Draft: Do Not Cite

Housing Values, Deregulation, and Household Savings Behaviour: The Case of New Zealand

Leslie Hull
Senior Analyst
Reserve Bank of New Zealand
2 The Terrace
P.O. Box 2498
Wellington
New Zealand
Phone: 64-4-471-3625
Fax: 64-4-471-3964
Email: hulll@rbnz.govt.nz

Declining household savings rates across many OECD countries, including New Zealand, has attracted a lot of attention in the literature over the last decade. Low national savings has been blamed for New Zealand's current account deficit, which reached seven percent of GDP in March, 2000. New Zealand's household savings rate has followed a downward trend and been negative for the last several years. This downward trend seems to be more pronounced in New Zealand than in other countries as, over the last fifteen years, New Zealand's position within the OECD savings rate rankings has fallen so that New Zealand ranks the lowest alongside Australia.[1]

The household sector plays an important role in the economy. Households affect the economy directly through consumption and investment decisions. Household consumption represents roughly sixty percent of gross domestic product (GDP) in New Zealand and residential investment makes up twenty-five percent of total investment and five percent of GDP

The household sector can also affect the economy indirectly through the banking sector. Households provide over one-third of banks' funding through deposits as well as account for almost forty-five percent of bank claims. Households' share in total bank funding has been declining over the last several years, however, with the difference being made up by overseas borrowing. Because households play a large role in the economy and in the banking industry, it is important to monitor the household sector for signs of instability.

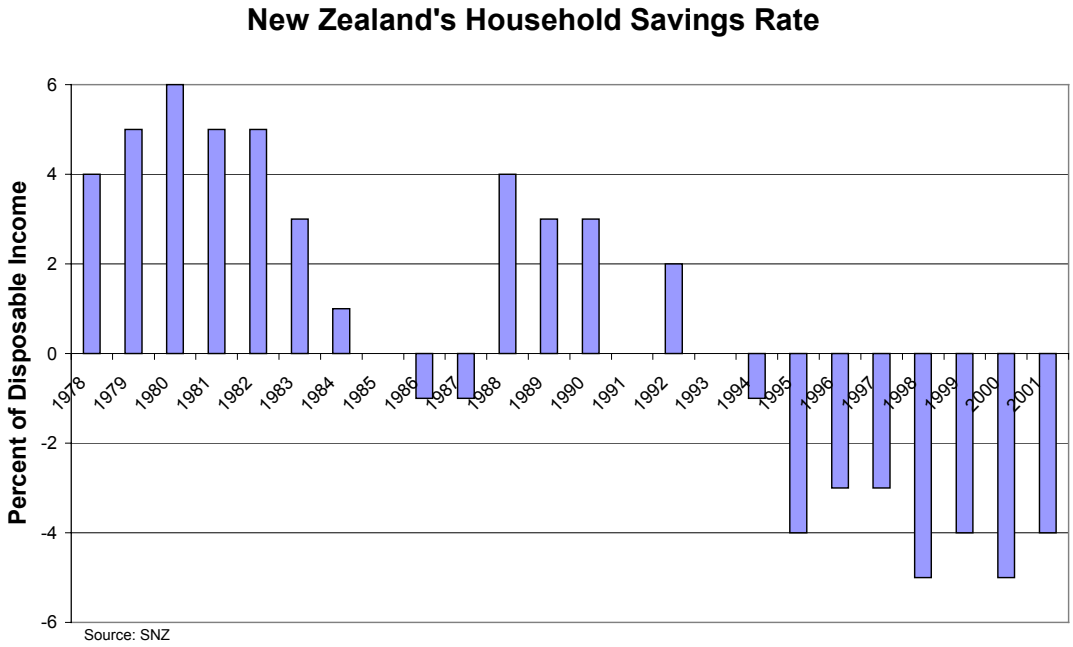
Household savings can be measured in two ways. Household savings is equal to household disposable income less household consumption or an implied savings rate can be derived from changes in net household assets. As many studies have pointed out, there are issues regarding the measurement of household savings (Claus and Scobie 2002). Claus and Scobie break these issues down into three categories; coverage, valuation and classification. The omission of savings through home production is one example of mismeasurement that would fall under "coverage". Valuation issues include the omission of capital gains from asset values in measured savings. Classification is their largest category and discusses issues such as durable goods consumption included in consumption, health care and education included in current consumption, capital expenditures by government are counted as current

[1] This data comes from an IMF working paper by Callen and Thimann (1997).

expenses. Together, these measurement issues bias downward measured savings to some extent.

These issues highlight the imprecision of measured savings. However, considering these issues are present over time and across countries, they do not fully explain the downward trend in measured savings shown in Figure 1 nor do they fully explain New Zealand's poor savings record compared with other countries.[2]

Figure 1 Household Savings Rate



An additional measurement issue (pointed out in Claus and Scobie (2002) and others) is that inflation distorts savings rates. High inflation causes transfers from debtors and creditors and tends to overstate savings measures. Figure 2 presents the same data in Figure 1 adjusted for inflation.

[2] Many countries suffer similar measurement issues resulting in a downward bias of their savings rates as well.

Figure 2 Inflation Adjusted Savings Rate

The data for Figure 2 was calculated by subtracting an inflation adjustment term from the official measured savings series. Multiplying the inflation rate by net financial assets yielded the inflation adjustment term. This methodology captures the real return to financial assets and real costs of financial liabilities. Comparing Figures 1 and 2, there is a distinct change in the savings ratio early in the time series, which corresponds to high inflation levels in New Zealand. When inflation declined after implementation of the Reserve Bank Act the series are not too different. The downward trend in the savings rate since 1988 is present in both series.

An alternative measure of savings is the change in the stock of net financial wealth and international figures are provided in Table 1.

Table 1 Household net financial wealth to income ratios[3]

Per cent	1990	1995	2000	1990-2000	1995-2000
US	260	300	370	110	70
Japan	260	280	340	80	60
Germany	130	140	170	40	30
France	130	180	290	160	110
UK	210	280	340	130	60
Italy	200	220	290	90	70
New Zealand	100	100	70	- 30	- 30

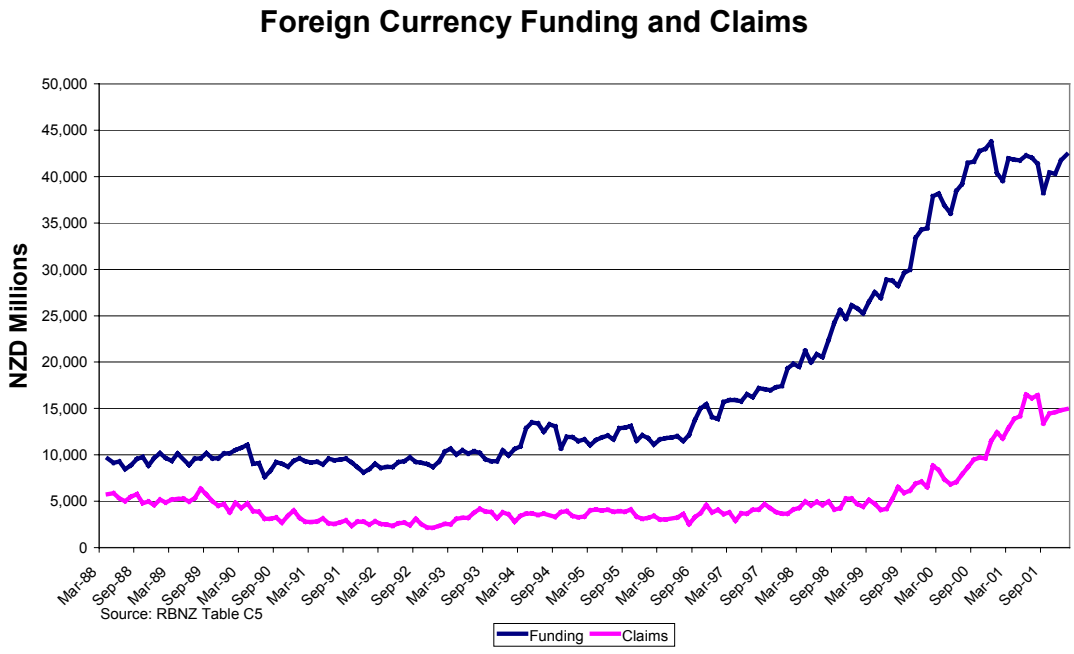
Source: OECD, RBNZ

[3] Data are rounded to the nearest ten percent.

Two things are apparent from this table. Firstly, New Zealand's net financial wealth to income ratio is significantly lower than the other countries listed. Secondly, the wealth to income ratio has been increasing over time for all countries except New Zealand over the 1990's.

This paper has four objectives. Firstly, the role of the household sector in the current account is discussed. The largest component in New Zealand's current account deficit is the investment income account due to the degree of foreign borrowing that New Zealand undertakes. Recently, the composition of this borrowing has changed with foreign borrowing by banks increasing markedly over the past two years. Foreign currency claims have also been increasing at a rapid rate over the past four years. Overall however, with the exception of the past several months, funding growth has outpaced claims growth so that net foreign currency liabilities have been growing.

Figure 3 Foreign Currency Funding and Claims



In the following section, banking and household sector balance sheets are analysed to uncover the extent to which low household savings rates are contributing to the current account deficit. Secondly, this paper provides an analysis of the effect of deregulation on households' access to credit. Thirdly, the role of housing prices on consumption decisions is analysed. Finally, the household sector's role in macrofinancial stability is considered.

I. The Role of the Household Sector in the Current Account

The current account balance is often divided into three components; balance on goods, balance on services, and balance on income. New Zealand often runs a small surplus on the goods and services component and a sizeable deficit on the income component. Households play a role in both of these components. They provide labour and capital to domestic firms that produce export goods and households import goods directly for consumption purposes. Households also borrow from abroad, primarily through banks, and make interest payments to their creditors, which contributes to the income account deficit. On the other hand, households invest abroad and income payments received by households in New Zealand will have an offsetting effect.

The financial account of the balance of payments can help determine where the income payments are originating. Data for 2000, the last year we have household balance sheet data, is provided in Table 2. Bolded figures indicate areas where households play a role.

Table 2 New Zealand Financial Account 2000

	NZD Million
Investment Abroad	5,811
Foreign Direct Investment	1,342
Portfolio	**1,665**
Equity	2,575
Debt	-909
Other	2,976
Investment in New Zealand	9,981
Foreign Direct Investment	2,964
Portfolio	-6,041
Other	**13,058**
Loans	371
Deposits	12,526

Source: SNZ

There was a financial account deficit of almost $4.2 billion in 2000. There is one category on each side of the financial account where households can play a significant role. Firstly, households receive income payments on overseas investments. Household overseas investments consist of directly held overseas equities and other portfolio assets invested on behalf of households by life insurance

and managed fund companies and super-scheme managers. On the other side of the balance sheet, households make interest payments on overseas borrowings. Over ninety percent of household liabilities in 2000 were to large financial institutions, mainly banks. Because domestic funding is less than domestic borrowing, banks borrow overseas on behalf of New Zealand households and businesses.

Data on household assets and liabilities are best compared to International Investment Position data as they are both in stocks.

Table 3 New Zealand's International Investment Position 2000

	NZD Millions	Share
New Zealand Investment Abroad	48,366	
Foreign Direct Investment	13,778	28%
Portfolio Investment	**17,036**	35%
Equity	13,416	
Debt	3,620	
Other	9,676	20%
Investment in New Zealand	135,451	
Foreign Direct Investment	63,766	47%
Portfolio Investment	27,722	20%
Other	**43,962**	32%
Loans	12,222	
Deposits	30,318	

Source: SNZ

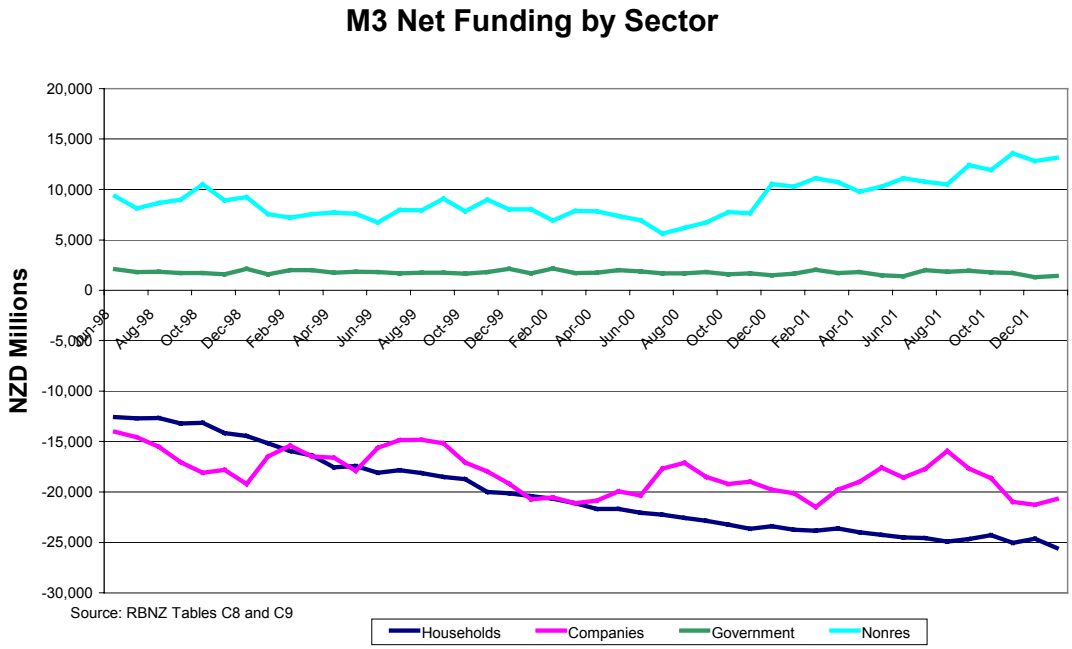
As of 2000, households' direct overseas equity holdings totalled roughly $4 billion. Households hold additional overseas assets through their assets in life insurance, managed funds and super-schemes. An RBNZ estimate of the overseas holdings in this category is $19 billion of which $15 billion is in the form of equities. Thus, New Zealand households' investment abroad totals roughly $23 billion representing a significant portion of overseas investment[4].

New Zealand households' overseas borrowing is more difficult to estimate. Ninety percent of household borrowing is arranged through large financial institutions. Overseas funding for M3 institutions primarily enters the international investment position data through the "other" category as loans and deposits. As Table 3 shows, "Loans and Deposits" is 97% of the "other" category and thirty-one percent of the stock of investment in New Zealand. While it is impossible to come up with a

[4] The household balance sheet data and IIP data come from two separate sources and reveal some discrepancies.

figure representing banks' overseas borrowing for households, Figure 4 gives some perspective.

Figure 4 M3 Net Funding by Sector



The data in Figure 4 represents net M3 institution New Zealand dollar funding (funding less claims) by sector. Households and companies have significantly more claims than funding of over $20 billion each and the trend is worsening. Net providers of funding are the public sector and non-residents. Foreign currency funding makes up the difference and is predominately provided by non-residents. Loans and deposits by non-residents represented over thirty percent of the stock of foreign investment in New Zealand in 2000.

Data limitations make it difficult to characterise the household's role in the current account over time. In 2000, approximately 39% of the assets of life insurance, managed funds and superannuation were held overseas. In 1995, this figure was approximately 24% so it appears this figure is increasing over time. Total assets (not solely overseas) in life insurance, managed funds and superannuation in 1990 was $25 billion. If we assume 20% of assets were held overseas in 1990, that would yield $5 billion. This implies overseas assets of life insurance and managed fund companies and superannuation schemes increased by $14 billion between 1990 and 2000 and direct ownership of overseas equities increased $2 billion, so that households contributed $16 million to the financial account balance during that time period.

Deposits in M3 institutions increased by $16 billion, however loans from M3 institutions increased by $45 billion. Table four summarises these figures.

Table 4 Household Overseas Assets and Liabilities NZD Billions

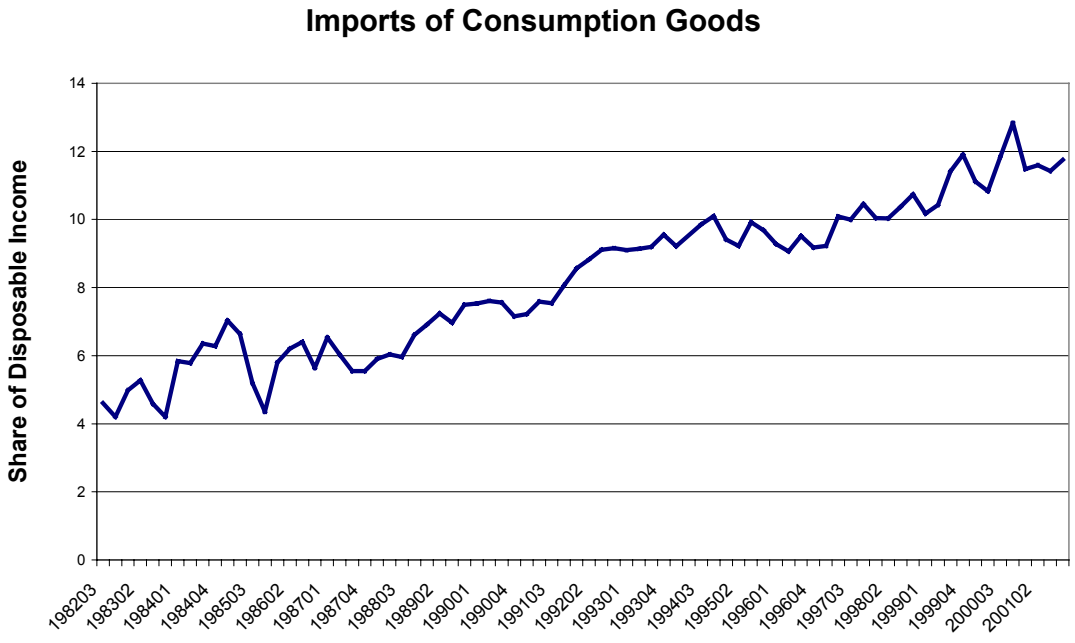
	1990	2000	Change
Overseas Assets	**7**	**23**	**16**
Directly held Equities	2	4	2
Indirectly held Assets	5	19	14
Net M3 Funding	**5**	**-24**	**-29**
Net Overseas Surplus	**12**	**-1**	**-13**

Source: RBNZ

Over period 1990 to 2000, the estimated net position of households deteriorated by $13 billion, from a surplus of $12 billion to deficit of $1 billion.

Foreign currency inflows must be matched by foreign currency outflows so overseas borrowing has real repercussions through the trade balance.

Figure 5 Imports of Consumption Goods



The consumption goods category serves as a proxy for the household's role in the trade balance. The upward trend in the graph is consistent with the upward trend in overseas borrowing. Increasing liabilities to disposable income, partially funding by overseas borrowing by banks, is occurring as imports of consumption goods are making up a larger share of household disposable income so that households play a role on the real side as well.

Overall, household savings decisions do affect the current account. The household sector is only one component of the current account and a large part of deficit comes from business activity and foreign direct investment. However, households play a growing role in the current account though increasing ownership of overseas assets, increasing foreign currency borrowing by banks on behalf of households and increasing imported consumption goods.

II. Deregulation and Household Credit

Because countries have had declining household savings rates over the last decade, much research has been done in this area. One noteworthy study (Parker 1999) undertakes an analysis of both macroeconomic data and household level data to try to understand what caused the decline in household saving in the United States since 1980. The author draws seven conclusions.

- the decline in savings is matched by an increase in consumption
- the decline in saving is not due to increased consumer spending on durables
- decreased government purchases do not fully "crowd-in" private consumption
- at most, twenty percent of the increase in consumption can be explained by increased household wealth
- demographics do not explain the consumption boom
- technological advances providing easier credit access can explain about one third of the consumption boom
- intergenerational fiscal transfers cannot explain the consumption boom.

The author concludes, one cannot "blame" the declining savings rate on one factor and concludes there are other, untestable, factors that might contribute such as a shift in preferences.

Many of the factors listed above have been discussed as reasons for New Zealand's decline in household savings. As seen previously in Figures 1 and 2, in recent years, the savings rate has declined significantly. This paper focuses on two potentially important issues in explaining New Zealand's declining savings rate: financial deregulation and house prices.

Jappelli and Pagano (1994) show that liquidity constraints on households raise household savings rates, strengthen the effect of growth on savings, and also raise

economic growth. In an empirical study using data on OECD countries, they measure the effects of reducing maximum loan to value ratios on the ratio of net national saving to net national product. Coefficients are negative and significant enabling them to conclude that financial deregulation in OECD countries in the 1980's reduced national savings in these countries. There were several reforms in New Zealand that affected the household sector's access to credit. The reforms generally fall into two categories; reforms directly affecting financial institutions and macroeconomic reforms.

There were two reforms that directly affected financial institutions[5]. Firstly, there was a removal of interest rate controls. Prior to the reforms, financial institutions were limited to what interest rates they could give to depositors. Secondly, compulsory reserve ratios on financial institutions were abolished and a range of 'credit guidelines' was removed. These included reserve asset ratios and lending ratios and served as a means to constrain credit growth, diverting funds from the private sector to the government. From an efficiency standpoint the ratio requirements forced financial institutions to invest in government securities which had below-market yields and this acted as a tax on these institutions. The "tax" was passed on to the customer in the form of lower interest rates on deposits or higher rates on lending. Credit guidelines that had been in place roughly eighteen months prior to deregulation were removed. The credit guidelines limited M3 institutions to a one percent per month growth in credit issued.

Macroeconomic reforms gave New Zealand banks better access to overseas credit and opened New Zealand's financial markets to foreigners. Firstly, overseas borrowing controls were relaxed. Prior to the reforms, private overseas borrowing had to be of a fixed term of at least twelve months and with an interest rate of not more than 2 percent more than the London or Singapore inter-bank rate. Secondly, restrictions prohibiting New Zealand financial institutions from borrowing overseas were removed although specific currency exposure limits remained. Finally, foreigners' access to New Zealand financial markets improved when overseas-owned companies in New Zealand were allowed unrestricted access to New Zealand's capital market.

[5] For a detailed discussion of the reforms see Reserve Bank of New Zealand, 1986.

Together, these reforms enhanced New Zealand households' ability to access credit. The interest rate controls along with the reserve requirements hindered banks' and other financial institutions' abilities to raise funds. Credit growth guidelines further limited the amount of funds that could be disbursed. Thus, once these controls were removed funding and lending increased, and much of the change was a diversion of business from the non-institutional market to the institutional one. Other reforms that promoted competition in the banking industry lowered the cost of funds to borrowers and resulted in new financial products.

The mortgage sector is one sector that has improved consumer's abilities to purchase houses and access home equity. Institutional changes lowered the down payment required by homebuyers. For any given home purchase, the amount of savings that needed to take place was considerably less. Thus, on average, the amount of debt incurred on any given home that sold increased. Increasing housing prices exacerbated this trend.

A second innovation in the mortgage sector was line-of-credit home equity mortgages. Many banks offer a mortgage that also serves as a checking account. Customers are given an EFTPOS card tied to the mortgage and the account can be used to pay day-to-day expenses. This sort of account is theoretically appealing as it is a floating rate account, so a customer's paycheck can be deposited into the account thereby lowering the average monthly balance on which interest charges are incurred and provides homeowner's with costless access to home equity. This financial product is a small but growing part of the market and largely came into effect post 1995. A final issue is the short term setting of interest rates for fixed rate mortgages. Fixed rate contracts having to be rewritten as frequently as six months (ranging up to five years) offers homeowners the opportunity to access home equity on a more frequent basis.

Credit cards came into more frequent over the last decade and usage continues to increase. Awards programs and the ability to "float" a certain amount of money each month have increased credit card usage. Credit card advances outstanding have increased an average of ten percent per year over the last ten years and now exceed $3.3 billion. In addition, RBNZ data shows that almost seventy-five percent of credit card balances are interest bearing.

It should be noted however that at the same time the financial reforms were taking place, New Zealand's public sector was going through reforms as well as

concerted efforts to bring down the government budget deficit commenced. Lower fiscal spending has been shown to "crowd-in" private consumption. Moreover, lower fiscal deficits reduce the magnitude of future tax increases, reducing consumers' incentive to save. The fiscal reforms resulted in high unemployment. From the fourth quarter of 1986 to the third quarter of 1991, the unemployment rate increased from four percent to almost eleven percent. Therefore, in addition to the effects of financial deregulation, household consumption decisions were affected by fiscal reforms.

Because of data limitations, it is not possible to undertake an empirical investigation of the effects of deregulation on household savings. The relevant question is whether prior to deregulation households were credit constrained. If they were, and deregulation relaxed the constraint, then the coinciding decline in savings rates are consistent with the findings of Jappelli and Pagano (1994).

Figure 6 Household Liabilities

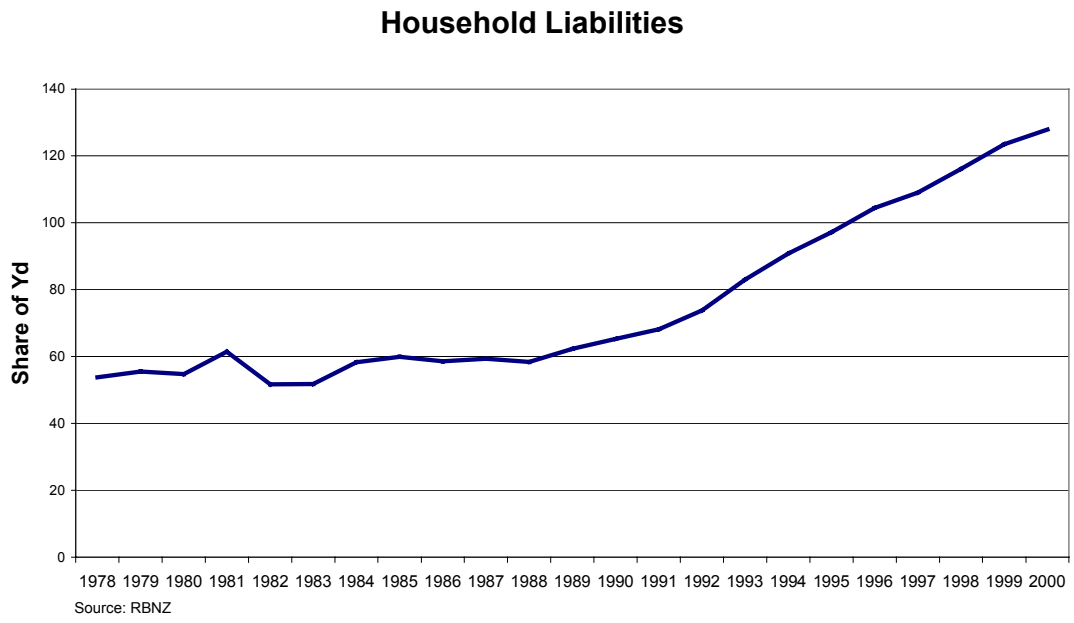


Figure 6 shows that after 1988 household liabilities to disposable income began a steady increase. This is not matched by a steady increase in household assets (so that net wealth remained unchanged). Table 2 showed the net position of New Zealand households worsened over the 1990 to 2000 period. There are various reasons why the increase in liabilities might have occurred, including reasons listed previously from Parker (1994). Figure 6 is also consistent with increased household access to credit, as the upward trend coincides with financial deregulation. This result is

consistent with the conclusions of Jappelli and Pagano regarding the link between liquidity constraints and savings rates.

III. Housing Prices

a. Stylised Facts

There are two avenues for changes in wealth to affect consumption: the credit channel effect and the wealth effect. In the former, increasing assets prices improve the value of the assets when used as collateral. In the latter, a life-cycle model would predict that unexpected increases in wealth result in an increase in permanent income and hence, consumption. The literature on the role of wealth on consumption decisions dates back to the life-cycle models of Friedman (1957) and Modigliani and Brumberg (1954). In these models, a household's permanent income, (the present discounted value of labour and capital income (which includes housing wealth)), will determine a household's consumption level. Households smooth consumption over their lifetime based on their expected permanent income. An unexpected increase in wealth will cause consumers to increase consumption but by less than the wealth increase as they spread the increased wealth over the rest of their lifetime. There are problems with the life-cycle models however as they do not account for uncertainty in future income streams nor for bequest motives. In addition, increases in wealth may not be fully accessible due to liquidity constraints.

Housing assets represent eighty percent of New Zealander's stock of wealth. This figure is high by international standards, as the average for the G6 countries was fifty-seven percent in 2000[6]. Figure 7 shows that New Zealand house prices have outpaced inflation several times over the last twenty years adding to New Zealanders' stock of wealth.

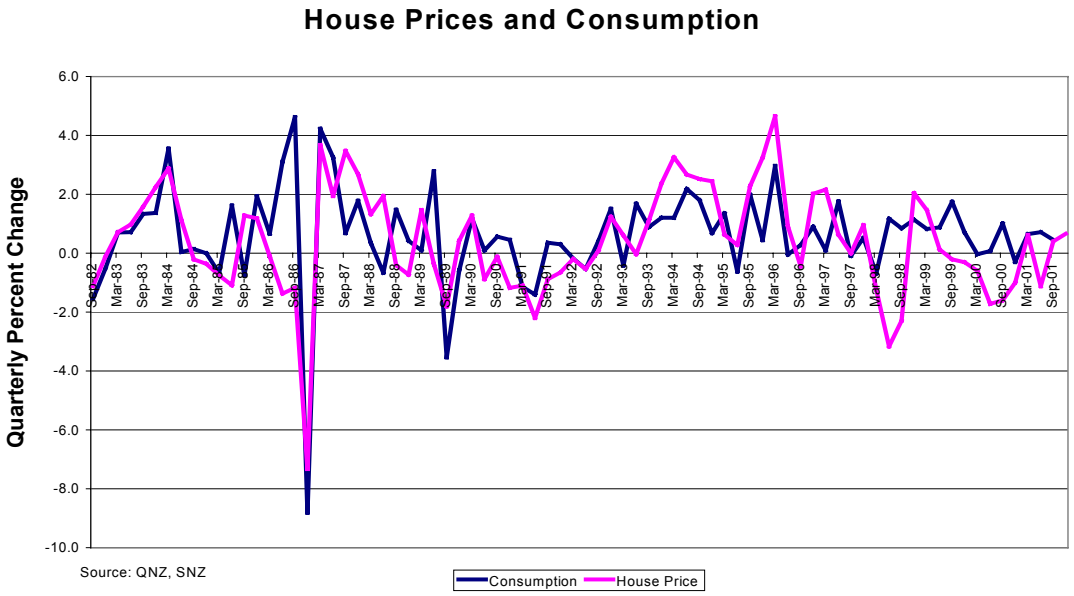
[6] This figure was calculated using OECD data and data for Japan is for 1999.

Figure 7 New Zealand's Real Housing Price Gains

Housing assets are fundamentally different from financial assets however as houses provide housing services as well as a store of wealth. Some households may not feel wealthier when housing prices rise as implicit rental costs rise. Moreover, housing is not traded internationally to a large degree so homeowners in aggregate cannot realise capital gains.

On the other hand, increases in housing values can affect consumption through the wealth effect and the collateral value effect. There can also be a contemporaneous link between housing prices and consumption due to common effects from interest rate changes. Higher interest rates, all else equal, imply lower housing prices and lower consumption. There is also a link between house prices and consumption through housing demand. Increased housing demand results in higher house prices and increased consumption of durable goods required to set up a household. Figure 8 illustrates similar co-movements in house prices and private consumption.

Figure 8 House Prices and Private Consumption



Life-cycle models posit a long run relationship between wealth and consumption. Recent studies use cointegration models to measure the sensitivity of consumption to changes in wealth. When cointegration exists, an error correction model is used to measure the short-run relationship between consumption and income and wealth. In the following section, the effect of housing wealth on consumption is measured in this way, and inferences about the effects of deregulation on consumption decisions are made.

b. Empirical Evidence

A consumption function that is a function of current income and wealth can be derived life-cycle models of consumption.[7]

The long run equation has the form:

$$c_t = \alpha_0 + \alpha_1 y_t + \alpha_2 w_t + \varepsilon_t \qquad (1)$$

where c is the log of per capital private consumption, y is the log of per capital disposable income, w is the log of the stock of wealth, and ε is the error term and all are represented at time t.

[7] See Mehra (2001)

The short run relationship is given by:

$$\Delta c_t = b_0 + b_1 \sum_{i=0}^{n} \Delta y_{t-i} + \sum_{i=0}^{n} b_2 w_{t-i} + \varepsilon_{t-1} \quad (2)$$

where ε_{t-1} is the error correction term, and Δ is the first difference operator.

The data used in this study are quarterly from the first quarter of 1965 through the third quarter of 2001. Because durable goods consumption provides a stock of consumption services over time, authors sometimes use private non-durable goods and services consumption. However, because consumption of durable goods is often affected through housing prices through the use of home equity to finance these purchases, real total private consumption is used here. Personal disposable income is not available over the desired time series so real GDP is used as a proxy as disposable income's share in GDP remains fairly stable.

Previous studies have separated wealth into two components: financial wealth and other wealth, which is primarily housing wealth.[8] There are two difficulties in using financial wealth for this study. First, financial wealth figures are not available quarterly and while other authors have used share market price indices as a proxy, share ownership in New Zealand is quite low and non-residents own a large part of the market. Moreover, the two largest components of financial wealth are deposits and life, superannuation and managed funds representing 82% of financial wealth. Deposits generally do not earn large, unexpected returns and there is limited use of life, superannuation and managed funds for current consumption purposes as they primarily represent retirement savings. On the other hand, housing wealth has remained about eighty percent of New Zealanders' total wealth and is assessable for consumption purposes. Thus, an index of housing prices is used to proxy for wealth.

As a first step, unit root tests were performed on each of the variables. Both Augmented Dickey-Fuller (ADF) tests and Phillips-Perron tests were conducted. Results are given in Table 5.

[8] See for example, Ludwig and Slok(2002) and Girouard and Blondal (2001).

Table 5 Unit Root Tests

	Consumption	GDP	House Price
ADF Test			
Levels	-2.123	-2.344	-1.144
First Difference	-4.831*	-5.188*	-3.712*
Phillips Perron Test			
Levels	-2.325	-2.391	-0.072
First Difference	-11.701*	-9.125*	-3.709*

* Indicates significant at the 1% confidence level.

The hypothesis of a unit root could not be rejected for all variables in levels and could be rejected at the one-percent level for each variable in first-difference form.

The effects of housing gains on consumption were estimated using the Engle and Granger Error Correction Model. Initially, a long-run relationship (equation 1) was estimated for the full sample period. The coefficient on the house price index was not significant and the hypothesis of a cointegrating relationship was rejected. Given the effects of deregulation on credit access through home equity, the sample was split into two periods; 1965 through 1985 representing the pre-deregulation period and 1986 through the third quarter of 2001 representing post-deregulation.

In the earlier sample period, the hypothesis of a cointegrating relationship is rejected. Therefore, during that time period, long run relationship between house prices and consumption did not exist. In the later period however, the hypothesis of a cointegrating relationship cannot be rejected at the one-percent confidence level. Estimated coefficients for the long-run relationship are given in Table 6. As the variables are in logs, the resulting coefficients are elasticities.

Table 6 Long Run Relationship

Dependent Variable: LNCONSPC
Method: Least Squares
Sample: 1986:1 2001:3
Included observations: 63
Newey-West HAC Standard Errors & Covariance (lag truncation=3)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.281406	0.453706	0.620239	0.5374
LNGDPPC	0.842351	0.064451	13.06959	0.0000
LNHPI	0.082417	0.021091	3.907654	0.0002
R-squared	0.954629	Mean dependent var		8.215959
Adjusted R-squared	0.953116	S.D. dependent var		0.069205

Table 6 indicates that a one-percent increase in income results in .84-percent increase in consumption and that a one-percent increase in house prices results in a .08 percent increase in consumption. The implied marginal propensity to consume out of housing wealth can be calculated by multiplying the elasticity by the ratio of consumption to housing wealth. Using data from Thorp and Ung on net housing wealth, the implied long-run marginal propensity to consume out of an extra dollar of net housing wealth would be 1.14 cents. Ludwig and Slok (2002) find an MPC of 2.6 cents for bank-based economies and a similar figure of 1.4 for France. This figure is also not surprising given the evidence seen previously that current borrowing is not resulting in a consumption boom.

The short-run relationship (equation 2) was estimated using the general to specific methodology where lags were excluded until all variables were significant or of expected sign. Results are in Table 7.

Table 7 Short Run Relationship

Dependent Variable: FDCONS
Method: Least Squares
Sample(adjusted): 1986:2 2001:3
Included observations: 62 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001105	0.001462	0.755774	0.4528
POSTRES(-1)	-0.368865	0.097432	-3.785878	0.0004
FDGDP	1.021113	0.135246	7.550016	0.0000
R-squared	0.581104	Mean dependent var		0.003951
Adjusted R-squared	0.566904	S.D. dependent var		0.016927

In the short run, house prices are not significant while income is highly significant with an elasticity measure greater than one. This figure for the effect of a change in income on consumption is consistent with the observed negative saving rate. It is not surprising that housing prices are not significant in the short run, as there can be an information lag and uncertainty on the part of the consumer regarding changes in the price of their house.

Overall these results show that housing prices have a small but significant effect on households' consumption decisions in the long term. In addition, there is evidence that deregulation fundamentally changed the way house prices affect

consumption, and hence saving decisions. A long run relationship between housing wealth and consumption only came into existence after deregulation.

IV. Implications for Financial Stability

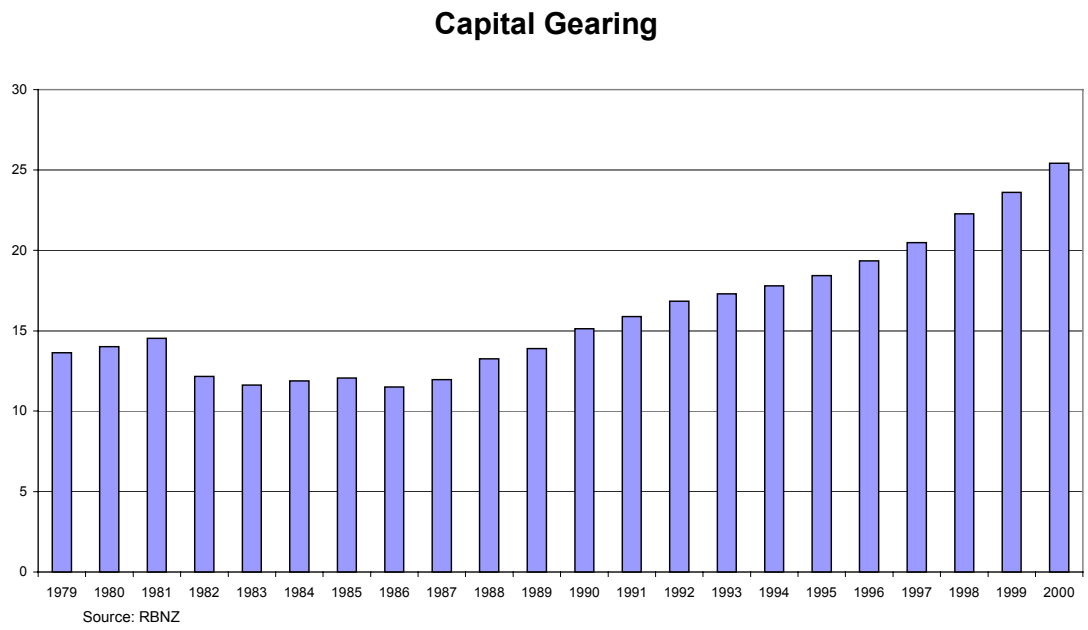
There are two avenues by which households affect macrofinancial stability. Firstly, there is the direct role households play in the economy through consumption and savings decisions. Secondly, there is the impact on financial institutions as households enter into both sides of banks' balance sheets. Thus, instability in the household sector can have a large impact on both the financial sector and the economy as a whole.

Household consumption represents approximately sixty percent of gross domestic product in New Zealand. Households also affect the investment component of GDP through savings and also more directly though residential investment which represents abut five percent of GDP. Therefore, if households have a liquidity crisis, we would see a contraction of both consumption and investment and a potentially large impact on GDP growth.

There are two potential causes of a household liquidity crisis. Firstly, if a shock to New Zealand causes a large recession and unemployment were to rise significantly, households would see a reduction in their monthly income flows. If households were able to access their store of wealth, when incomes fall, household consumption would not undergo a large contraction. As shown above, household indebtedness in New Zealand has risen over the last decade. High indebtedness may hinder a household's ability to access credit in times of need. Furthermore, should the contraction cause a decline in housing values, the value of household's collateral would erode further inhibiting their ability to access funds.

In gauging the future borrowing abilities of households, it is useful to look at the capital gearing ratio.

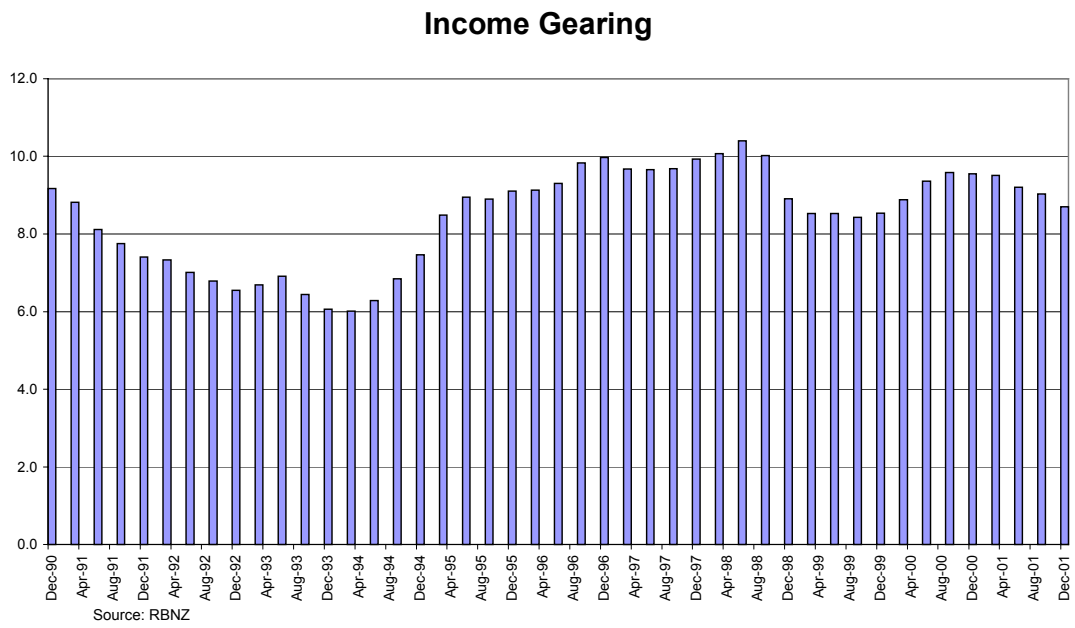
Figure 9 New Zealand's Household Capital Gearing



Capital gearing is defined as the ratio of total liabilities to total financial assets and housing wealth. The increase in capital gearing seen in Figure 9 is mainly driven by increases in debt, and begins its upward trend after financial deregulation. The increase in capital gearing makes households more vulnerable to declines in assets values than they would have been ten years ago. If a severe recession were to hit causing a decline in asset prices, their ability to access credit would be more difficult due to high debt levels and falling asset prices. An offsetting force to the liquidity crunch would be a decline in debt servicing costs when stimulatory monetary policy takes place.

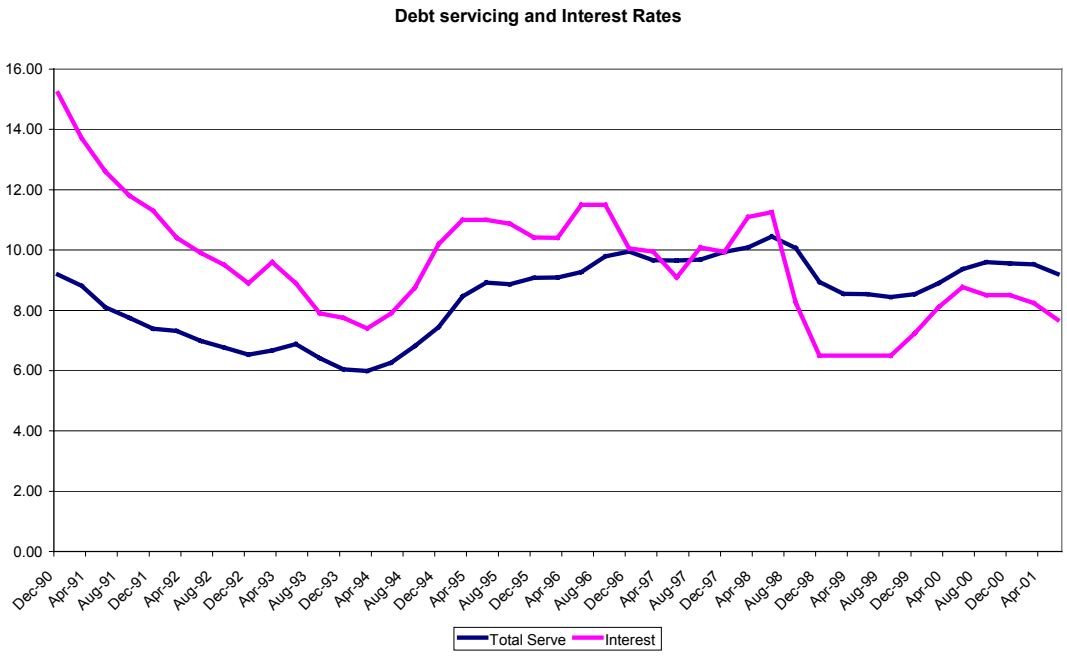
A second vulnerability comes through servicing debt. Households have taken on more debt in an environment where interest rates were falling on average. Thus, they currently have a large stock of debt, and if interest rates rise, their monthly outlays on debt serving will rise as well. Figure 10 gives the income gearing figures for New Zealand households.

Figure 10 New Zealand Household's Income Gearing



Income gearing is defined as interest payments on debt to disposable income. Households have had a steady increase in debt over the 1990's and the income gearing figure does not show a steady rise, thus lower interest rates have kept this ratio under ten percent.

Figure 11 Debt Servicing and Interest Rates



As Figure 11 shows, income gearing and interest rates move together quite closely. If interest rates rise at a rate faster than income rises, for a given amount of debt, this ratio will rise. This issue has been discussed in the context of the United States. U.S. households went into the recent recession with unprecedented level of debt. The decline in interest rates stimulated more borrowing. There is a fear that when interest rates start to rise the recovery will be thwarted as rising debt servicing costs cause consumers to cut back on consumption spending. Fixed-rate mortgages will help offset this in the short-run but even these need to be rolled-over at prevailing interest rates over time.

In addition to the macroeconomic impact households have, they can also impact the banking sector. If households face a liquidity problem and withdraw deposits there will be an adverse impact on bank funding. However, households' presence on the liability side has been declining over time so that this vulnerability is not as large as when households represented a larger share of bank funding. Nonetheless, if household instability is playing a large role in the overall macroeconomy, then banks may face larger overseas borrowing costs as overseas investors' confidence in New Zealand's economy wanes.

On the claims side of the balance sheet, households currently represent forty-four percent of total banking sector claims. Thus, household illiquidity or insolvency could have a significant impact on banks' impaired assets. This could lead to increases in the cost of capital to banks as well as a decline in credit growth. When a bank's pool of investment "projects" becomes more risky, banks tend to cut back on lending. Overall, household financial instability can lead to instability in an economy's financial sector.

V. Conclusion

New Zealand's household savings rate, like many other developed countries, has been declining over the last ten to fifteen years. New Zealand's household liabilities have increased from under thirty billion to almost eighty billion dollars since 1990. Over ninety-percent of this borrowing comes from banks. At the same time, households' share in bank funding has been declining. Overseas borrowing, adding to the current account deficit, has helped fund the difference. While there are potentially many determinants of household savings, this paper focuses on the role of financial deregulation and housing prices.

Financial deregulation gave household's better access to credit and there was a shift in household indebtedness at the time of deregulation. Data availability problems prohibit an empirical investigation of liquidity constraints of New Zealand households. However, the coincidence of higher indebtedness and declining savings is consistent with the finding that liquidity constraints increase savings rates. Moreover, since deregulation, housing prices are found to play a role in consumption decisions with a one-percent increase in housing values causing a .08 percent increase in consumption.

Households also play a role in macrofinancial stability. Increased household indebtedness makes households more susceptible to liquidity problems should they face an adverse income shock. Currently, interest rates are low, keeping debt servicing costs fairly stable. Should interest rates rise significantly, households will feel pressures on their balance sheet. In either case, the result could be a contraction in consumption, which would affect GDP. From a financial system standpoint, households' role in banks' balance sheets could affect credit growth and banks' cost of capital should there be significant instability in the household sector.

References

Aoki, Kosuke, James Proudman, and Gertjan Vlieghe "Why House Prices Matter" Bank of England Quarterly Bulletin, Winter 2001.

Berube, Gilles and Denise Cote (2000) "Long-term Determinants of the Personal Savings Rate: Literature Review and Some Empirical Results for Canada" Bank of Canada Working Paper 2000-3.

Boone, Laurence, Nathalie Girouard and Isabelle Wanner (2001) "Financial Market Liberalisation, Wealth and Consumption" OECD Economics Department Working Papers No. 308.

Boone, Laurence, Claude Giorno and Pete Richardson (1998) "Stock Market Fluctuations and Consumption Behaviour: Some recent Evidence" OECD Economics Department Working Paper No. 208.

Callen, Tim and Christian Thimann (1997) "Empirical Determinants of Household Saving – Evidence from OECD Countries" International Monetary Fund Working Paper No. 97/181.

Case, Karl E., John M. Quigley and Robert J. Shiller (2001) "Comparing Wealth Effects: The Stock Market Versus the Housing Market", National Bureau of Economic Research Working Paper No. 8606.

Claus, Iris and Grant Scobie (2001) "Household Net Wealth: An International Comparison" New Zealand Treasury Working Paper 01/19.

Claus, Iris and Grant Scobie (2001) "Saving in New Zealand: Measurement and Trends" forthcoming New Zealand Treasury Working Paper 02/02.

Engelhardt, Gary V. (1995) "House Prices and Home Owner Saving Behavior" National Bureau of Economic Research Working Paper No. 5183.

Engle R.F. and C.W.J. Granger (1987) “Co-integration and Error Correction: Representation, Estimation and Testing” Econometrica 55.

Friedman, M. (1957) “A Theory of the Consumption Function” Princeton University Press, Princeton, NJ.

Girouard, Nathalie and Sveinbjorn Blondal (2001) “House Prices and Economic Activity” OECD Economics Department Working Papers No. 279.

Jappelli, Tullio and Marco Pagano (1994) “Saving, Growth and Liquidity Constraints” The Quarterly Journal of Economics, Volume 109(1) pp. 83-109.

Ludwig, Alexander and Torsten Slok (2002) “The Impact of Changes in Stock Prices and House Prices on Consumption in OECD Countries” International Monetary Fund Working Paper No 02/1.

Margaritis, Dimitri, Dean Hyslop and David Rae (1992) “Financial Policy reform in New Zealand”, Reserve Bank of New Zealand Discussion Paper G92/2.

Mehra, Yash P. (2001) “The Wealth Effect in Empirical Life-Cycle Aggregate Consumption Equations” Federal reserve Bank of Richmond Economic Quarterly, Volume 87/2.

Modigliani, F. and R. Brumberg (1954) “Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data” in K.K. Kurihara (ed.): *Post Keynesian Economics*, Rutgers University Press, New Brunswick, NJ.

Parker, Jonathan A. (1999) “Spendthrift in America? On Two Decades of Decline in the U.S. Saving Rate”, National Bureau of Economic Research Discussion Paper No. 7238.

Reserve Bank of New Zealand (1986) “Financial Policy Reform”

Spencer, Grant and David Carey (1988) “Financial Policy reform – The New Zealand Experience, 1984-1987”, Reserve Bank of New Zealand Discussion Paper G88/1.

Thorp, Clive and Bun Ung (2001) “Recent Trends in Household Financial Assets and Liabilities” Reserve Bank of New Zealand Bulletin, Vol 64, No. 2, pp 14-24.