions identified above.

If the statistics are an accurate representation, one possible hypothesis is that individuals in the countries represented are actually following a similar investment rule but that other factors such as the differing cost of housing as a proportion of disposable income result in differing investment holdings. Further research to test this hypothesis would be valuable and would require finding data on average incomes, house prices, and other consumption goods prices in the range of countries to be compared.

Changes in social factors such as average household size may also be having an effect. Statistics indicate that average household size in New Zealand has been declining significantly leading to an increase in the amount of housing per person consumed.

**Appendix: Potential Factors Influencing Investment and Saving Decisions**

Typical explanations for a country's saving behaviour concentrate on factors such as demographic structure, per capita income, households offsetting rises in government saving, the history of widespread public provision of social services, and close links between the business and household sector. The potential effects of these various factors are outlined below.

*a)     Demographic Factors*

One of the more popular theories regarding saving behaviour is the life-cycle hypothesis of saving. This theory predicts that an individual's saving behaviour changes depending upon their age and the manner in which their disposable income changes through time. Individuals save little during the early period of their life but their saving rate steadily increases as their income increases in line with their accumulation of skills and work experience. Their saving rate is expected to peak just before retirement, and following retirement their saving rate becomes negative.

If the individuals within an economy are following this predicted path of lifetime saving, the aggregate saving rate of the economy depends on the relative numbers of individuals within each age grouping. As the proportion of the total population that is over the retirement age increases, as is predicted to occur over the coming decades, aggregate saving rates could be expected to decline.

These predictions are complicated, however, by other features such as an individual's uncertainty over their life expectancy and the common desire to provide a bequest for their children.

If an individual's saving peaks just prior to retirement, New Zealand should be experiencing an increase in its saving rate now as the baby boomer generation approaches retirement. This increase in aggregate saving will occur as long as the increase in population entering the high earning and high saving periods of life just prior to retirement outweigh the increased number of individuals entering the negative saving period of retirement. Little evidence of this is yet available.

*b)     Per Capita Income*

Households with greater wealth, or larger incomes, are expected to have greater annual saving than poorer families. Similarly, annual saving/GDP ratios for richer countries should be greater than for poorer ones. Since New Zealand is among the less wealthy of the OECD countries its annual saving per head is expected to be less than most of the other OECD nations.

## c) Credit Institutions

The ability to borrow for various purposes can have an effect on the composition of assets held. For example, if a large deposit is required for purchasing a house this will tend to diminish the level of assets held in real estate as many individuals would have to defer purchasing a house or purchase a less expensive one. Over recent years, New Zealand mortgage providers have decreased the required deposit for receiving a mortgage and it is now possible to receive a mortgage of 95% of the value of the house. This may have had an effect on the rate of home ownership or more importantly on the amount of housing assets that individuals decide to hold.

The assets on which banks will lend money and the rates charged may also affect investment behaviour. Banks quite logically have different lending criteria for different assets due to the different levels of default risk involved. This means that it is easy to enter into highly leveraged arrangements to purchase real estate but it is not so easy to do this to purchase shares. If an investor wishes to create a higher risk and return portfolio through leveraging, it is easier and less costly to do this by securing it with housing assets than other assets.

## d) Social Security Programmes

In general, the provision of substantial Government funded retirement schemes reduces the incentive for young people to save separately. The current level of tax necessary to fund pay as you go retirement income schemes also reduces disposable incomes and people's capacity to save. Similarly, if a nation offers a comprehensive system of health care or unemployment benefits, the incentive to save as a precaution against illness or a temporary job loss is reduced.

Aligned to this hypothesis is the effect on saving of the expectations that individuals have regarding their future prospects. If individuals assess that they will be earning larger incomes in the future they will tend to save less in the present.

## e) Other Government Actions

Finally, it may be the case that a range of other Government actions may be affecting individual investment decisions. If a particular asset is somehow advantaged due to the tax system, individuals will tend to direct their investment towards that vehicle. Investors make their decisions on the basis of the post-tax return they receive. Therefore, if taxes alter the relative returns of a range of investments, investors will hold different portfolios of assets than if a consistent tax regime was in place.

Personal tax rates may also affect saving rates as they have a direct impact on an individual's disposable income. As income rises, the proportion of it that is saved could also be expected to increase.

When making international comparisons, one of the most significant factors may be any differences in the cost of living and differences in average disposable income. If a particular country has a high cost of living and low disposable income, it could be expected that saving rates will be low as the portion of an individual's income that remains after paying living expenses, would be small.

## f)      Returns to Schooling

One aspect of investment which is important but generally unmeasured, and which is closely related to the demographic discussion above, is investment in human capital through education. Due to its importance we will note the available data here but we do not intend to continue work to attempt to value it. Note that expenditure on education is recognised in the System of National Accounts as consumption.

Work income is 90% of the average full-time employed individual's income[17]. This income arises from individuals' work skills. Those work skills thus are income-producing assets whose incomes dominate the income from all other assets combined. In that sense they are therefore the largest single component of the ordinary household's wealth. Consequently, an examination of the composition of the stock of wealth and the returns to the particular assets should include the returns to, and the levels of, this form of wealth, often called human capital.

The value of an asset is required if one is to obtain its rate of return. It is not easy to work out the value of human capital. Unlike most assets it is not priced in asset markets though the value of the annual income from it implies an asset value. Its historic cost is also difficult to calculate because the government is a major investor in individuals' education. Families contribute too, and the sacrifice of wages while in full time education is doubtless an important part of the individual's cost of acquiring skills. Another significant way of adding to income earning skills is through years of experience in the workplace. Employers may contribute directly or indirectly to a person's human capital. This possibility adds to the valuation problem.

The personal rate of return to education is increased to the extent that the individual receives its rewards while not paying for all of it in the ways just discussed.

Data on households' wealth in the form of work skills is unavailable but there is census data on six levels of schooling and the individuals' income and age. This data has been used to provide the gross relative return to the different levels of schooling. For people with the same number of years of work experience, the gross increases in the income of qualified persons above that of someone with no qualification are expressed as a percentage of the income of a person without the qualification. Table 1 provides this evidence.

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17 *Taxmod* 1995-96.

**Table A1: Gross Percentage Increase in Income Above No-Qualification Income Due To Schooling in New Zealand**

|  | All Employed Males | | All Employed Females | |
|---|---|---|---|---|
|  | **1986** | **1996** | **1986** | **1996** |
| School Certificate | 11.5 | 17.0 | 13.6 | 17.9 |
| UE or Sixth Form Certificate | 27.3 | 26.9 | 23.9 | 32.0 |
| Bursary | 22.4 | 23.3 | 16.5 | 14.2 |
| Diploma | 40.3 | 47.3 | 41.4 | 56.3 |
| Bachelors Degree | 97.6 | 103.8 | 78.2 | 107.8 |
| Postgraduate Qualification | 109.4 | 133.4 | 99.6 | 157.8 |
| $R^2$ | 0.240 | 0.318 | 0.040 | 0.150 |
| Sample Size | 41758 | 35145 | 28487 | 29733 |

Source: Winkelmann, R. *The Economic Benefits of Schooling in New Zealand: Comment and Update.* DP No. 9810, Department of Economics University of Canterbury Christchurch, Sept 1998. Compiled from Tables 1 and 2. Log income.

The table is read this way: A man with a bachelors degree earned 103.8% more than a male without a qualification, when both had been working for the same number of years in 1996. This is before income tax.

The impression from the table is that the before tax relative rates of return to additional schooling are high. These are not necessarily equivalent to the rate of return on the associated capital asset. 50% of wage and salary earners have no post-secondary school qualification[18].

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[18] Gobbi, Maria. (1998) *Participation in Post-Compulsory education and Training in New Zealand.* Department of Labour. p 7.

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