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**Working Paper**

## Household Net Wealth: An International Comparison

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# TREASURY WORKING PAPER

## 01/19

### Household net wealth: an international comparison

Iris Claus and Grant Scobie

#### ABSTRACT

Household saving can be measured as either the difference between the *flows* of current income and expenditure, or through households' balance sheets as changes in the *stocks* of accumulated net wealth. This paper examines household saving in New Zealand and other OECD countries, with particular focus on the stock of net wealth. The ratio of real assets to disposable income in New Zealand is close to OECD levels. However, household financial net wealth as a proportion of disposable income has been falling in New Zealand since the late 1980s, whereas it has been rising in other OECD countries. As a result, housing assets in New Zealand have become an increasing share of households' wealth portfolios. The implied savings rate from households' balance sheets is significantly higher than the flow measure. Moreover, it follows the business cycle more closely, consistent with consumption smoothing behaviour by households.

*JEL classification:* E21 Consumption, saving; N20 Financial markets and institution – general, international or comparative

*Key words:* Household net wealth, saving, financial deregulation

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# HOUSEHOLD NET WEALTH: AN INTERNATIONAL COMPARISON\*

## 1 INTRODUCTION

Discussions about saving generally tend to focus on measures of saving that are derived from the income and expenditure flows in the National Accounts (the flow approach). In New Zealand, both aggregate and household saving, measured as the residual between current income and expenditure, have declined. A similar trend has occurred in other OECD countries. The reasons for this decline in saving rates are not well understood, either for New Zealand or for other countries. Measurement issues are undoubtedly part of the explanation.

An alternative measure of household saving can be derived from the net wealth data constructed by the Reserve Bank of New Zealand. This data is the first long-run time series for household net wealth published in New Zealand and was introduced in June 2000. The data are obtained from regular quarterly and monthly surveys conducted by the Reserve Bank and an annual December survey. Definitions and explanations can be found in Thorp and Ung (2000).<sup>1</sup>

Net wealth is the value of households' assets (financial and real) less household debt, i.e. liabilities in the form of mortgages, hire purchase and credit cards loans, student loans and other debt. Saving can then be measured as the change in the stock of accumulated net wealth (the stock approach).

The primary purpose of this paper is to examine household net wealth in New Zealand and to compare the portfolios of New Zealand households with those in other OECD countries. Households' balance sheets reflect the importance of housing on both sides of the balance sheet, the asset and liability side, and is the focus of much of the discussion. The paper also contrasts the flow and stock approaches to measuring saving, clarifying the conceptual differences between the two approaches and providing an estimate of the household saving rate derived by both methods.

To foreshadow the findings in this paper, the stock and flow measures of saving are quite different in New Zealand and other OECD countries. In terms of the composition of households' net wealth, the ratio of real assets to disposable income in New Zealand is close to OECD levels. A key difference, however, is that households' financial net wealth as a proportion of disposable income has been falling in New Zealand since the late 1980s, whereas it has been rising in other OECD countries. As a result, housing assets in New Zealand have become an increasing share of household portfolios, whereas in other countries this share has been declining. Financial deregulation has played an important role in the accumulation of net wealth and its composition.

The remainder of the paper is organised as follows. Part 2 discusses the flow and stock measures of household saving. Part 3 shows the link between the two measures and discusses when they differ. Part 4 analyses household saving and net wealth in

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<sup>1</sup> See also Thorp and Ung (2001).

New Zealand. The New Zealand experience is compared to those in other OECD countries in Part 5. Part 6 discusses financial liberalisation and housing wealth in more detail. Concluding remarks are contained in Part 7.

## 2 DEFINITIONS AND MEASURES OF SAVING

Saving is generally defined as foregoing current consumption and providing funds directly or indirectly to capital markets for productive investment in financial, real or human capital (Boskin 1988). It can be measured in terms of “flows” as the difference between current income and expenditure.

Alternatively, saving can be measured as the change in the “stocks” of accumulated net wealth from one period to the next. Household net wealth, for example, can be thought of as the amount of money that households would be left with, if they sold off all their assets and paid off all their debts. Net wealth is thus the value of households’ assets (financial and real) less their debt, i.e. money owned on mortgages, vehicles, credit cards, student loans and other debt. Financial assets include assets with deposit-taking institutions, other fixed interest instruments, assets with life, super and managed funds, and directly held domestic and overseas equities. Real assets comprise housing and other tangible assets (although the Reserve Bank data does not yet include other tangible assets).

Saving rates in New Zealand are generally measured in terms of flows, derived from the System of National Accounts. However, there are important limitations in the measurement of saving rates as the residual between the flows of current income and expenditure.<sup>2</sup> Saving, measured as the difference between two large numbers (current income and current expenditure), is subject to wide margins of measurement error. This is because any errors in other series will be reflected in the saving estimate. For example, in 1998/99 household disposable income was about \$58.1 billion and household consumption \$60.5 billion. This implies a “dis-saving” of 4.1, as a percentage of disposable income. If income was under-estimated by, say two percent, and consumption was over-estimated by two percent, then the saving rate would have been zero instead of minus 4.1 percent.

Moreover, measured saving rates derived on this flow basis are biased downward. Expenditure on education, health care and durables is treated as consumption rather than investment, thereby understating saving. This downward bias is likely to increase over time as, for example, investment in education assumes greater importance. When allowances are made for educational investment and natural capital (e.g. mineral resources), New Zealand’s national saving rate in 1998, according to the World Bank, would have been almost six percentage points higher.<sup>3</sup>

An alternative measure of household saving can be derived from the net wealth data constructed by the Reserve Bank of New Zealand.<sup>4</sup> Household net wealth is also

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<sup>2</sup> These measurement issues are discussed in more detail in Claus and Scobie (2001).

<sup>3</sup> See [http://www.worldbank.org/data/wdi2000/pdfs/tab3\\_15.pdf](http://www.worldbank.org/data/wdi2000/pdfs/tab3_15.pdf).

<sup>4</sup> The data in this paper do not include the Reserve Bank’s recently published estimate for 2000 (Thorp and Ung 2001). They also do not incorporate the downward revision of direct equity investment overseas. The focus in this paper is on trends rather than levels. The

subject to measurement error and the derived saving rate is also likely to be biased downward. Household liabilities, which mainly consist of home mortgages, are almost certainly overstated.<sup>5</sup> This is because some home mortgages are in effect loans to small businesses (secured by residential mortgages). Some banks estimate that possibly between 10 and 20 percent of household loans secured on housing are for business purposes. Assets, on the other hand, are likely to be understated. Financial assets are understated as direct investment in non-financial substitutes, like forestry and farms, are not captured in the data (Thorp and Ung 2001). Moreover, the value of household investment in businesses not priced through the stock market is not captured. Real assets are also understated. Household real assets comprise house values alone and, for example, excludes consumer durables. In addition, net farm wealth, an important component of total net wealth in New Zealand, is excluded (Thorp and Ung 2001).

### 3 THE LINK BETWEEN THE FLOW AND STOCK MEASURES OF HOUSEHOLD SAVING

In this section we explore the link between the flow and stock measures of household saving. The link can be illustrated with a simple example of households' choice problem. Households are assumed to value alternative streams of consumption and leisure over their lifetime according to some utility function, which they maximise subject to a budget constraint.

At the beginning of each period, households must decide how much to hold in demand deposits ( $d_t$ ), which they use for consumption during the period. Demand deposits consist of deposits with banks and other fixed interest. At the beginning of each period, households must also decide how to save for next period consumption. They can either purchase shares in firms (financial assets,  $fa_t$ ) or buy houses (real assets,  $ra_t$ ). Alternatively, households can "purchase" human capital ( $h_t$ ) in the form of education or health care.

For simplicity, it is assumed that households don't borrow. This implies that households' liabilities are zero and household net wealth (assets minus liabilities) equals households' wealth (assets). Moreover, it is assumed that there is no government sector. Households do not pay taxes and do not receive any transfer payments from the government.

The value of financial assets at time  $t$  is given by  $p_t^{fa}fa_t$ , where  $p_t^{fa}$  denotes the market price of financial assets. The value of real assets and human capital is given by  $p_t^{ra}ra_t$  and  $p_t^hh_t$  respectively, where  $p_t^{ra}$  and  $p_t^h$  denote the market price of real assets and education or health care at time  $t$ .

During each period, households derive income from four sources. First, households earn wage income,  $w_t p_t^h h_t$ , from supplying human capital to firms, where  $w_t$  denotes

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revision will shift household net wealth downward. Estimates for 2000 confirm recent trends discussed in Parts 4 and 5.

<sup>5</sup> Over 90 percent of household liabilities are mortgages.

the nominal wage rate. Second, households receive interest income,  $i_t d_t$  on demand deposits held with banks, where  $i_t$  is the rate of interest paid on deposits. Third, they receive a return on financial assets  $r_t^{fa} p_t^{fa} fa_t$ , in the form of dividend payments from firms, where  $r_t^{fa}$  denotes the yield on financial assets. Finally, households receive a return on real assets, in the form of imputed rent for housing, i.e.  $r_t^{ra} p_t^{ra} ra_t$ , where  $r_t^{ra}$  is the yield on real assets.

Households use their income to purchase consumption,  $p_t^c c_t$ , where  $p_t^c$  denotes the price of the consumption good  $c_t$ . Households also purchase financial and real assets and human capital to provide income next period. The price they pay for financial and real assets and human capital depends on next period's expected value of these assets and human capital. The household budget constraint can then be written as follows

$$(1 + w_t)p_t^h h_t + (1 + i_t)d_t + (1 + r_t^{fa})p_t^{fa} fa_t + (1 + r_t^{ra})p_t^{ra} ra_t - p_t^c c_t - E_t(d_{t+1}) - E_t(p_{t+1}^h h_{t+1}) - E_t(p_{t+1}^{fa} fa_{t+1}) - E_t(p_{t+1}^{ra} ra_{t+1}) = 0 \quad (1)$$

where  $E_t(\cdot)$  is the conditional expectation operator with respect to information available at time  $t$ .

Suppose for the moment that there is no uncertainty and that households have perfect information. Equation (1) can then be written as

$$(1 + w_t)p_t^h h_t + (1 + i_t)d_t + (1 + r_t^{fa})p_t^{fa} fa_t + (1 + r_t^{ra})p_t^{ra} ra_t - p_t^c c_t - d_{t+1} - p_{t+1}^h h_{t+1} - p_{t+1}^{fa} fa_{t+1} - p_{t+1}^{ra} ra_{t+1} = 0 \quad (2)$$

Households' budget constraint can be interpreted as follows. Each period, households receive a return on deposits and financial and real assets. They also receive income from their human capital in the form of wage income. Households then "sell" all their deposits, financial and real assets and human capital to purchase consumption, human capital and new financial and real assets. The budget constraint is binding and household expenditure equals household income.

The link between the stock and flow measures of saving becomes clear when re-writing equation (2) as follows

$$(d_{t+1} - d_t) + (p_{t+1}^h h_{t+1} - p_t^h h_t) + (p_{t+1}^{fa} fa_{t+1} - p_t^{fa} fa_t) + (p_{t+1}^{ra} ra_{t+1} - p_t^{ra} ra_t) = w_t p_t^h h_t + i_t d_t + r_t^{fa} p_t^{fa} fa_t + r_t^{ra} p_t^{ra} ra_t - p_t^c c_t \quad (3)$$

The left hand side of equation (3) is the change in household net wealth, or the stock measure of household saving. The right hand side measures saving in terms of flows as the difference between current income ( $w_t p_t^h h_t + i_t d_t + r_t^{fa} p_t^{fa} fa_t + r_t^{ra} p_t^{ra} ra_t$ ) and current expenditure ( $p_t^c c_t$ ). Equation (3) then implies that, in the absence of uncertainty and under the assumption that households have perfect information, the stock measure of saving should be identically equal to the flow measure of saving. In reality, the two measures are not the same. There are several reasons for this.

In equation (3), it is the change in the market value of net wealth that should be equal to the difference between the flow of current income and expenditure. However, the Reserve Bank's estimate of household net wealth does not include all components of net wealth at market value, like the stock of housing for example. This would lead to some discrepancy between the stock and flow measures of saving in New Zealand.

The two measures of saving can also differ because of mismeasurement. Most estimates of household net wealth do not include human capital. This means that *measured* changes in household net wealth are understated by  $(p_{t+1}^h h_{t+1} - p_t^h h_t)$ , i.e.

$$(d_{t+1} - d_t) + (p_{t+1}^{fa} fa_{t+1} - p_t^{fa} fa_t) + (p_{t+1}^{ra} ra_{t+1} - p_t^{ra} ra_t) = w_t p_t^h h_t + i_t d_t + r_t^{fa} p_t^{fa} fa_t + r_t^{ra} p_t^{ra} ra_t - p_t^c c_t \quad (4)$$

The flow measure of saving will be understated relative to the *measured* stock saving rate that excludes human capital. This is because the flow measure includes expenditure on education and health care, but they are treated as consumption.

Saving measured in terms of flows will also be understated relative to the stock measure if expenditure on durables is treated as consumption rather than investment.

Another reason why the stock and flow measures of saving differ is because the assumptions of no uncertainty and perfect information do not hold in the real world. The (expected) cash flow of future earnings of financial and real assets, and hence their price, are subject to random, unforeseen shocks. In the above example, households must decide at the beginning of each period how much of their wealth to hold in bank deposits, financial and real assets and how much to add to their human capital. The prices paid depend on next period's expected values of these assets and human capital. If assets are subject to random shocks that occur during the period and affect future earnings, then the value of assets at the beginning of the period will differ from the end of period value. Thus, ex post the change in household net wealth may not equal the flow measure of saving.

If the shocks affecting the price of financial and real assets are normally distributed, then asset prices are subject to positive and negative shocks, which, on average, are zero. This implies that the two measures of saving will diverge during some periods, but would tend to move together over time. However, they will not move together over time if shocks to asset prices are persistent. Generally, shocks to asset prices are persistent and the stock and flow measures of saving are likely to diverge. Tests for a unit root suggest that in New Zealand house and stock prices are non-stationary, i.e. shocks to asset prices have permanent effects.<sup>6</sup>

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<sup>6</sup> The augmented Dickey and Fuller (Said and Dickey 1984) test was performed on the Quotable Value New Zealand quarterly house price index and the New Zealand stock exchange capital 40 price index. The null hypothesis of a unit root could not be rejected at conventional levels of significance.



#### 4 HOUSEHOLD SAVING AND NET WEALTH IN NEW ZEALAND

Measured household net wealth in New Zealand is the value of households' financial and real assets (housing only) less households' liabilities. Financial assets include assets with deposit-taking institutions, other fixed interest instruments, assets with life, super and managed funds, and directly held domestic and overseas equities. Household liabilities are financial liabilities and consist of loans from financial institutions, life, super and managed funds loans, solicitor and contributory mortgage loans and student loans. They include home mortgages, hire purchase loans, credit card and student loans and other debt. Table 1 shows a stylised household balance sheet.

Table 1: A stylised household balance sheet

Assets	Liabilities
Financial assets	Mortgages
With deposit-taking institutions	Hire purchase loans
Fixed interest	Credit card loans
Life, super and managed funds	Student loans
Direct domestic equity	Other debt
Direct foreign equity	
Real assets	
Housing only	

A measure of the saving rate can be derived from the change in the stock of households' net wealth (total assets minus liabilities). The "stock" measure of saving together with the "flow" measure from the Household Income and Outlay Account in the System of National Accounts is plotted in Figure 1. Both measures of saving are calculated as a percentage of disposable income.

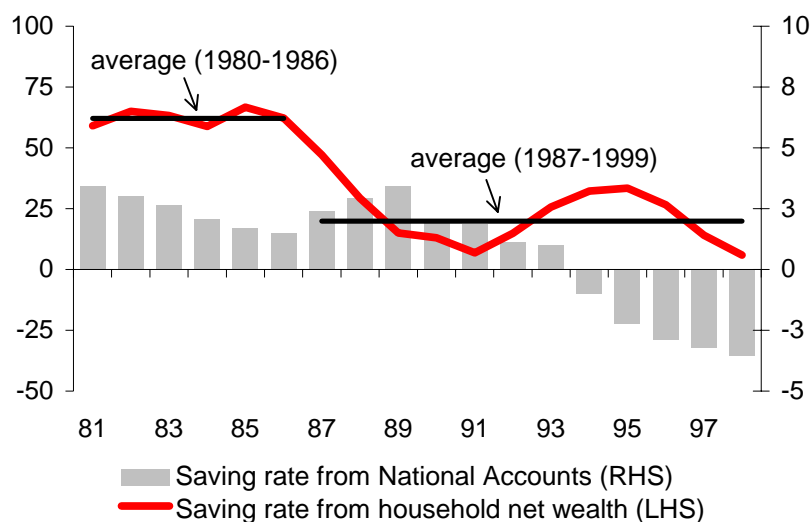
Figure 1 shows two main differences between household saving measured in terms of flows and in terms of changes in the stocks of accumulated net wealth. First, the stock measure appears to follow business cycle fluctuations more closely than the flow measure. Second, as in other OECD countries (discussed further below), the stock measure of saving is significantly larger than the flow measure in New Zealand. The two measures are plotted on scale of 10:1.

The savings rate derived from households' accumulated net wealth is more cyclical than the flow measure (see Figure 1). It declines during economic contractions and increases during periods of expansions. This can be seen from Figure 2, which plots the implied savings rate together with three measures of economic activity used by the Reserve Bank of New Zealand.<sup>7</sup> For example, the saving rate implied by household

<sup>7</sup> Economic activity is measured by the output gap, i.e. deviations of actual from potential output (as a percentage of potential output), where potential output is the level of economic activity that is consistent with no inflation pressures. A positive (negative) output gap indicates excess demand (supply) and upward (downward) pressure on inflation. The official Reserve Bank measure of the output gap is derived by filtering output using a

net wealth fell over the second half of the 1980s and early 1990s following the structural and fiscal reforms and period of disinflation and rose during the period of strong economic growth in the mid-1990s.

Figure 1: Household saving in New Zealand (three-year moving average, as a percentage of disposable income)<sup>8</sup>



Source: Reserve Bank of New Zealand, Statistics New Zealand and The Treasury

The cyclical behaviour of saving is in line with the life cycle model of Modigliani and Brumberg (1954) and Ando and Modigliani (1963). In the life cycle model, households optimally choose how much to save and how much to work over their lifetimes. These decisions are constrained by lifetime budgets that restrict households from spending more in (present value) on consumption goods than they earn (in present value) in the labour market. In order to equalise the discounted marginal utility of consumption from one period to the next, optimising households smooth consumption over time. For example, households save when income is high (during economic expansions) and dis-save when income is low (during economic contractions).

The second difference between the flow and stock measures of saving is that the household saving rate from the National Accounts is significantly lower than the stock measure and would imply much lower net wealth than balance sheet estimates suggest. For example, Figure 3 plots the implied stocks of net wealth by cumulating household saving from the National Accounts (dotted line) and changes in net wealth

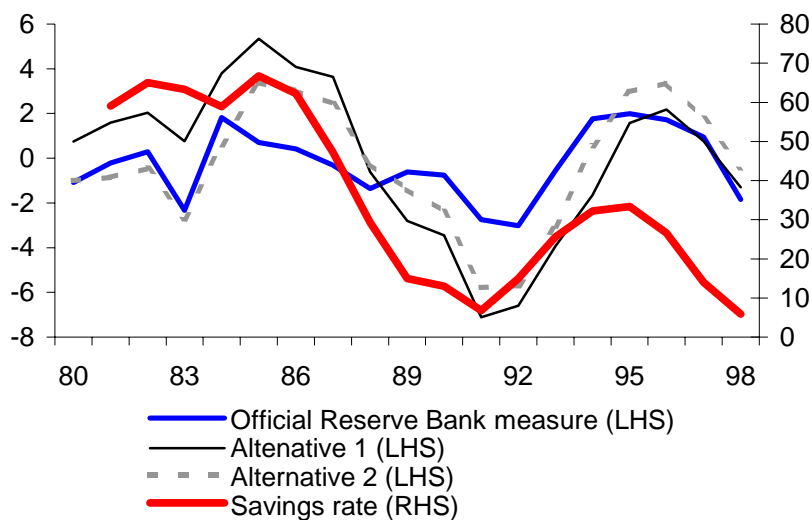
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multivariate (MV) filter. The MV filter is a Hodrick and Prescott (1997) filter augmented with conditioning information. Alternative 1 estimates the output gap using a structural vector autoregression approach and alternative 2 is based on an unobserved components approach. For more details see Claus, Conway and Scott (2000).

<sup>8</sup> Revised household saving and disposable income are only available from 1987 onwards. Data prior to 1987 were constructed by splicing on the growth rates of the old series to the levels of the revised series.

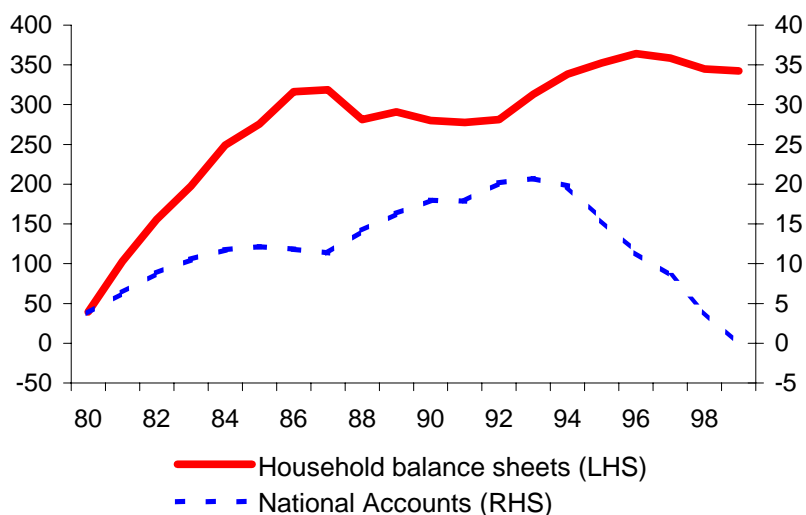
(solid line) under the assumption that initial net wealth is zero in 1979.<sup>9</sup> Until the mid-1990s both measures of implied net wealth were generally trending upward, however over the second half of the 1990s the flow measure of net wealth declines sharply, whereas the stock measure continues to increase.

Figure 2: Household saving in terms of net wealth and business cycle fluctuations (in percent)



Source: Reserve Bank of New Zealand, Statistics New Zealand and The Treasury

Figure 3: Implied household net wealth (as a percentage of disposable income)



Source: Reserve Bank of New Zealand, Statistics New Zealand and The Treasury

<sup>9</sup> Note that the scales in Figure 3 are different by a factor of 10 – the stock measure of cumulative net wealth is much higher in absolute terms than that obtained by cumulating the flow measure of saving.

Savings measured as changes in net wealth and as the difference between the flow of current income and expenditure differ for the reasons discussed in Part 3 – unforeseen asset price movements and measurement problems. The stock measure of household saving continued to increase over the second half of the 1990s in part because of surprisingly strong increases in house prices. The consequent gain in the value of housing stock may actually have contributed to the decline in the flow measure of saving. This is because an unexpected (permanent) increase in assets prices (or discounted future cash flows) is a real income gain that is likely to encourage more consumption today and in future and would tend to reduce current saving as measured by the difference between current income and expenditure.

Factors that likely contributed to the divergence of the stock and flow measures because of mismeasurement include:

- a higher ratio of household expenditure on health care to total consumption expenditure in the early and mid-1990s in part due to increased medical care costs,
- rising household expenditure on tertiary education over the second half of the 1990s, and
- strong growth in consumer durables due to the elimination of tariffs on motor vehicles, parallel importing, and increasing importance of computers.<sup>10</sup>

Overall, the trend in the National Accounts' household saving rate has been downward in New Zealand (see Figure 1).<sup>11</sup> The implied savings rate from households' balance sheets has also fallen (see Figure 1). However, its decline has not been as gradual as it has been for the flow measure. Household savings measured by the change in household net wealth appear to have shifted to a lower level following the financial market liberalisation during the second half of the 1980s.<sup>12</sup> Statistical tests for structural change indicate that this shift occurred in 1987.<sup>13</sup>

Over the period 1980-86, households, on average, saved about three times more than in 1987-99, as measured by changes in households' net wealth as a percentage of disposable income. However, despite the fall in household savings in 1987, the average saving rate from household balance sheets, at about 20 percent, remains significantly larger than the average saving rate from the National Accounts over the period 1987-99, which was -0.2 percent (see Figure 1).

Saving in terms of changes in household net wealth has been positive and as a result total net wealth as a percentage of disposable income has grown modestly over time. Total net wealth increased from about 350 percent of disposable income in 1979 to

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<sup>10</sup> Recall that these items are counted as current consumption expenditure and thus reduce the flow measure of saving.

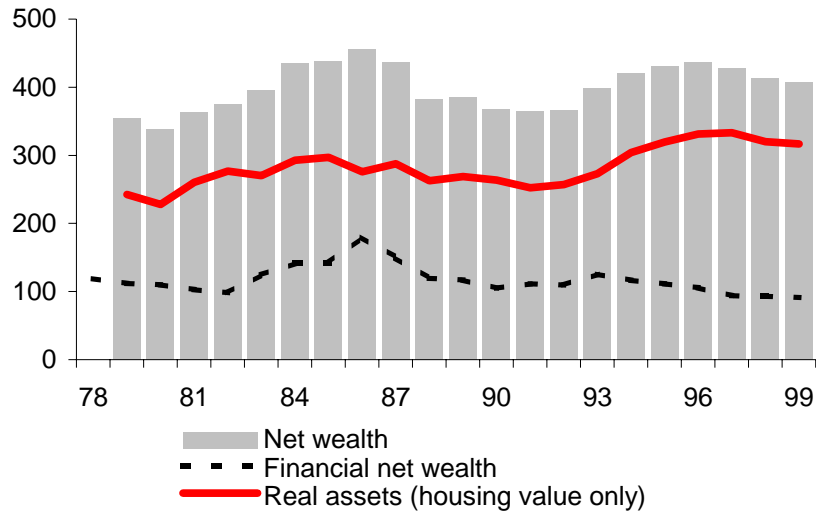
<sup>11</sup> Measurement problem are part of the explanation of the downward trend in household saving. Another reason might be the ageing of the population combined with a belief of guaranteed future New Zealand Superannuation payments at retirement (see Gibson and Scobie 2001). Choy (2000) examines the determinants of household (and national) saving in New Zealand using a cointegration approach in more detail.

<sup>12</sup> The shift also coincides with the decline in the stock market.

<sup>13</sup> It was assumed that the saving rate follows an autoregressive process of order one and tests for structural breaks were performed. Andrews' (1993) Sup-F test and the fluctuation test rejected the null hypothesis of parameter stability at the one and five percent level of significance respectively.

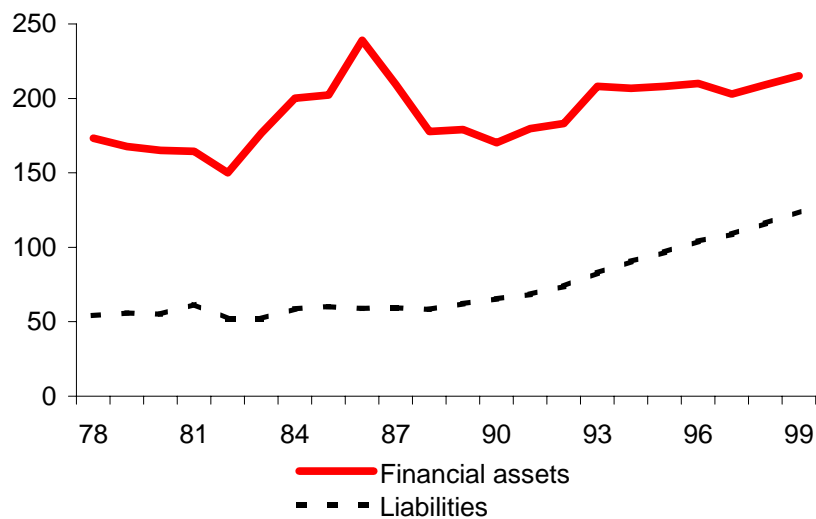
about 400 percent in 1999 (see Figure 4). Over the first half of the 1980s total net wealth rose because of increasing financial net wealth (financial assets minus liabilities) and rising real assets.

Figure 4: Household total net wealth, financial net wealth and real assets in New Zealand (as a percentage of disposable income)



Source: Reserve Bank of New Zealand, Statistics New Zealand and The Treasury

Figure 5: Financial assets and liabilities in New Zealand (as a percentage of disposable income)



Source: Reserve Bank of New Zealand, Statistics New Zealand and The Treasury

Household financial net wealth as a percentage of disposable income reached a peak at about 180 percent in the mid-1980s. It rose during the first half of the 1980s because of an increase in financial assets, while household liabilities remained virtually unchanged (see Figure 5). Since then, household financial net wealth has generally been trending downward and below 100 percent over the late 1990s. The marked deterioration in households' financial net wealth is largely the result of strongly rising debt (liabilities) following the deregulation of financial markets in the second half of the 1980s. Moreover, financial assets as a proportion of disposable income fell sharply following the stock market crash in 1987 and so far, although rising, have not yet recovered back to the peak reached in 1986. As household liabilities have continued to increase, financial net wealth has continued to trend downward since the second half of the 1980s.

Total household net wealth fell less sharply than financial net wealth following the stock market crash in 1987 and during the period of reform and restructuring (second half of the 1980s to early 1990s). It fell less because the decline in housing value was less marked during this period. From 1992 to 1996, household total net wealth as a percentage of disposable income once again rose with higher real assets offsetting the continuing decline in financial net wealth. The value of housing stock rose in part because immigration and population growth and decreasing household size increased demand for housing and put upward pressure on house prices. From 1997 to 1999, total net wealth fell, largely because of declining house prices and a consequent fall in the value of housing stock.

Housing has been important in the portfolio of New Zealand households for three main reasons. First, relative rates of return to real assets have been high because of high and persistent inflation in the past. Relative rates of return to real assets tend to be higher during periods of inflation. In New Zealand, consumer price inflation, except for the price and wage freezes in 1983-84, was high and persistent during much of the 1970s and 1980s. This led to low and falling real interest rates and negative real returns on some financial assets as prices and inflation expectations only adjusted sluggishly.

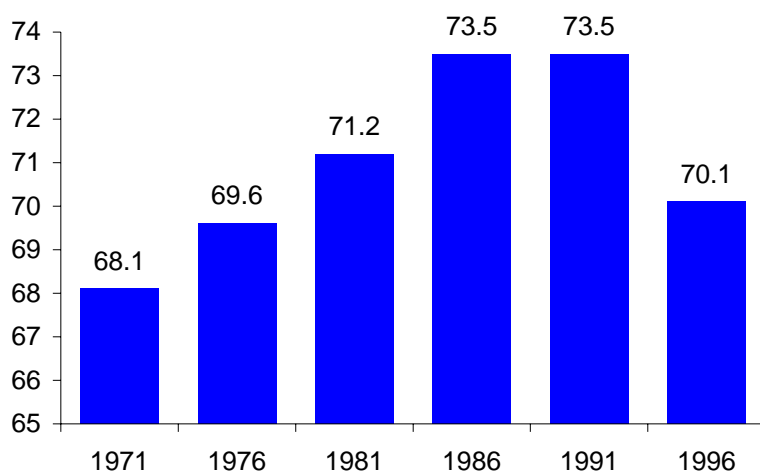
Second, the advent of low inflation and financial liberalisation made access to home ownership more widespread. Following the deregulation of domestic financial markets in the mid-1980s, New Zealand households gained access to finance previously not available. Moreover, low inflation made it easier for lower income households to qualify for housing finance. This is because banks and other lenders apply repayment-to-income tests to intending borrowers and for any given size of loan, the higher is the nominal interest rate, the higher is the income to qualify for a loan (Stevens 1997). Lower nominal interest rates (because of falling inflation) made housing finance possible for lower income households.

Third, owner-occupied housing is the most tax-preferred form of saving in New Zealand (Goss and Duncan 1999). Owner-occupied housing provides a flow of services to the occupant that are non-monetary in nature and therefore are not recorded as part of the occupant's income for tax purposes. This non-taxed "imputed rental income" leads to an advantage of owning a house over renting. However, the size of the tax advantage declines as leverage increases. Because mortgages as a proportion of housing value have been rising due to greater access to financial borrowing the tax advantage has

been declining.<sup>14</sup>

These three factors have affected home ownership rates. The percentage of New Zealand households owning their own house (with or without a mortgage) rose steadily over the period of high and persistent inflation during the 1970s and 1980s (see Figure 6). Following financial deregulation in the mid-1980s, the increase in owner occupied housing was particularly dramatic. In 1986 and 1991, 73.5 percent of households owned their own house compared to 71.2 percent in 1981, 69.6 percent in 1976 and 68.1 percent in 1971 according to census data. However, in the 1996 census, home ownership rates grew more slowly than the number of households. As a result the percentage of New Zealand households owning their own house declined. The slowing in home ownership rates in the 1996 census is not surprising as the initial impact of financial deregulation and the move to low and stable inflation started to wear off and the tax advantage from non-taxation of imputed rent declined.

Figure 6: Owner occupied housing (as a percentage of total “specified” housing)

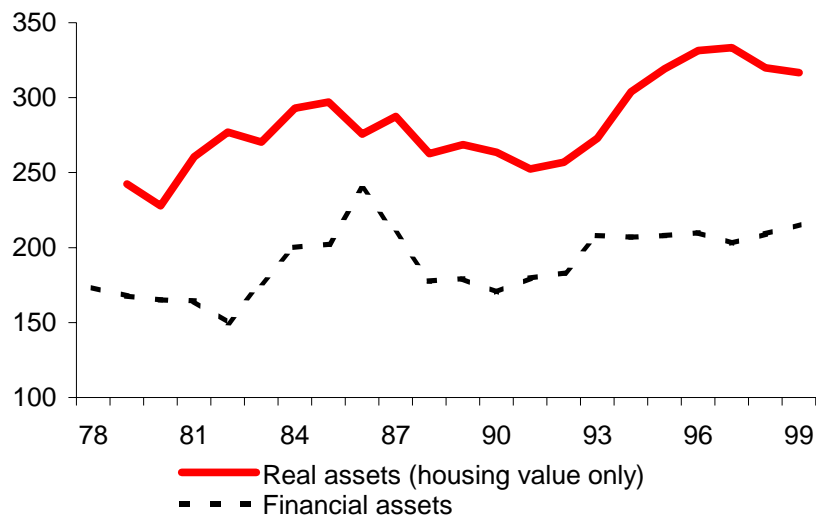


Source: Statistics New Zealand

As rates of home ownership decelerate and the relative importance of housing declines, one would expect a re-allocation of households' portfolios from housing into equities and other financial assets. There is some indication that this portfolio re-allocation may have started to take place. Over the three years from 1997 to 1999, real assets as a percentage of disposable income fell, while financial assets as a percentage of disposable income rose (see Figure 7), resulting in a change in the composition of households' assets. Households have started to hold a higher proportion of their portfolios in managed funds, including life insurance and pension funds, and equities, both domestic and foreign at the expense of traditional instruments of savings, such as deposits with banks and other fixed interest assets and housing (see Figure 8).

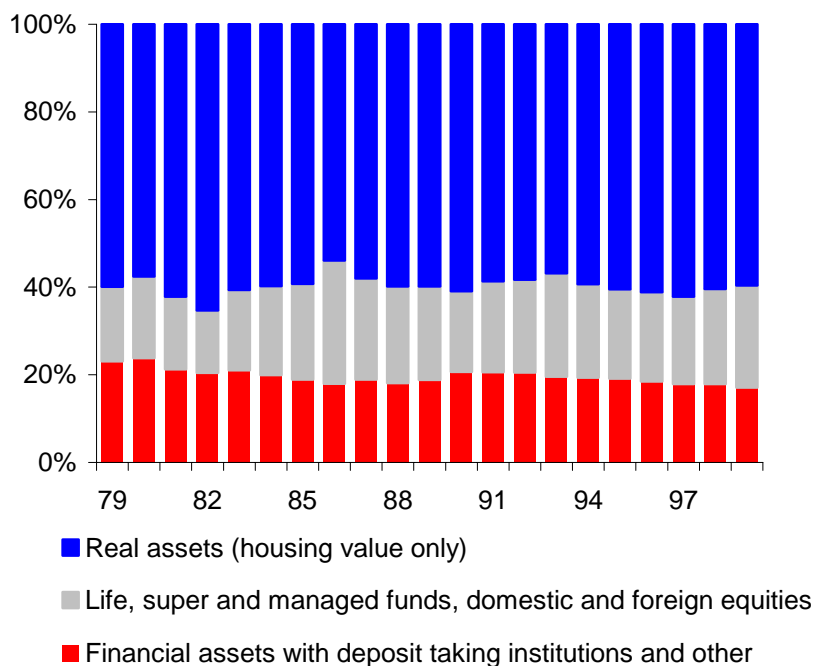
<sup>14</sup> The inability to deduct costs of housing, such as mortgage interest payments, also partly offsets the tax advantage.

Figure 7: Financial and real assets (as a percentage of household disposable income)



Source: Reserve Bank of New Zealand, Statistics New Zealand and The Treasury

Figure 8: Composition of households' assets in New Zealand



Source: Reserve Bank of New Zealand

A similar trend has occurred in the United States. Bertaut and Starr-McCluer (2000), for example, report that in the United States, the share of residential property in total assets fell from about 28 percent in 1983 to about 22 percent in 1998, while the relative



importance of financial assets increased substantially over this period, rising from about 45 percent to 61 percent of total assets. The composition of financial assets also shifted appreciably, with the relative importance of time and savings deposits declining while the importance of pension funds, corporate equity and mutual funds rose.

## **5 A COMPARISON WITH OTHER OECD COUNTRIES**

Data for household balance sheets are also available from the mid-1980s onward for Australia, Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.<sup>15</sup> The data should be more or less comparable and allows a comparison of the New Zealand experience with that of other countries. One known difference is that New Zealand real assets consist of housing only and do not include other tangible assets.<sup>16</sup>

As in New Zealand, household saving measured by the difference between the flow of income and expenditure has been declining in other OECD countries, at least over the 1990s (see Figure 9). Also a different picture emerges from the household saving rate implied by changes in household net wealth. Moreover, the absolute difference between the flow and stock measures are large. Countries that have less deregulated financial markets and where households are more credit constrained (France, Germany, Italy and Japan, discussed further below) appear to have a higher saving rate measured in terms of flows than in countries where financial liberalisation was largely completed by the mid-1980s (Australia, Canada, New Zealand, the United Kingdom and the United States).

In the United States, the United Kingdom and Australia, the decline in the flow measure of saving was particularly marked over the second half of the 1990s. In marked contrast however, measured in terms of stocks, household saving increased over this period. In Canada and Germany, saving measured by the difference between the flow of income and expenditure also declined sharply over the 1990s, while the stock measure remained virtually unchanged. The opposite occurred in Japan. The stock measure of saving fell and the flow measure remained virtually unchanged.

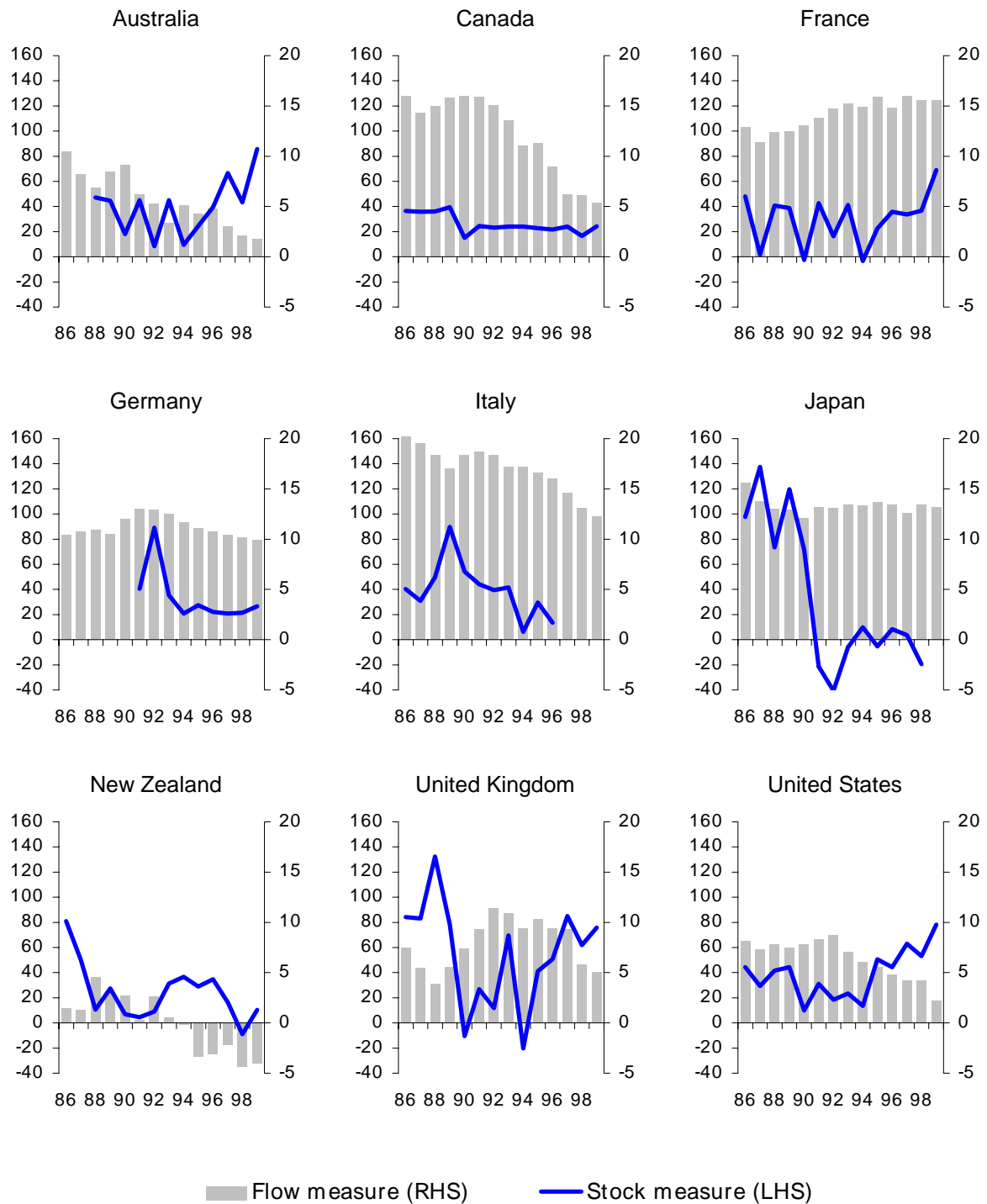
Total household net wealth as a percentage of disposable income generally increased in Australia, Canada, France, Germany, Italy and the United States from the second half of the 1980s to the end of the 1990s (see Figure 10). The ratio of household net wealth to disposable income increased in these countries because households' assets, largely financial assets, rose faster than liabilities (see Figure 11). In Australia and Canada, strong gains in real assets also contributed to the accumulation of total assets. This is in contrast to the United States and France, where financial assets rose at a much faster rate than real assets, at least over the 1990s.

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<sup>15</sup> Data for Australia are from the Reserve Bank of Australia. Data for Canada, France, Germany, Italy, Japan, the United Kingdom and the United States are from the OECD.

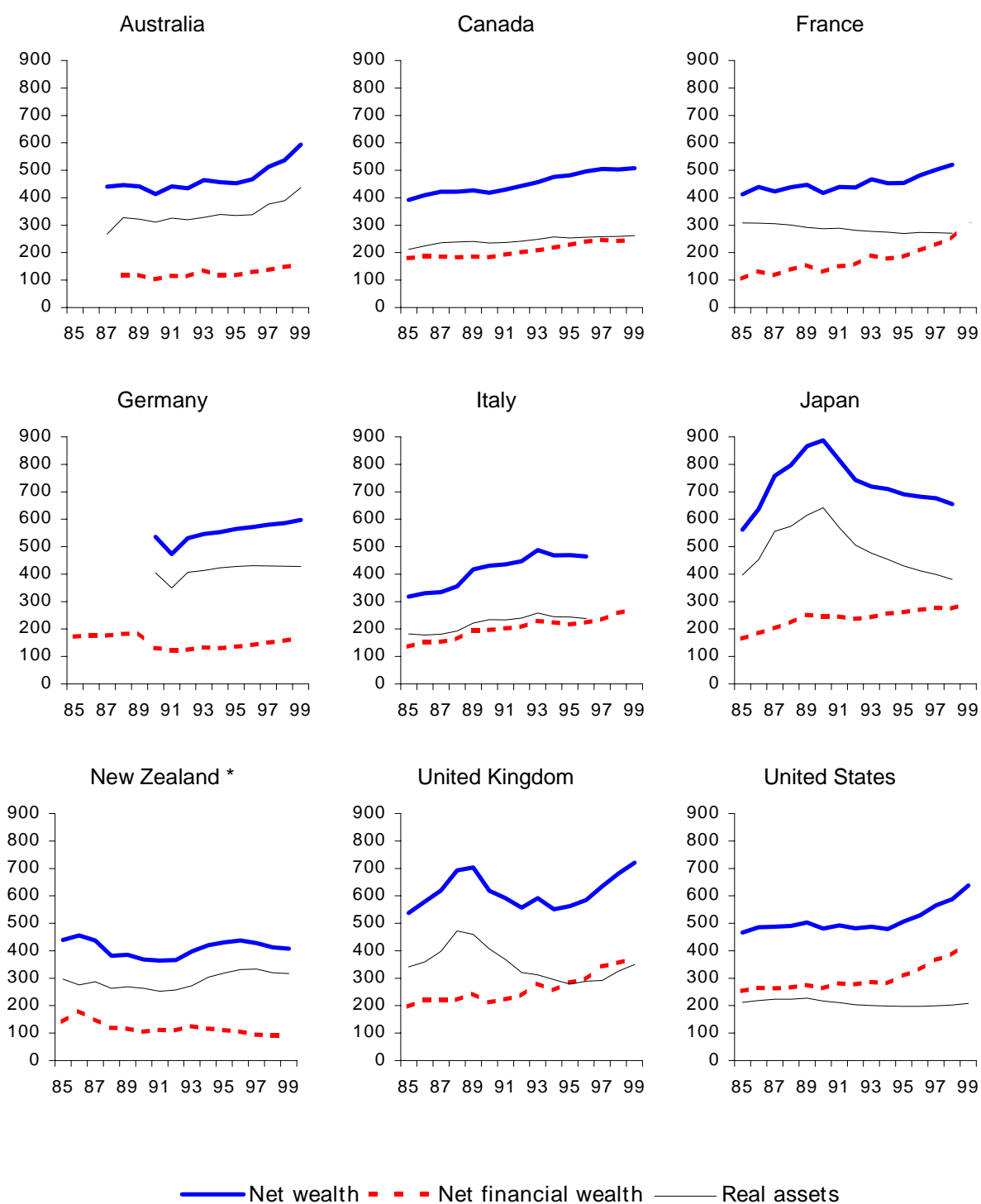
<sup>16</sup> Because of measurement difficulties the focus is on trends rather than levels.

Figure 9: Stock and flow measures of household saving (as a percentage of disposable income)



Source: OECD, Reserve Bank of Australia, Reserve Bank of New Zealand, Statistics New Zealand, Datastream and The Treasury.

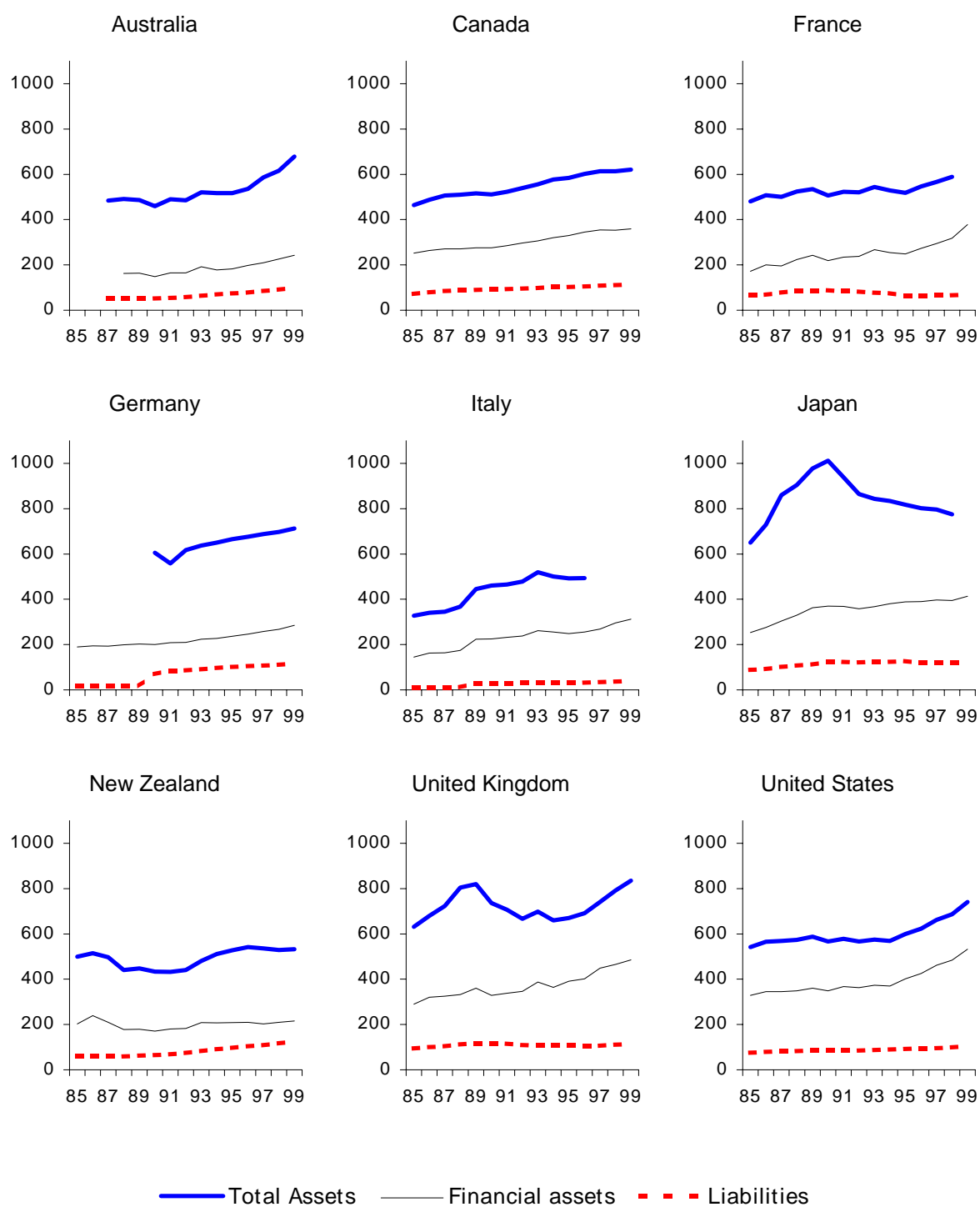
Figure 10: Household total net wealth, financial net wealth and real assets (all expressed as a percentage of disposable income)



Source: OECD, Reserve Bank of Australia, Reserve Bank of New Zealand, Statistics New Zealand and The Treasury.

\* Real assets include housing value only.

Figure 11: Households' total assets, financial assets and liabilities (all expressed as a percentage of disposable income)



Source: OECD, Reserve Bank of Australia, Reserve Bank of New Zealand, Statistics New Zealand and The Treasury.

Notable exceptions to the steadily upward trending ratio of household net wealth to disposable income are Japan, New Zealand and the United Kingdom. In Japan, household net wealth rose strongly over the second half of the 1980s, but then fell sharply during the 1990s. The increase during the 1980s was largely driven by real assets, although financial assets were also a contributing factor. In the second half of the 1980s, housing loans increased massively in Japan as a result of abundant liquidity due to loose monetary policy. However, liabilities rose at a slower rate than assets, leading to an increase in net wealth. The rate of accumulation of liabilities slowed markedly after 1990. The ratio of financial assets to disposable income continued to rise over the 1990s, but real assets dropped sharply, leading to a sharp decline in total household net wealth as a proportion of disposable income.

Household net wealth in the United Kingdom was also subject to large swings. As a percentage of disposable income, household net wealth rose over the second half of the 1980s, fell in the first half of the 1990s and rose strongly again in the latter half of the 1990s. Similar to Japan, the ratios of financial assets and liabilities to disposable income were generally trending upward.

Table 2: Correlation and concordance between total net wealth and real assets<sup>17</sup>

	Correlation statistics	Concordance statistics
Australia	0.63	0.92
Canada	0.75	0.86
France	0.41	0.46
Germany	0.98	0.67
Italy	0.93	0.73
Japan	0.99	1.00
New Zealand	0.61	0.79
United Kingdom	0.87	0.79
United States	0.70	0.71

The large swings in Japan and the United Kingdom and the upward trend in the other countries is in contrast to a fairly stable ratio of household net wealth to disposable income in New Zealand from 1985 to 1999. Over this period, New Zealand's household net wealth as a proportion of disposable income fluctuated around 400 percent. It fell during the period of reforms in the mid-1980s and early 1990s, rising initially somewhat following the end of the economic downturn in 1992. New Zealand's ratio of financial net wealth is also quite different to that in other countries. Whereas financial net wealth as a proportion of disposable income was generally trending upward in other countries, it fell in New Zealand. Financial net wealth has generally been trending downward in New Zealand, largely because of strongly rising debt (liabilities) following the deregulation of financial markets. Moreover, financial assets

<sup>17</sup> The concordance statistic was calculated as follows

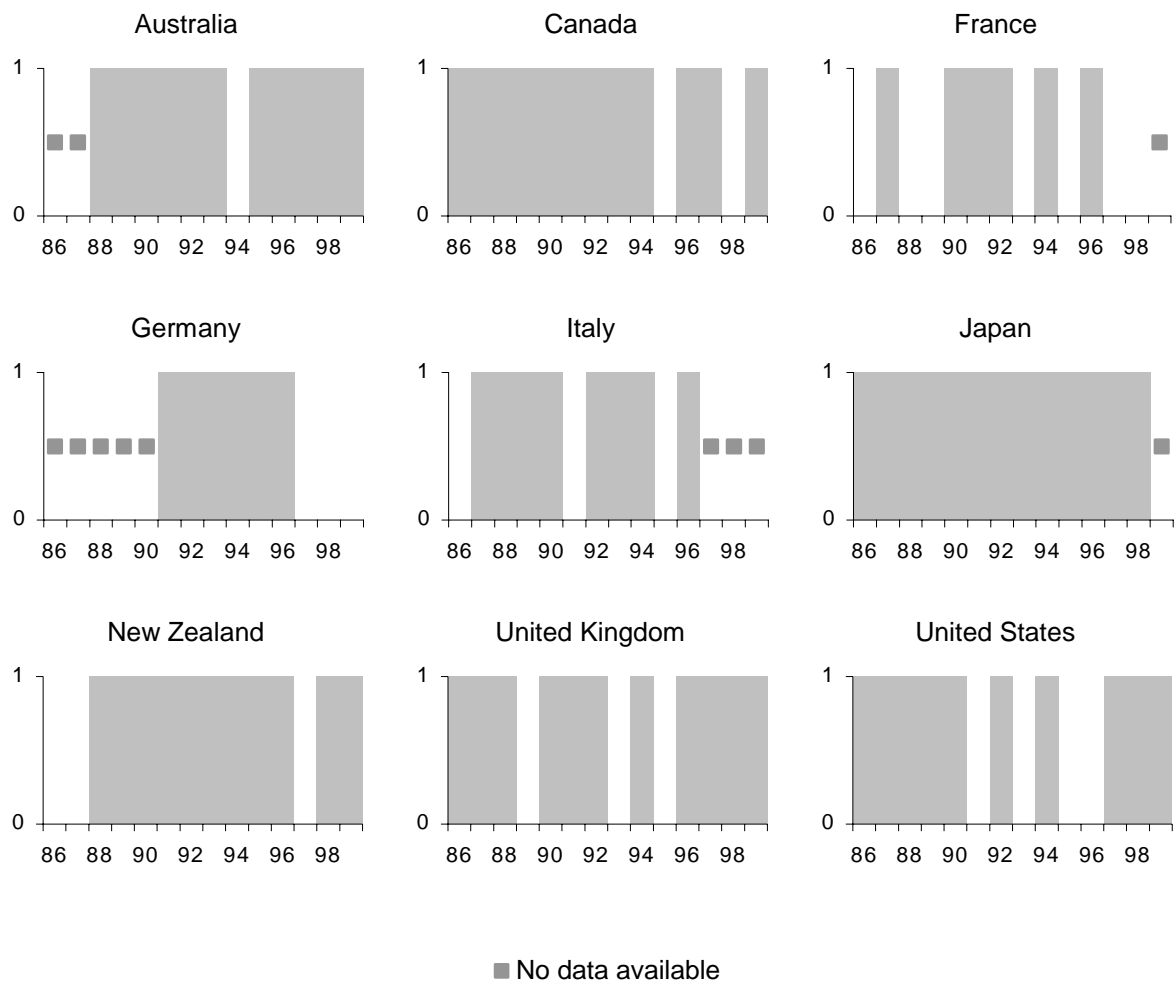
$$C_{ij} = \frac{1}{T} [\sum (S_{nw,t} \cdot S_{ra,t}) + (1 - S_{nw,t}) \cdot (1 - S_{ra,t})],$$

where  $\{S_{nw,t}\}$  is a series equal to one when the change in net wealth is positive and zero when it is negative. The series  $\{S_{ra,t}\}$  is defined in the same way for the change in real assets, and T denotes the sample size.

as a proportion of disposable income fell sharply following the stock market crash in 1987.

Real assets are an important component of household balance sheets. In most countries, movements in total net wealth are largely driven by real assets. Correlation coefficients between total net wealth and real assets vary between 0.41 for France and 0.99 in Japan (see table 2). Concordance statistics, which measure the proportion of time total net wealth and real assets moved in the same direction, range from 0.46 in France to 1.0 for Japan.<sup>18</sup>

Figure 12: Concordance between total net wealth and real assets



Source: OECD, Reserve Bank of Australia, Reserve Bank of New Zealand, Statistics New Zealand and The Treasury.

<sup>18</sup> Correlation coefficients mix amplitude and duration measures and the amplitude of a particular large swing that is common to two series may dominate the covariance of the two series (McDermott and Scott 1999). The concordance statistic proposed by Pagan and Harding (1999) avoids this problem.

Figure 12 graphically depicts the concordance statistics. Areas are shaded for years when real assets and net wealth moved in the same direction, i.e. both increased or both fell. Areas are blank when one series rose while the other fell.

Figure 12 shows that the degree of concordance is largest for Japan. Total net wealth and real assets in Japan moved in the same direction for every year that data are available. In Australia, concordance is also strong. Total net wealth and real assets co-moved in each year apart from 1994. In Canada, they moved in the same direction except for 1995 and 1998, while in New Zealand net wealth and real assets diverged during three years, in 1986, 1987 and 1997. Net wealth and real assets also tended to co-move in the remaining countries, apart from France. In France, the ratio of real assets to disposable income actually fell while total net wealth as a proportion of disposable income rose (see Figure 10).

Real assets, including housing and other tangible assets, are an important component of households' total assets (see Figure 13). Most recent available data suggest that real assets account for about 30 percent of total household assets in the United States, for about 40 percent in Canada and the United Kingdom and around 50 percent in France, Italy and Japan. At around 60 percent, real assets in Australia, Germany and New Zealand make up the largest component of households' total assets.

Apart from Japan, residential property or housing assets form the largest proportion of real assets (see table 3). Housing assets account for between 52 percent in Germany to 85 percent in New Zealand. At 19 percent, Japan is the exception to this picture. Kiernan (2001) estimates that in New Zealand housing assets accounted for about 85 percent in 1999.<sup>19</sup> The proportion of housing in the United Kingdom, at around 80 percent, is also large and suggests that the swings in the ratio of household total net wealth to disposable income, discussed earlier, were largely driven by the housing market.

Table 3: Housing assets as a percentage of real assets in 1998

	Housing assets	Other tangible assets
Australia	82	18
Canada *	79	21
France	82	18
Germany	52	48
Italy	70	30
Japan	19	81
New Zealand **	85	15
United Kingdom	83	17
United States	72	18

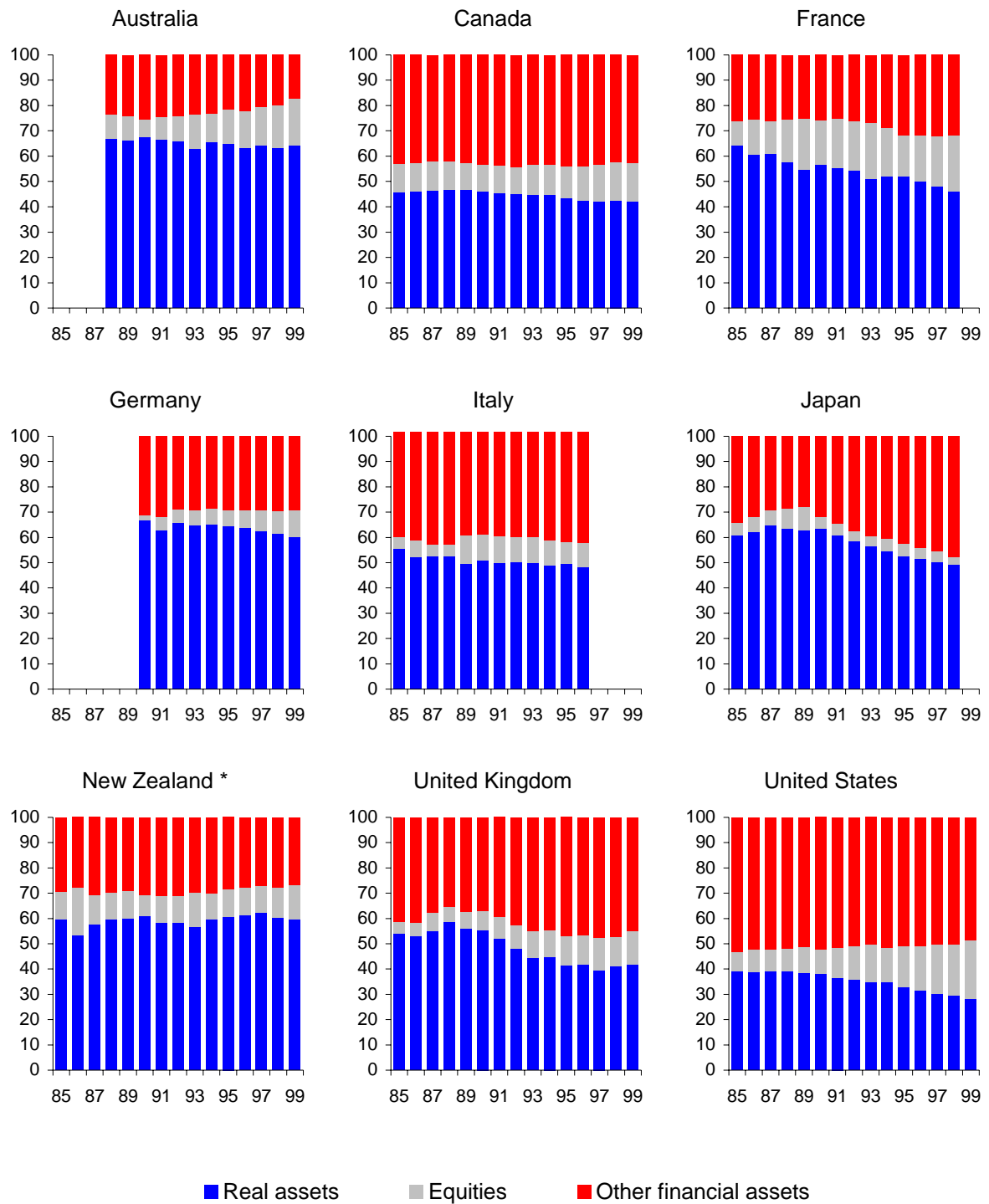
Source: OECD, Australian Department of the Treasury, Statistics Canada, Reserve Bank of New Zealand, Infometrics.

\* 1999. See Statistics Canada (2001).

\*\* Infometrics' estimate.

<sup>19</sup> The Reserve Bank of New Zealand data do not account for other tangible assets.

Figure 13: Composition of household assets



Source: OECD, Reserve Bank of Australia, Reserve Bank of New Zealand, Statistics New Zealand and The Treasury.

\* Real assets include housing value only.



In most countries, the importance of real assets has fallen somewhat relative to financial assets during the 1990s. This is in part because of increases in the relative price of equities. The share of equities rose significantly during the 1990s in the United States, Australia, Canada and the United Kingdom, undoubtedly helped by strong gains in these countries' stock markets. In Germany, the share of equities also increased. But this was, in part, because of a slowing of the housing market following the unification boom and the withdrawal of tax subsidies in the late 1990s.

In New Zealand, the share of real assets has been more volatile than in other countries and it has only been falling over the late 1990s. The share of equities rose slightly over the 1990s, while the share of other financial assets (mainly deposits with deposit-taking institutions and other fixed interest assets) has been falling steadily. The share of other financial assets has also been declining in the United States and Australia (see Figure 13). This is in sharp contrast to Japan, where the share of other financial assets has been growing strongly (at the expense of real assets and equities) following the stock market meltdown in 1990.

## **6 FINANCIAL LIBERALISATION AND HOUSING WEALTH**

Housing is an important component of households' balance sheets, both on the asset side and the liability side. Housing markets across countries differ in part because of variations in regulations of the rental sector, differences in the tax treatment of owner-occupied housing and mortgage debt, and demographic factors. Another important factor is the availability of mortgage debt.

In the regulatory environment prevailing in most countries during the 1970s, financial institutions usually had only limited scope to increase mortgage lending, even if a higher value of assets could have been used to secure loans. Mortgage lending was generally restricted to specialised institutions that were prohibited from engaging in other activities. Direct quantitative limits were imposed on mortgage loans or the funding capacity of these institutions, and the terms and conditions of mortgage lending were quite regulated.

Financial reforms since the 1980s have significantly reduced legislative constraints on institutional lending and therefore household borrowing. By the mid-1980s, financial markets were almost completely freed from interest rate and quantitative controls in Canada, the United States, the United Kingdom, New Zealand and Australia. In some continental European countries and Japan, deregulation has tended to be less comprehensive and slower.

In countries where liberalisation was completed by the mid-1980s, competition in the mortgage market rose quickly as new entrants started competing for market share.

- In Canada, competition in the market for mortgages has been relatively strong since ceilings on interest rates on loans and restrictions on commercial banks' involvement in mortgage financing were abolished in the late 1960s, permitting banks to invest in non-insured mortgages (Freedman 1998).
- In the United States, the reduction of preferential tax treatment in favour of thrifts, the elimination of interest rate ceilings and government measures to

develop secondary markets in mortgage bonds increased competition between banks and thrifts for customers in the early 1980s (OECD 2000).<sup>20</sup>

- In the United Kingdom, banks also entered the mortgage market in the early 1980s as credit controls were lifted and restrictions on mortgage lending for non-housing purchases were abolished (OECD 2000).
- In New Zealand, all interest rate controls and ratio controls on banks were removed by 1985 and limits on foreign ownership in New Zealand financial institutions abolished in 1986 (Evans et al. 1996).
- In Australia, ceilings on interest rates and quantitative bank lending guidance were removed and foreign banks had entered the Australian banking sector by 1986 (Drake 1997 and Nevile 1997).

In Germany, although the financial system was largely liberalised in the early 1970s with the removal of interest rate restrictions, competition on the funding side of the banking sector has remained somewhat distorted. This is largely because public sector financial institutions, which account for a large share of the residential mortgage market, continue to benefit from advantageous financing conditions due to the perception of public guarantees (OECD 2000).

The reform process was less comprehensive and competitive pressures less intense in France and Italy, and in Japan (OECD 2000).

- In France, deregulation allowed commercial banks to compete in the mortgage market after 1987, but restrictions on interest rates remained for longer. Although lending became competitive, funding sources were not and public sector financial intermediaries continue to benefit from significant advantages.
- In Italy, quantitative ceilings on bank loans were abolished in 1983, but re-imposed temporarily in 1986 and 1987. In 1994, important restrictions in the banking sector were removed and all types of credit institutions were allowed to issue mortgage bonds and make long-term loans. Nonetheless, banks are still subject to various procedural and lending restrictions on mortgage activities, limiting their ability to engage in mortgage lending.
- In Japan, interest rate deregulation started in the early 1980s, but restrictions were not completely eliminated until the mid-1990s. Credit controls were gradually lifted in the early 1990s.

The varying degree of financial deregulation has led to differences in housing markets. Levels of owner occupation and the stock of outstanding mortgage debt to household disposable income are markedly different across countries, reflecting differences in the availability of mortgage debt (see table 4). Owner occupation rates and mortgage debt to household disposable income tend to be lower in countries where mortgage markets are less competitive and where other institutional and historical circumstances tend to restrain home ownership (France, Germany, Italy and Japan).

Owner occupation rates vary between around 40 percent in Germany and around 70 percent in Australia and New Zealand. In the United Kingdom, the United States and Italy, about 67 percent of households occupy their own house. Although Italy's owner occupation rate is amongst the highest, its debt to disposable income ratio is low. At 22 percent, Italy has the lowest debt to disposable income ratio followed by France and Japan with 53 percent. New Zealand has the largest stock of mortgage debt to

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<sup>20</sup> Thrifts include saving and loans and saving banks.

household disposable income, at 114 percent, followed by the United Kingdom with 104 percent.

The varying degree of financial deregulation across countries is also reflected in the loan-to-value ratios. In the United Kingdom and the United States, first-time borrowers are able to finance close to 100 percent of the purchase price of homes (Miles 1994). In Australia and New Zealand, home buyers are able to finance up to about 95 percent. In Canada the maximum loan to value ratio must not exceed 95 percent<sup>21</sup>. In contrast, loans in Italy and Germany rarely cover more than 50-60 percent of the value of the house and in Japan, down-payments rates of 40 percent on first-time purchases are usual. In France, loans can only be made up to a maximum of 80 percent if they are eligible for refinancing on the secondary market (Miles 1994).

Table 4: Housing markets

	Owner occupation (percent)	Stock of mortgage debt to household disposable income in 1999 (percent)
Australia	70 (1997-98)	78
Canada	64 (1999)	72
France	54 (1996)	52 *
Germany	41 (1998)	71
Italy	> 67 (1999)	22 **
Japan	60 (1998)	52
New Zealand	70 (1996)	114
United Kingdom	68 (1998)	104
United States	67 (2000)	70

Source: Australian Bureau of Statistics, Statistics Canada, INSEE, Statistisches Bundesamt Deutschland, Istituto Nazionale di Statistica, Japanese Statistics Bureau & Statistics Center, Statistics New Zealand, United Kingdom National Statistics, Datastream, OECD, Reserve Bank of Australia, Reserve Bank of New Zealand and The Treasury.

\* Long-term loans

\*\* Medium- and long-term loans

Finally, another factor that has contributed to higher mortgage debt to disposable income ratios in some countries is the scope for explicit equity withdrawal. Explicit equity withdrawals mean that households can take out loans backed by the collateral of a house for purposes other than a house purchase. In the United Kingdom and the United States, mortgage products, which allow households to consume part of their housing equity, were first offered in the 1980s. In the United States, home equity lines of credit are taken up on a substantial scale. Explicit equity withdrawals are also likely to be important in New Zealand. The tendency in New Zealand for small business loans secured on housing has accelerated in recent years and some banks estimate that possibly between 10 and 20 percent of household loans secured on housing are for business purposes (Thorp and Ung 2000).

<sup>21</sup> See [http://www.cmhc-schl.gc.ca/cgi-cmhc/enfrmsite.pl?target=/hf-fl/en/buying\\_home/2/2sing.html](http://www.cmhc-schl.gc.ca/cgi-cmhc/enfrmsite.pl?target=/hf-fl/en/buying_home/2/2sing.html).

## 7 CONCLUDING REMARKS

This paper examined household net wealth in New Zealand and other OECD countries. It was partly motivated by the limitations in the measurement of saving rates from the National Accounts.<sup>22</sup> The trend in the household saving rate from the National Accounts overall has been downward and negative over the last few years. The implied savings rate from households' balance sheets appears to have shifted to a lower level following the deregulation of financial markets. However, it remains significantly higher than the flow measure. It also follows business cycle fluctuations more closely than the National Accounts measure, in line with consumption smoothing models of saving behaviour.

The flow measure of saving was cumulated in order to construct a proxy measure for household wealth. In recent years the flow measure has been negative, indicating that households were accumulating liabilities at a rate faster than their asset accumulation. The flow measure of saving understates the true household saving rate in part because of the manner in which consumption expenditures are defined. Focussing on changes in household net wealth as a measure of household saving has the advantage that it incorporates expected future earnings through asset prices. However, household net wealth, and hence the stock measure of saving, is also likely to be understated. This is because some loans by households are in effect loans to small businesses and should not appear on households' balance sheets. Moreover, direct investment in forestry and farms and real assets other than housing are not captured in the household net wealth data.

The analysis in this paper showed that the ratio of real assets to disposable income in New Zealand is close to OECD levels. One difference, however, is that households' financial net wealth as a proportion of disposable income has been falling in New Zealand since the late 1980s, whereas it has been rising in other OECD countries.

Residential property is an important component of households' balance sheets, both on the asset side and the liability side. Housing markets differ across countries, in part because of variations in the degree of financial deregulation. The analysis showed that owner occupation and mortgage debt to household disposable income rates tend to be lower in countries where mortgage markets are less competitive than in countries where liberalisation has largely been completed.

The focus in this paper was on household net wealth, including individuals and unincorporated businesses, although it may actually be more accurate to assess private net wealth rather than household net wealth. The trend towards incorporation in many countries over recent years has meant that some of the saving that was previously measured as household saving would now be measured as business sector saving. For these reasons, the Australian Treasury recently constructed a measure of private net wealth that includes household and business net wealth (Department of the

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<sup>22</sup> While New Zealand has data that allows a flow measure of saving to be constructed for a sample of individual households (from the Household Economic Survey), no such data exist for household net wealth. Statistics New Zealand is currently designing and constructing a survey (the Household Savings Survey) to provide estimates of assets and liabilities for a sample of individual households (see <http://www.stats.govt.nz/domino/external/web/Aboutsnz.nsf/htmldocs/Household+Savings+Survey>).

Treasury 2000). Such a measure of private net wealth is currently not available for New Zealand. Its construction and analysis is left for future work.

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