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### Editorial Committee

Michael Reddell (chair), Bernard Hodgetts, Jason Burt.

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Photography by Stephen A'Court.

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## Editor's note

Our final issue of the *Bulletin* for 2011 features three articles.

In the first article Emmanuel de Veirman and Michael Reddell look at consumption spending. More than 80 percent of all the income earned in New Zealand each year is spent on consumption of goods and services, most of that by the private sector. Fluctuations in consumer spending can matter a lot for pressure on resources, one of the main influences on monetary policy decisions. The article outlines some factors that are often thought to influence consumer spending, and takes a preliminary look at the New Zealand data for the last decade in particular. The very large rise in house prices may have had less of an influence on total consumer spending than is often thought.

David Hargreaves and Elizabeth Watson focus on the highly topical issue of financial crises. In particular, they look at some of the international literature on other countries' experiences over past decades and then reflect on New Zealand's vulnerabilities in light of that experience. The literature suggests that, if offshore funding dries up, countries can be particularly vulnerable if their debt (public or private) is denominated in foreign currency or if the

country is part of a fixed exchange rate arrangement. New Zealand, by contrast, has debt that is, in effect, mostly in New Zealand dollars, and has a freely floating exchange rate. In addition, the current account can adjust relatively more quickly when a country is small and largely an exporter of commodities.

In the final article, Richard Dean looks at the new solvency (or capital adequacy) standards the Reserve Bank is putting in place for insurance companies, now that the Reserve Bank is responsible for the regulation and supervision of the insurance sector. Of particular interest, especially in light of the huge insurance claims generated by the Canterbury earthquakes, is the question of how to determine the appropriate amount of capital insurance companies should hold to cover the risk of catastrophic events like earthquakes, to which New Zealand is exposed.

Michael Reddell

For the Editorial Committee



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## ARTICLES

# Towards understanding what and when households spent

*Emmanuel De Veirman and Michael Reddell*

Household spending is typically the largest component of economy activity. This article sets out some ways of thinking about what shapes household consumption decisions and looks at New Zealand's experience over the last decade or so – a period marked by rapid growth in asset prices and debt, and by big swings in economic performance. Large unexpected, but sustained, shifts in incomes appear to have been the biggest influence on total household consumption. Fiscal policy also appears to have played a role. It is less clear that the large increases in asset prices played a substantial role in influencing total household spending.

## 1 Introduction

Just over 80 percent of all the income earned by New Zealanders is consumed in a typical year (about three-quarters of that through goods and services purchased by households directly, and around one quarter of it delivered or undertaken by central and local governments).<sup>1</sup>

In this article, we outline some ways to think about private consumption behaviour, including some reasons why fluctuations in total household consumption, income and assets values might be expected to be related.<sup>2</sup> We look at some factors that are likely to influence long-term (even lifetime) average spending, and others that might affect more substantially the timing of spending. We then take a preliminary look at some data to help shed light on New Zealand consumption behaviour over the last decade – both through the boom years, and subsequently.

Understanding private consumption matters a lot to a central bank. Increased spending, all else equal, tends to put more pressure on resources, raising inflation pressures. In addition, households take spending decisions jointly with decisions about how much to borrow. Big swings in debt, and in asset prices, can matter a lot for financial stability.

## 2 Longer-term influences on aggregate consumption

Economic theory typically posits that the most important single influence on consumer spending (for individuals and for the whole economy) is shifting perceptions of how much purchasing power people will have over long periods of time (for an individual, one can think in terms of a lifetime). The current year's income matters, of course, but annual consumption spending tends to fluctuate less than annual income does (individually and economy-wide).

That approach makes a lot of sense. To a first approximation, what one doesn't have (or expect to have) one can't spend. And most of what people do have they will spend at some point in their lives. Any individual's total expected lifetime resources consists of their current income, the value of their assets (minus their debt), as well as the sum of all their expected future income and any expected appreciation in the net value of their assets. Of course, they can spend based on future income by borrowing today and then repaying the loan when the income comes in. Many people do that to some extent - most obviously, for example, when they take a loan as a student. However, a person cannot spend more than they (or those lending to them) expect that they will ever be able to repay.

Typically, a household will spend more over its lifetime if the resources they expect to have available over a lifetime increase. Resources can increase either because of rising incomes (e.g. wages and salaries or business profits) or

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<sup>1</sup> **And, thus, the (gross) national savings rate has averaged under 20 percent of income. The national savings rate itself can be further broken down into household, business, and government savings rates.**

<sup>2</sup> **For some formal evidence on the economy-wide relation between consumption, income, wealth and debt in New Zealand, see De Veirman and Dunstan (2008, 2010, 2011).**

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from increases in the value of owned assets. The academic literature refers to this influence as a 'wealth effect'.<sup>3</sup>

We look at incomes and asset values separately.

### Wealth effect: actual and expected income

If we want to understand overall consumption behaviour we need to look at overall incomes. Since households ultimately own businesses and, as citizens 'own' government, total national income is likely to influence private spending, not just the income specifically recorded as directly and immediately available to households.

The value of all the income generated in New Zealand each year is measured by Gross Domestic Product (GDP). However, this isn't the same as the incomes of New Zealanders, since some of the income generated here accrues to foreigners, and New Zealanders also earn some income from abroad. The sum of all New Zealanders' income is known as Gross National Income (GNI)<sup>4</sup> and, wherever possible, this is the measure of income used in the rest of this article.

Incomes tend to increase over time. But what happens when incomes increase more than households expected? Typically, households do not immediately spend the extra resources that they have just found out about. In part, that is because they can't be certain how much of the gain is permanent and how much might be temporary. But even if they were confident of being better off, the economics literature typically, and plausibly, assumes that households feel better off when they increase their spending somewhat for every future year rather than spending it all at once (in other words they smooth out their consumption). The standard view is that a typical household's spending increases by about five

dollars a year in response to an increase in lifetime resources of 100 dollars.<sup>5</sup>

None of us has any great certainty about our future real incomes, especially over a lifetime. Circumstances change, shocks happen, and the future is inherently unknowable. What we experience now tends to influence our expectations of the future. Single-year surprises in income probably don't change consumer spending very much, but as those surprises become embedded in expectations about the future, consumer spending is likely to adjust accordingly.

When the economy proves to be surprisingly strong for a prolonged period of time, economic forecasters (and probably ordinary householders) seem to come to assume that much of the improvement will be permanent. And on the other hand, a protracted period of poor economic performance probably also gets factored into households' expectations about their future incomes and how much they can afford to consume.

More generally, De Veirman and Dunstan (2011) find that about 75 percent of all variation in New Zealand household income is permanent, while the remaining 25 percent is temporary. Therefore, if households see that average incomes increase more than expected today, they likely also become more optimistic about their future income prospects.

Of course, many households do not (either consciously or unconsciously) take their future income into account when deciding how much to spend today. Some just behave as 'rule-of-thumb' consumers who purely consume their current income, and others have no capacity to do anything else, living week to week with little or no borrowing capacity. We will discuss borrowing restrictions later in the article.

Patterns in the government's finances may also influence household consumption spending. Typically, households spend a higher proportion of their immediately disposable income when the government's fiscal position is very strong (large surpluses), and a lower proportion when government

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<sup>3</sup> For accessible discussions of theoretical approaches to wealth effects, see Attanasio (1999) and Davis and Palumbo (2001).

<sup>4</sup> In New Zealand, GNI has been consistently less than GDP, because of New Zealand's persistent heavy dependence on foreign debt and equity finance (and, hence, the income flows that need to be paid to foreign lenders and investors). The shorter-term fluctuations in the two series are quite similar.

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<sup>5</sup> Modigliani (1971) found a consumption response of that size. Since then, most economists have treated the size of the response as common knowledge. For instance, the responses in Poterba (2000) are of that order.

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finances are weak (large deficits). Large government deficits are, in some sense, money that the government will need to collect in future from households (or from the businesses they own). Closing a large deficit will tend to dampen for a time the future growth in the resources immediately available to households. And sustained large surpluses have tended to foreshadow some mix of spending increases and tax cuts, increasing expected disposable incomes. This is especially so if the government has a very low level of debt.

Big changes in the government's own consumption spending may also be mirrored partly in offsetting changes in private consumption spending. If the government provides, say, more health or education services directly to households (funded from taxes), households do not need to directly purchase as many of these services themselves (from earned incomes, or from cash transfers from the government). For some purposes, it is going to be more useful to look at total consumption, and for others, to look just at private consumption.

### **Wealth effect: changes in asset values affecting lifetime consumption**

An increase in the real (ie adjusted for general inflation) market value of an asset one owns, increases potential lifetime consumption options.

The implications of an increase in share prices are easy to see. If share prices unexpectedly double, one can easily sell half one's shares and spend the proceeds, and still be just as wealthy as one was before the asset price rose. In principle, the same goes for an increase in the value of a farm or any other business.

The situation is less clear for houses, since a house is not just an asset but also somewhere to live.<sup>6</sup> At an individual level, if real house prices unexpectedly double, many people could, at least in principle, sell their current house and move to a smaller, cheaper one, using the increased wealth to consume

more of everything else. But the story is rather murkier at an economy-wide level. My sale is your purchase.<sup>7</sup>

When house prices increase, the asset wealth of existing homeowners increases. But the cost of acquiring a house also increases for everybody who may ever wish to buy a house. So a rise in house prices does not make the population as a whole materially better off.

For the whole economy, unexpected changes in house prices probably have more of an effect on the distribution of wealth (and consumption possibilities) than on the overall level. The relatively old, who might have been about to downsize, benefit from the windfall, and can spend more than otherwise over the rest of their lives. But the relatively young, coming into the housing market, have to pay the higher cost of housing, and find themselves worse off. A landlord will be rather better off (since he or she can sell the house and put the proceeds in the bank). But tenants will be worse off: many will wish to buy a house in the future and in any case over the longer-term higher house prices will also tend to mean higher rents. Home owners gain at the expense of renters; the relatively old tend to gain at the expense of the relatively young, but the economy's sustainable consumption possibilities don't seem likely to change much at all.

### **Collateral effects – affecting consumption at a point in time**

The redistributions that arise out of big house price changes may well matter, even at a macroeconomic level. Certainly, there appears historically to have been a positive relationship between consumer spending and the value of the housing stock. A variety of factors may explain the apparent relationship. One may be the impact of limitations on how much one can borrow.

Banks are typically reluctant to lend very much unsecured, simply on expectations about someone's future income. Instead, banks typically only lend substantial amounts to the

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<sup>6</sup> In the jargon, we consume 'housing services', the value of which are included in aggregate consumption statistics. The value of housing services is measured using actual market rents for rental properties, and uses imputed rents (the estimated rental value) for owner-occupied houses.

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<sup>7</sup> The situation would be different if houses could readily be sold to, and then rented from, foreign investors. But in most countries, most houses are held by domestic owners, and the share of foreign ownership changes only slowly.

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extent that the household guarantees repayment of a large fraction of the loan by providing collateral: an asset that the bank can seize if the household is not otherwise able to repay the loan. Housing is by far the most common type of collateral that households use. Household borrowing without collateral, for instance, in the form of student debt, credit card debt or consumer credit, accounts for quite a small fraction of borrowing.

When average house prices rise, the value of the collateral homeowners hold tends to increase, which normally means that banks are willing to lend more. In fact, in sustained housing booms banks' lending standards are often somewhat relaxed, further increasing homeowners' access to credit. Of course, this collateral effect applies to other assets too - but for a typical household, a house is the most practical asset to borrow against.<sup>8</sup>

### The collateral effect has a number of implications

In contrast to a pure wealth effect from higher asset values, these collateral effects only affect the timing of consumption: one might expect to see consumption rising more strongly than otherwise during a house price boom, but it will be offset by weaker consumption later (for example, during a period when house prices were flat or falling, in which no additional collateral was coming available).

A significant collateral effect will unambiguously boost household debt – the whole point of the effect is that it involves more borrowing. A wealth effect need not boost total debt – an asset that had increased in price could be sold to facilitate increased consumption, or indeed to retire some debt. In practice, of course one can't readily sell just part of a house (in the way that, say, one can sell part of a share portfolio) so that if people do generally increase their spending based on perceived increases in their housing wealth that would probably involve some of them increasing

their debt for a time. Others will tap other forms of saving to finance the increased consumption.

A collateral effect also implies a stronger response of consumption to changes in current asset wealth than a wealth effect does. Because restrictions on borrowing make it harder for a household to spend out of future income, they weaken the relationship between consumption and expected future resources, but they strengthen the relation between consumption and currently available resources. To put it a different way, if a household that is restricted in terms of how much it can borrow suddenly finds those constraints eased, they might well choose to increase spending quite substantially immediately (perhaps by the whole of the increased amount its bank is willing to lend).

Collateral effects are undoubtedly important for some individual homeowners: if one's house price increases by, say, 20 percent, an individual homeowner with his eye on a new car or overseas holiday may now be able to finance that purchase much more readily and quickly. Quite how much collateral effects can explain behaviour at an economy-wide level is a more open question. Even when house prices are relatively stable, it is typically only borrowers in the first few years of a mortgage who would face tight borrowing constraints – most homeowners have substantial equity in their houses.

Existing homeowners find themselves with additional borrowing capacity when house prices rise, and for some of them that will provide a real increase in immediate consumption possibilities. But for each renter looking to move into the housing market shortly, the increase in house prices also increases the deposit they have to save to enable them to enter the housing market in the first place. (Of course, to the extent that overall lending standards ease in big housing booms, initial deposit requirements may themselves be easing). If collateral effects matter a lot for the whole economy, then in a very big house price boom one might expect see the consumption to current income ratio rise quite a lot.

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<sup>8</sup> There is a large theoretical literature on the collateral effect. See, for instance, Iacoviello (2005) and Kiyotaki, Michaelides and Nikolov (2011). See Coleman (2007) for a model with a collateral effect tailored to New Zealand.



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## Expectations may affect the timing of consumption (inter-temporal substitution effects)

So far, we have focused on the way that unexpected increases in income or asset values relax constraints people face.

But expectations about future changes in asset prices could also affect spending. If households expect asset prices to increase in future, they might choose to hold back spending today, using the increased savings to take advantage of the rising asset values. By saving more today, they will be able to consume even more in the future.

The incentive to switch the timing of spending when expected returns on saving alter could apply to all assets. Interest rate changes work partly through this so-called inter-temporal substitution: an interest rate cut tends to stimulate consumption today because it lowers the return on saving and the cost of borrowing, while an interest rate increase raises the return on saving and, in so doing, dampens current consumption. And when a business judges that the profit opportunities open to it are particularly good, the owners are likely to defer consumption: increasing the share of profits held as retained earnings (business savings) and reinvested in the business.

If asset prices have already increased a lot, and households now expect those prices to go sideways or fall back, then expected returns to savings are lower than they would normally be. In such a situation, households may have a motive to reduce their rate of saving and to consume more today.

Getting a sense of how important these inter-temporal substitution effects are is not easy. For example, one needs a good sense of expected increases in asset prices (and hence expected returns to saving). Good data on that are scarce anywhere.

What data there are tend to suggest that people's expectations of house price inflation in particular often tend to extrapolate from recent experience. When house prices have been rising for a while, they are expected to carry on rising, and when they have been flat or falling for a while, that sort of behaviour is also expected to continue. If that

does describe how households form their (conscious or otherwise) expectations, then an inter-temporal substitution effect would mean that consumption spending would tend to be quite subdued, all else equal, during a house price boom and quite high, as a share of current income, as asset prices were falling.

In practice, we never observe inter-temporal substitution in isolation, but always see it in combination with other influences on consumption. De Veirman and Dunstan (2011) is one attempt to disentangle the wealth effect from the inter-temporal substitution effect.

## Some other shorter-term influences

The exchange rate may also matter in explaining the timing of consumption spending. The exchange rate can depart from its long-run average level (or some sense of longer-term equilibrium) for sustained periods. A persistently high (low) exchange rate tends to lower (raise) the relative price of consumption, since much of what we consume is tradable goods and services. A persistently high exchange rate might raise the real volume of goods and services consumed (people buy more stuff when it is cheaper), even if the total dollar value of consumption as a share of current income did not change much.

There is also some evidence, internationally and locally, that the volume of activity in the housing market (turnover) matters for the timing of consumption. People changing house are more likely to purchase a new lounge suite or white ware at the same time. But this is clearly a timing effect: a purchase of a new lounge suite this year means that, all else equal, one is unlikely to purchase another lounge suite next year.

## 3 Towards making sense of the last decade

The first half of this article has outlined some of the factors we might expect to influence consumption behaviour. These included:

- Fluctuations in actual income

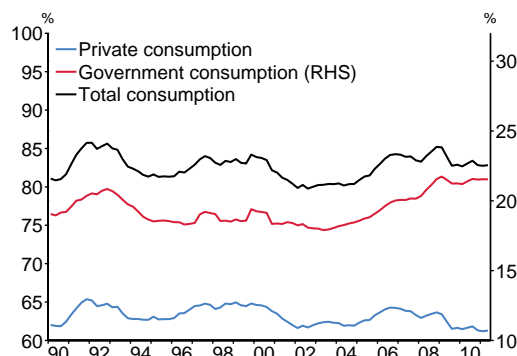
- Fluctuations in expected future income
- Unexpected changes in the value of asset wealth
- The implications of asset price changes for the borrowing capacity of asset owners.
- The impact of changes in expected rates of return (including expected rates of increases in asset prices).

In addition, patterns of behaviour in government spending and the overall fiscal position may influence, in particular, the timing of private consumption. Sustained exchange rate changes may also matter.

So how do we interpret New Zealand's actual consumption experience in the last decade or so, a period which, among other things, featured probably the largest house price boom in New Zealand's history?

Figure 1 shows public consumption, private consumption, and total consumption, each as a percentage of the total gross income of New Zealanders (GNI) since 1990. Our focus is on understanding private consumption, but total consumption<sup>9</sup> also matters when thinking about total pressure on resources.

**Figure 1**  
Consumption as percent of nominal GNI  
(four-quarter moving averages)



Source: Statistics New Zealand and RBNZ calculations.

Some things stand out:

- Private consumption fluctuates over time as a share of GNI, but there is no obvious trend in the series.

- Private consumption to GNI generally tends to be higher in recessions and a bit lower in booms (consistent with the idea that households adjust their spending only slowly and, in effect, smooth through what appear as short-term fluctuations in income).
- Private consumption did not reach new highs, as a share of GNI, in the last decade: the peaks were not out of the ordinary.
- What increase there was in the private consumption share did not come until rather late in the boom years (in other words, it does not look to have been a private consumption-led boom)
- Public consumption as a share of GNI increased very substantially late in the period (indeed, as a share of GNI, it increased by more than the private consumption share did).
- Total consumption as a share of GNI averaged much the same in the 2000s as in the previous decade (and was persistently low for the first half of the 2000s).

A full assessment of what shaped consumption behaviour is hampered by data limitations. We do not, for example, have formal comprehensive data for the relevant period on any of the following items:

- Household medium to long-term income expectations
- Household asset price expectations (including house price expectations)
- Many of the major components of household wealth, including the value of farms and businesses owned directly by households.

Data on household spending patterns through time, broken down by age and by whether the household owns a house or rents, are also limited, especially for the last decade.<sup>11</sup>

Given those limitations, any conclusions that we draw must inevitably be rather tentative, and should stand as an invitation to continuing research work.

<sup>9</sup> Or, alternatively, the difference between income and total consumption, national saving.

<sup>10</sup> By contrast, in the US and the UK the consumption share of income has trended upwards over the last 20-30 years.

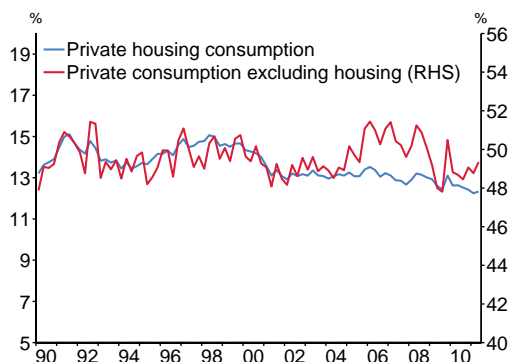
<sup>11</sup> Some results drawing on the data that are available are reported in Smith (2010).

## Housing consumption

Housing itself is, of course, a significant chunk of total consumption. The housing component of consumption is not, however, measuring the cost of purchasing a house, or of building a new house (which both rose very sharply during New Zealand's housing boom). The housing component of consumption instead tries to capture the cost of purchasing housing services: actual rents on rented houses, and an imputed rental value for owner-occupied houses.

Despite the size of the house price boom, rents have been flat to falling in real terms over the last decade. Partly as a result, the housing component of consumption has actually been edging down, and now represents the smallest share of GNI for 20 years

**Figure 2**  
Private housing consumption as percent of nominal Gross National Income (GNI)



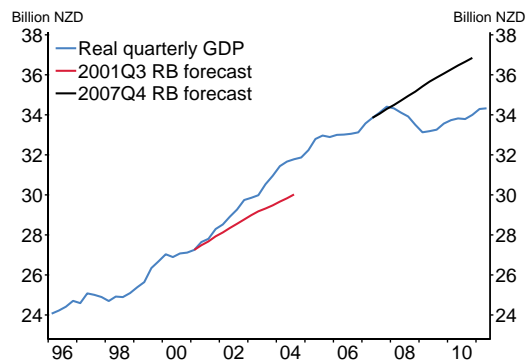
Source: Statistics New Zealand and RBNZ calculations.

## Incomes

Figure 3 is one way of helping to illustrate how surprised people were by the level of income the total economy was generating. The blue line shows actual real GDP.<sup>12</sup> The red line shows the Reserve Bank's forecasts for GDP in the August 2001 *Monetary Policy Statement* while the black line shows the forecasts published in the December 2007 *Monetary Policy Statement*, the last before New Zealand went into recession. In neither case were the Reserve Bank's forecasts particularly unusual. For example, these appear to have been broadly consistent with the expectations of the private sector respondents in the Bank's Survey of Expectations.

<sup>12</sup> We use real GDP for this purpose, mainly for data availability reasons, but also so as not to muddy the picture with unexpected changes in the inflation rate (which don't alter total purchasing power).

**Figure 3**  
GDP surprises



Source: Statistics New Zealand.

Note: Production GDP in billion 1995/96 NZD. Forecasts from *Monetary Policy Statements* issued in 2001Q3 and 2007Q4.

For quite a few years, at least until around 2005, GDP ran well above most expectations. Times were good, unemployment was very low, wage rates were rising. It would not have been at all surprising to see households consuming as if the good times would last. There was no hint, whether from official agencies or private forecasters, that they would not - at worst, forecasters tended to foresee a brief dip in growth rates, but certainly not a reversal of the increased level of income.<sup>13</sup> Quite late in the boom, the unexpected sharp lift in the terms of trade provided an additional boost to incomes.<sup>14</sup>

Since 2008, actual incomes have run well below projections made prior to the recession (and projections for the future incomes have been progressively revised down). Nothing in the Reserve Bank's published forecasts (or in any private forecasts of which we are aware) suggests a return to the pre-recession path for the economy. Once the initial extreme volatility of 2008-09 passed, it looks as though people have started spending on the (implicit or explicit) assumption that future incomes will, in aggregate, be rather lower than they had previously expected. Despite the big swings in perceived incomes, the consumption-to-income ratio didn't change that markedly. People adjusted.

<sup>13</sup> As one illustration, from the start of 2000 to the end of 2005, however strongly the economy performed respondents to the Reserve Bank's Survey of Expectations never expected annual GDP growth two years ahead to drop below 2.4 percent.

<sup>14</sup> Large oil price increases dampen the terms of trade, and also appear to influence spending behaviour in the short term.

## Fiscal policy

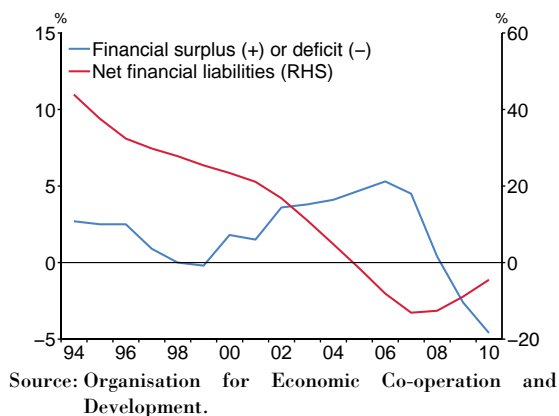
Household consumption as a share of GNI had been quite subdued until around 2005. The large and rising government fiscal surpluses were probably one reason. Rising government surpluses meant that a smaller proportion than usual of national income was directly in the hands of the private sector.

From around the middle of the decade, fiscal policy began to be loosened. Public consumption rose rapidly as a share of income (from its lowest level in decades), and a combination of tax cuts and increases in cash transfers progressively transferred income from the public sector to the private sector. Indeed, in time, the large surpluses switched over to large deficits. Several factors played a part. Discretionary fiscal policy changes were important, but so too was the surprise governments received when national incomes (and the tax base) proved to be much smaller than had been foreseen (and assumed) prior to the recession.

Household consumption as a share of GNI seems to have started rising increasingly strongly only from around 2005 – coinciding with the big shift in direction in fiscal policy and in particular the big increase in cash transfers (and then tax cuts) to the private sector. Apparently as a result, total consumption as a share of GNI rose from around 80 percent as late as 2004 (just after the period of peak house price inflation) to around 84 percent in 2006.

Figure 4

### General government position (as percent of nominal GDP)

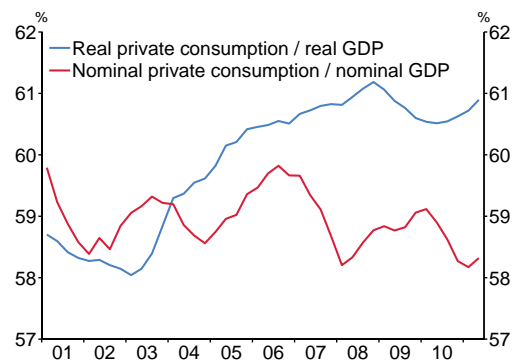


## Exchange rate

On a trade-weighted basis, the exchange rate had been very low (so that the relative price of consumption was quite high) from around 1999 to 2002. By contrast, since around 2004, the exchange rate has averaged higher than at any time for some decades (so that each New Zealand dollar buys more foreign currency and, hence, more foreign goods). It is likely that the high exchange rate, itself arising out of the overall mix of domestic and foreign economic and financial conditions, has made consumption spending relatively more attractive than it otherwise would have been – or than it would have been at the turn of the last decade. This is reflected in the divergence between the real and nominal consumption shares shown in Figure 5.

Figure 5

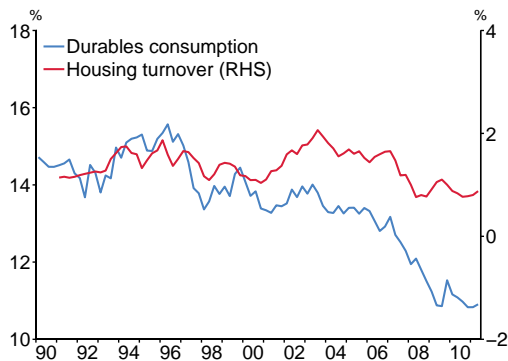
### Consumption to GDP ratios (four-quarter moving averages)



## Assets

The market value of household (net) assets rose very substantially during the period 2002 to 2007. Houses make up the largest chunk of household balance sheets, and the price of houses nearly doubled in that period, one of the larger increases internationally during that period; and one of the most rapid real increases in New Zealand's history. House prices rose fastest in 2003 (which was also when housing market activity and turnover was at its most frenetic) and the bulk of the increase in house prices had occurred by 2005.

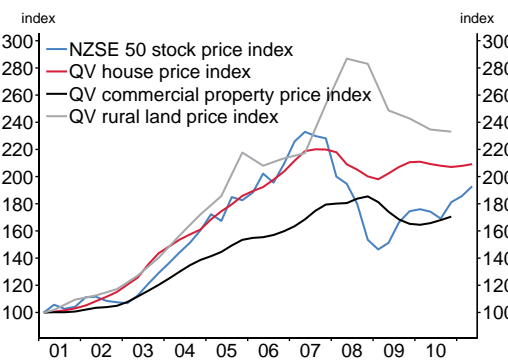
**Figure 6**  
Consumption of durable goods and housing turnover



Source: Real Estate Institute of New Zealand, Statistics New Zealand, RBNZ calculations.

Note: Consumption of durable goods as a percent of GNI. Housing turnover is the number of dwelling sales as a percent of the total number of private dwellings.

**Figure 7**  
Asset prices (2001Q1=100)



Source: Quotable Value Limited, Datastream, Reuters and RBNZ calculations.

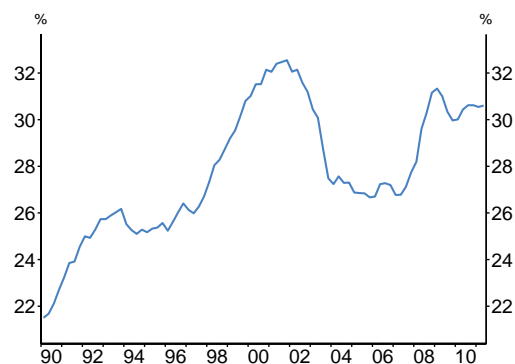
Other real assets (including shares) owned by households also increased materially in value during that period, as illustrated in Figure 7. The increase in farm prices, for example, was even more dramatic than the increase in house prices, and ran on for longer. Even allowing for the rapid increase in the debt of the farm sector over the period (around \$30 billion), the market value of wealth held in the form of farms rose very substantially during the boom years.

The asset boom ended, of course. Farm prices and equity prices (and presumably the values of unlisted businesses for which we do not have any data) are now well below previous peaks. Even in nominal terms, the prices of houses and commercial buildings have, at best, gone sideways.

The increase in house prices increased the value of homeowners' collateral - at least for those homeowners who had bought before the boom was too far advanced. That in turn, increased those homeowners' borrowing capacity. We do not have good formal data on lending standards during the earlier years, but it is fairly clear that bank lending standards eased during the boom years, amplifying the increase in actual borrowing capacity.

Figure 8 shows house mortgage debt as a share of the market value of the housing stock. Household debt indeed increased sharply during the housing boom (by around \$75 billion, and a similar figure for mortgage debt). However, the value of the housing stock increased by around \$335 billion from 2002 to 2007, so there was a large increase in household equity in the housing market. The chart also illustrates how, once house prices peaked, the level of equity began to fall back. There has been no additional collateral freed up (in aggregate) since at least 2007.

**Figure 8**  
Housing leverage (mortgage debt as percent of housing stock)



Source: Statistics New Zealand, Quotable Value Limited, RBNZ calculations.

Household debt tends to rise just because house prices rise. When house prices increase, new entrants to the housing market tend to need to take on larger mortgages to purchase a first house, while those leaving the market or trading down (typically with a high level of equity in the house) capture a windfall that finds its way into a bank deposit.

This phenomenon - new entrants having to take on higher debt to purchase a home from the elderly - is a

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large component of what is known as mortgage equity withdrawal. It happens even if no individual's consumption behaviour changes (higher gross debt for the buyer is simply matched by higher household deposits for the seller). And this passive equity withdrawal can go on for some considerable time even if house prices stop rising because the housing stock turns over relatively slowly. Today's new entrants to the housing market are typically taking on much larger mortgages than new entrants did in 2001, just prior to the boom.

What role, then, did housing or asset-related effects play in explaining consumption behaviour?

Residential investment as a share of GDP rose markedly during the boom years, partly, no doubt, because of unexpectedly rapid population growth, and perhaps partly in response to the increase in existing house prices. Moreover, rising house prices (as distinct from high house prices) tend to be associated with a high level of activity in the housing market, and turnover itself not only generates more consumption (the new lounge suite) but also boosts other significant components of GDP (e.g. real estate agents and lawyers experience a boost in income). In other words, strong activity in the housing market probably contributed directly to the strength of economic activity and income.

That high level of building and housing market activity also put pressure on resources, and was one factor behind the increase in interest rates during the boom years. Higher interest rates will have deterred some consumption that people would otherwise have undertaken. However, the extent of the increase in the OCR in New Zealand was not particularly unusual relative to previous cycles (indeed, short-term interest rates rose less than they did in the smaller mid-1990s cycle).

But how much did the rapid growth in house and farm prices contribute to consumption in aggregate through wealth or collateral effects?

As discussed earlier, increased house prices do not amount to an increase in consumption possibilities for the economy as a whole. However, it is still possible that misperceptions on that score might have played a part.

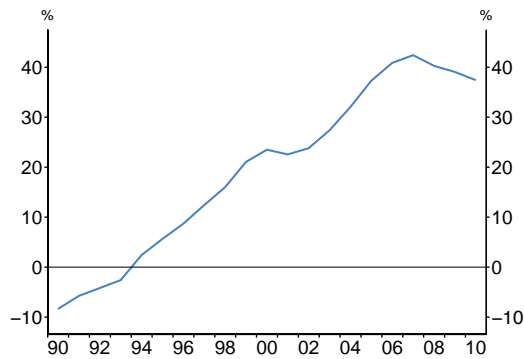
If asset wealth effects boosted consumption, we would have expected to see the consumption of home owners (and especially older home owners) increasing materially faster than the consumption of other groups in the economy. And to the extent that collateral effects were an important explanation of consumption behaviour, we would expect to have seen consumption rising relatively more rapidly for households with large mortgages than for those without. Renting households won't have benefited from the collateral effect, of course. But for the many households with little or no initial debt, the collateral effects will also have been small (since they already had substantial equity before the boom, or will have been accumulating financial assets in addition to an unmortgaged house).

Smith (2010) found some tentative evidence for these sorts of effects, but the data used shed only a limited amount of light on the question. Using macroeconomic data, consumption as a share of income was quite subdued through the period of the most rapid house price inflation, and despite the very large house and farm price boom, consumption as a share of income never reached exceptional levels.

It is likely that higher asset prices (and higher house prices in particular) will have altered the distribution of consumption more than they raised total private consumption. If consumption spending during the boom years was growing quite strongly for all groups, that would be more consistent with actual and expected incomes having been the largest influences on household consumption behaviour.

Sometimes financial data can also shed light on these questions. If house prices had directly influenced total private consumption (and especially if the collateral effect was important), we might also have expected to see net household debt (relative to income) rising faster than usual during such a large house price boom. Slightly surprisingly, in the New Zealand data there is no sign of that. Household debt net of deposits had been rising for decades, but showed no sign of rising at a faster rate in the last decade than it did in the previous decade.

Figure 9  
Net household debt to income



Source: Statistics New Zealand, RBNZ calculations.

Note: December net household debt (gross debt less fixed income assets) as a percent of immediately following March year annual GNI.

### Asset price expectations

Asset price expectations may have influenced consumer behaviour (recall the inter-temporal substitution effect). Unfortunately, we do not have good consistent data for house or farm price expectations over time.

From contemporary evidence, however, it is clear that the initial rise in house prices from 2002 was largely unexpected. There is also little sign that anyone participating in the market expected any reversal in the level of house prices once the boom got going – if anything, interest in ownership of investment properties seemed to increase as the boom went on. Expectations appear to have become much more subdued only once the boom itself subsided. In the new Reserve Bank household survey, the median respondent expects no change in house prices over the coming year. And the ANZ/Property Investors' Federation 2011 survey recently showed that even property investors expect modest falls in real house prices over the next five years.

There is also little to suggest that the farm price boom was expected before it began. However, the behaviour of borrowers – rapidly increasing farm debt and bidding up prices ever further – suggested that for a time at least expectations of continuing farm price inflation became quite established.

These sorts of expectations patterns, if accurately described, may be part of the explanation as to why consumption (as a share of income) was very subdued in the early years of the housing boom and why it is higher than average at present.

## 3 Conclusion

This article has outlined a framework for thinking about what might explain aggregate consumer spending behaviour. In New Zealand over the last decade, changes in actual and expected income (private and national) seem likely to have been the most important influences. The economy remained stronger than expected for much longer than expected, and, since the recession, has similarly surprised on the downside. Fluctuations in fiscal policy also appear to have been part of the story, materially boosting consumption towards the end of the boom years.

New Zealand asset prices rose substantially until around 2007. Since then, they have mostly fallen in real terms. Asset price swings have often been regarded as an important part of the consumption (and savings) story in New Zealand. However as consumption as a share of income did nothing very unusual during an unprecedented housing boom, it is not obvious that there is a large role for house prices to play in explaining consumption behaviour during the period. But there are always conflicting forces at work and further research will continue to shed light on what shaped New Zealand household behaviour over the last decade. Cross-country perspectives should also add value in interpreting the New Zealand experience. The unresolved questions matter not just for understanding recent history, but also for thinking about how the economy might behave in future asset booms (or busts).

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# Sudden stops, external debt and the exchange rate

David Hargreaves and Elizabeth Watson<sup>1</sup>

New Zealand has accumulated substantial liabilities against the rest of the world reflecting persistent current account deficits over the past 30 years. International evidence suggests that when international creditors become unwilling to continue to fund a country's external liabilities (a situation known as a 'sudden stop'), the consequences for an economy can be severe. Adjustment has tended to be more painful and disruptive for countries where debt is foreign currency denominated, or in those without an independently floating national currency. This article argues that a disruption to New Zealand's access to external funding could be less disruptive due to the country's freely-floating exchange rate and the fact that the external debt is, in effect, denominated primarily in New Zealand dollars (NZD). The nature of New Zealand's exports suggests that an exchange rate depreciation would help to adjust New Zealand's trade balance relatively rapidly, which would assist in placing the country's net foreign liabilities on a more sustainable path and rebuilding market confidence in New Zealand investments.

## Introduction

New Zealand has run current account deficits for most of the last 30 years, and its net liabilities to the rest of the world are substantial by international standards, at around 75 percent of annual national income. If international creditors became unwilling to continue to fund these liabilities, the New Zealand economy would need to shift, perhaps rapidly, from net borrowing to making net repayments – a situation sometimes described as a 'sudden stop'.

Sudden stops have been very disruptive for other economies over the years, and so it seems plausible that one would be for New Zealand as well. However, many disruptive current account reversals have been in economies with an external debt denominated in foreign currency, or in a local currency that is tightly pegged to a foreign currency or other asset class like gold. The key message of this article is that the way adjustment would happen for a country with a floating exchange rate and debt that is effectively denominated in the local currency (like New Zealand<sup>2</sup>) is likely to be quite different. We suggest that the advantages of this configuration are not always emphasised appropriately, which

may be because the arrangement is relatively uncommon: most countries that have borrowed in international markets either face substantial foreign currency mismatch (e.g. Latvia or Thailand pre-Asian crisis) or have a fixed exchange rate or currency union that limits domestic monetary autonomy (e.g. Argentina in the currency board period, or Greece and Ireland since the adoption of the euro).

Section 1 presents evidence regarding the impact of current account reversals on industrial countries and the occurrence of sovereign default, particularly when debt is domestically denominated. Section 2 considers the different global financial crisis experiences of countries with national currency debt (such as the US and UK) compared to countries with debt in a foreign or union currency. Section 3 considers what would happen to New Zealand in a scenario where foreign investors became increasingly unwilling to take NZD risk.

## 1 Current account reversals in advanced economies: historical evidence

Goldstein and Turner (2004) describe evidence that 'currency mismatches' – the situation when foreign-denominated debt is large relative to the domestic resources available to repay it and domestic residents are not adequately hedged against a change in the exchange rate – make financial crises more likely and increase their seriousness. If debt is denominated in foreign currency and a crisis puts downward

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<sup>1</sup> Thanks to our team and Bernard Hodgetts, Anella Munro, Michael Reddell and Daan Steenkamp for helpful comments.

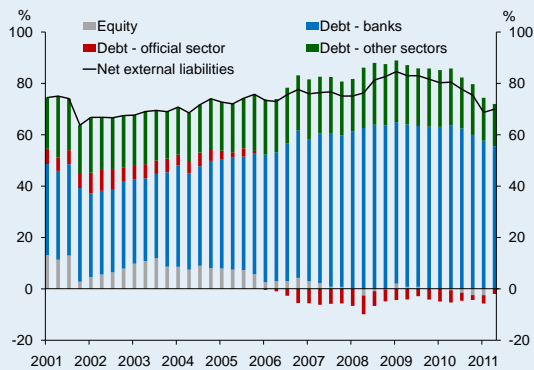
<sup>2</sup> While not all of New Zealand's debt is strictly denominated in local currency, almost all of the remaining foreign currency debt is hedged by New Zealand banks, which translates into New Zealand's foreign currency liabilities being effectively domestically denominated – for more on New Zealand's external debt and this hedging arrangement, see Box 1.

## Box 1

### New Zealand's external debt

New Zealand's net international investment position has been negative and persistently large in recent years.<sup>3</sup> A decomposition of New Zealand's net external liabilities is given in figure 1. A large portion of New Zealand's liabilities is debt, rather than equity, and a substantial portion of that is bank borrowing.

**Figure 1**  
New Zealand's net external liabilities  
(percent of GDP)



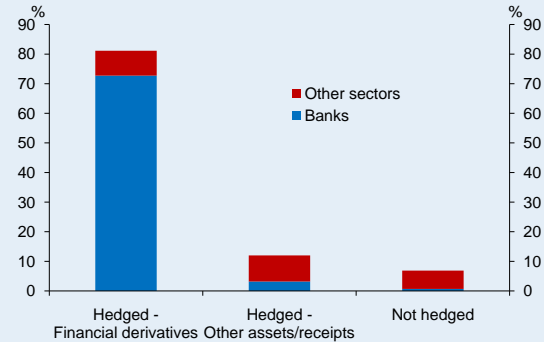
Source: Statistics New Zealand.

Note: Official sector includes general government and the Reserve Bank.

A significant amount of the liabilities of New Zealand entities is domestically denominated. As at 31 March 2011, approximately 52 percent of New Zealand's international liabilities were denominated in foreign currency. Most of the exchange rate risk associated with foreign denominated debt is hedged with financial derivatives or against other assets or receipts (figure 2).

**Figure 2**

### New Zealand's foreign currency-denominated debt hedging arrangements (as at 31 March 2011)



Source: Statistics New Zealand.

Hedges are often provided by non-resident borrowers, who require foreign currency funding, but are able to obtain this cost-effectively by issuing NZD denominated bonds to foreign investors and then swapping the NZD funding for foreign currency funding raised by New Zealand banks.<sup>4</sup> The New Zealand bank debt is therefore essentially 'domestically' denominated in that it is free from currency risk. In the case of an exchange rate depreciation (perhaps due to a sudden stop in capital flows), the rollover requirement in foreign currency terms will be lower, while the value of required repayments in domestic currency terms will remain constant. Furthermore, as in Australia – see Debelle (2011) – the New Zealand banks do not conduct significant amounts of offshore foreign currency lending, which inherently requires foreign currency funding.

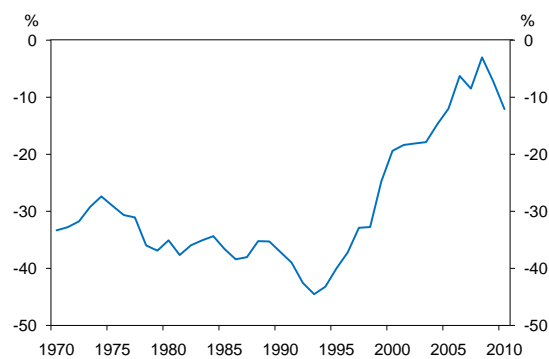
<sup>3</sup> Figure 4 shows New Zealand's external debt is relatively high in comparison to other advanced economies, though no longer an international outlier.

<sup>4</sup> For more on the typical hedging arrangements for foreign currency borrowing by the New Zealand banks see Drage *et al* (2005).

pressure on the domestic currency, the debt will balloon relative to GDP. As a consequence, when a fixed or managed exchange rate is in place, borrowers may be more likely to borrow in foreign currency, since they perceive less exchange rate risk. For these reasons, Goldstein and Turner advocate much more active management of currency mismatches in emerging economies for both public and private sector debt. Moreover, they assess that debtor nations with domestically denominated debt, like Australia and New Zealand, are at less risk of financial crisis because a fall in the exchange rate will not alter the burden of debt in domestic currency terms, but can reduce the value of its debt in foreign currency terms. See box 1 for a decomposition of New Zealand's external debt.

Empirical studies of current account adjustments in industrial countries since the 1970s confirm they are typically relatively orderly. Croke, Kamin and Leduc (2005) show industrial country current account reversals have not been associated with weak macroeconomic performance in the same way as reversals in many emerging economies. Instead, another study by Freund (2005) finds that current account dynamics in industrial countries, including large and growing deficits and subsequent reversals, have been largely a symptom of the business cycle. Certain other countries have run prolonged deficits but then achieved rebalancing without severe disruption (e.g. Canada over the past 15 years – see figure 3 below). On the other hand, the orderly history of debt under floating currencies may reflect the relatively short period most countries have actually had floating currencies.

**Figure 3**  
**Canadian net international investment position**  
*(ratio to GDP)*



Source: Haver Analytics.

It is also rare to find historical examples of countries that have had an external borrowing position in domestic currency as large as New Zealand's today.

Exchange rates often fall during current account reversals in industrial countries, but that will not push up the local currency value of domestically denominated debt. Gagnon (2005) identified 'currency crashes' in industrial countries since 1985 and found they tended to be associated with falling bond yields and reasonably strong equity prices, which would be atypical in an emerging market sudden stop.

It is also worth noting that the 'crashes' Gagnon uses are generally not particularly large,<sup>5</sup> suggesting that it is rare for investor unease to cause a severe currency crash in an industrial country with local currency debt. This may be an artefact of the 1985-2008 period, but it is plausible that a falling currency naturally tends to restore growth prospects and investor confidence if debt is locally denominated. New Zealand is an interesting data point for Gagnon, as our 1984 'crash' looked relatively disorderly, while the 1997 'crash' was much less so (see Gagnon's footnote 26). This may be partly attributable to the fact that, in 1984, New Zealand had substantial foreign-denominated public debt, which was totally repaid by 1996, and that New Zealand switched to a floating exchange rate regime in 1985.

Until recent years, sovereign debt has been the key component of external debt for many countries, and the greater manageability of local currency debt is also apparent in historical evidence on sovereign default. While Reinhart and Rogoff (2008) note that local currency sovereign debt default is more common than people typically think, they do not find examples of industrial country defaults after 1970, and this remains the case in the updated Reinhart and Sbrancia (2011) dataset.<sup>6</sup> The industrial country defaults reported after the 1880s by these authors were concentrated around the 1930s and 1940s, with some occurring amidst the economic upheaval following World

<sup>5</sup> His criteria is that the exchange rate has to fall by at least 20 percent cumulatively over two years, while 8 percent of the fall must occur in the first year (using annual average data).

<sup>6</sup> Recently, some industrial countries within the euro area have experienced problems with sovereign debt, discussed in the next section.

War II (in Japan, Germany and Austria). Prior to 1970, countries were frequently running currency pegs linked to gold (or another currency), which would have reduced the extent to which capital flight could have been dealt with via a falling currency, although exchange rate adjustments were sometimes part of macroeconomic stabilisation. Reinhart and Sbrancia suggest excessive debt burdens were also managed in the post war period (up to around 1980) via the imposition of capital controls and other financial regulations that helped governments borrow from domestic residents at low or negative real interest rates. These measures helped government debt fall to low levels in most countries by the 1970s.

The only example we are aware of where a country with a float and largely domestically denominated debt had disruptive external financing difficulties is Britain (1976). Britain had spent a long period seeking to avoid sterling depreciation while sterling reserves globally gradually wound down. Britain ultimately needed IMF support in 1976, as a number of bilateral swap lines expired (these had been used to borrow foreign currency to repay countries looking to diversify away from sterling reserves – see Schenk (2009)).<sup>7</sup> Britain could presumably have allowed the pound to float and find a market clearing level rather than borrow foreign currency, but this sort of variability in exchange rates may have seemed unacceptable. Notably, sterling had only floated since 1971 and the idea of maintaining price stability via independent monetary policy would have seemed more difficult then. Thus this example differs in important respects from circumstances today.

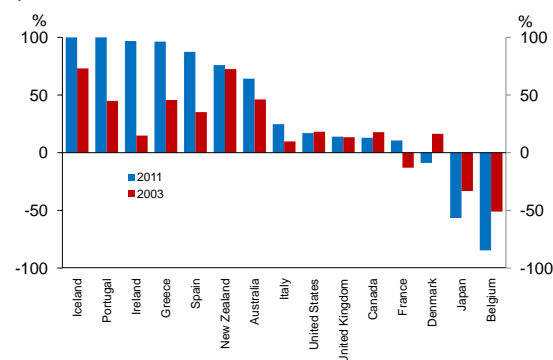
Overall, there is reason to think that a flexible exchange rate and domestically denominated debt can be important factors in mitigating the risk of a disorderly current account reversal and altering the character of any adjustment that does occur. It is difficult to find an example of a country with those two factors experiencing a current account reversal that looks like it was caused by a withdrawal of international funding and rising bond yields. Furthermore, although historical evidence shows that local currency sovereign

debt default is more common than generally assumed, the Reinhart and Sbrancia (2011) dataset suggests industrial countries have not defaulted on local currency sovereign debt in the last 25 years, the period where flexible exchange rates have become more common.

## 2 Current account reversals and the global financial crisis

A number of economies ran substantial current account deficits in the years leading up to the global financial crisis, leading in some cases to substantial increases in net foreign liabilities relative to GDP (figure 4). Amongst ‘advanced’ economies, the largest increases in net foreign liabilities were in European countries that had adopted the euro, including Ireland, Portugal, Greece and Spain, as well as Iceland (not graphed). Some emerging European economies, including Latvia and Hungary, also accumulated substantial liabilities.

Figure 4  
Net international investment positions of selected countries, 2003 and 2011 (percent of GDP)



Source: International Monetary Fund.

The seven economies noted above have all experienced difficulties adjusting in the wake of the global financial crisis as investors have questioned the sustainability of the debt accumulated in prior years. In some cases, the problems have primarily begun in the banking system (e.g. Ireland) while in other cases (e.g. Greece) the debt problems began with sovereign borrowing. Both of these examples are within

<sup>7</sup> Schenk and Singleton (2007) is also an interesting New Zealand case study of the support mechanisms used to slow this diversification.

the euro, constraining the domestic central bank's ability to support the government or banking system.

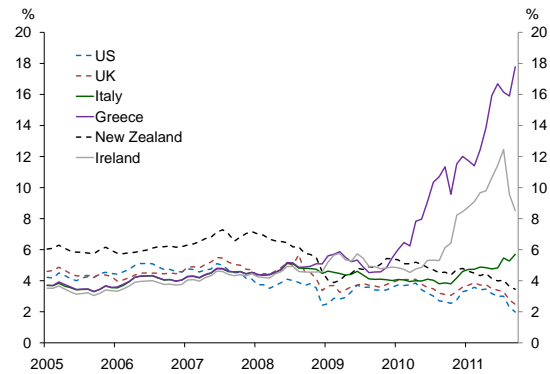
Outside of the euro area, some countries noted (including Hungary and Latvia) have had some difficulties related to lending to domestic households and firms in foreign currency. The banks in those countries can fund this lending by borrowing in international funding markets, and may appear to be hedged because their assets (loans) are also in the same foreign currency. However, if the local currency declines in value relative to the currency the loans are funded in, domestic borrowers may have difficulty repaying their loans, and the banks then have a partially unhedged foreign currency liability.

Other economies, notably the US, ran substantial current account deficits since the 1990s but did not accumulate a substantial stock of net foreign liabilities. This appeared to reflect revaluation effects, with outward investment from the US tending to appreciate in value faster than investments made by foreigners in the US.

At any rate, the US current account deficits were still seen as unsustainable by many commentators, including Mann (2002), Cline (2005), and Obstfeld and Rogoff (2004). This is prescient in light of the global financial crisis, although not everything has gone as predicted. For example, commentators including Roubini and Setser (2004) suggested that US current account reversal would be likely to involve a surge in interest rates and consequent crowding out of investment. At the time of writing, the US current account has shrunk although there is debate about how sustainable that will prove,<sup>8</sup> and the adjustment seems best characterised as being led from the trade side rather than forced by creditors. While the USD has depreciated, the global flight to quality has kept demand for US government debt strong (assisted to some degree by quantitative easing from the Federal Reserve), so that US interest rates have fallen. This has broadly also been true for the UK. Figure 5 shows the evolution of New Zealand, US and UK long term

interest rates compared to those of selected countries with debt problems within the euro area.<sup>9</sup>

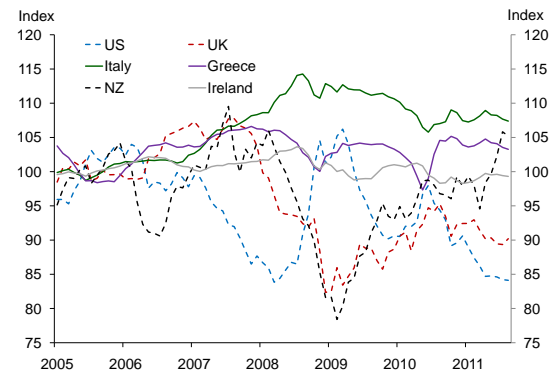
**Figure 5**  
**Government bond yields**



Source: IMF International Financial Statistics.

Figure 6 shows the real effective exchange rates of the same country sample. The New Zealand, US and UK exchange rates fell rapidly at times during the global financial crisis. The US and UK exchange rates remain low, while New Zealand's has recovered as the relative strength of the New Zealand and Australian economies has become evident. Despite significant economic difficulties, the real effective exchange rates of Ireland, Italy and Greece are not able to depreciate quickly or substantially since their nominal exchange rate is fixed through currency union with many of their key trading partners.

**Figure 6**  
**Real effective exchange rates**



Source: IMF International Financial Statistics

<sup>8</sup> For example, Feldstein (2011) has suggested that current account imbalances will continue to ebb away, while Gagnon (2011) argues that current account imbalances are likely to widen again.

<sup>9</sup> Countries with their own currency and substantial foreign currency-denominated debt have generally had more favourable trends in domestic borrowing rates recently. To some degree, this reflects write-downs imposed on foreign currency lending within their banking systems (in the case of Latvia, Iceland, and Hungary), which have reduced net external liabilities.

Table 1

Current account reversals in emerging and advanced economies

	Emerging economies	Advanced economies
Debt in foreign currency or union currency.	This has commonly led to crises, sometimes severe (e.g. Indonesia, Argentina).	This has led to crises/reversals, particularly recently (e.g. Iceland, Ireland).
Debt in local currency with domestic central bank.	Examples of this are rare.	These reversals do not seem to lead to defaults or economic crisis.

A falling currency boosts a country's competitiveness after a negative shock, facilitating repayment of local currency debt.<sup>10</sup> Conversely, structures where debt burdens become more onerous as a country's perceived economic prospects decline (because bond rates spike, and/or the debt is denominated in a rising foreign currency) are inherently riskier (Pettis, 2003). De Grauwe (2011) describes how euro area debt burdens are currently proving inherently fragile with investor unease pushing up funding costs for some countries. This fragility is not typically highlighted when considering the costs and benefits of small countries entering a currency union,<sup>11</sup> but seems a relevant consideration. The points made by Goldstein and Turner (2004) about monitoring foreign currency mismatch are also highlighted by the contrasting experiences of recent years.

If creditor interest in holding US assets did wane, US long-term interest rates might rise to some degree, but it seems likely a key impact would be an even lower value for the USD. Rather than being a 'crisis' as some commentators have anticipated, Krugman (2011) recently suggested that this would be desirable: "if the Chinese, in a huff, stopped buying Treasuries they would be doing us a favour". While there are important differences between the New Zealand and US situations, the essential point we want to make in the next section is similar – that severely reduced demand for NZD denominated debt would be manageable for the New Zealand economy because the fall in the NZD would act to stabilise the situation.

Reflecting the above discussion, our stylised interpretation of the evidence on current account reversals in emerging and advanced economies is summarised in table 1.

### 3 Possible scenarios for New Zealand adjustment

The New Zealand current account deficit has seen significant correction over the past three years on the back of weak domestic demand, a high terms of trade, and other factors including declining profits earned domestically by international investors. Furthermore, the NZD continues to appear overvalued (Cline & Williamson, 2010), and a sustained fall in the NZD would likely facilitate further current account adjustment.

Obstfeld and Rogoff (2004) have argued that real exchange rate depreciation would not be a particularly effective way to reduce the US current account deficit. But their arguments do not appear to apply to a country like New Zealand. Edwards (2004) finds that an economy's openness and level of trade is the major factor affecting the size of the adjustment required of the real effective exchange rate. On average, current account adjustments in countries with large traded goods sectors like New Zealand are characterised by smaller real effective exchange rate depreciations and less substantial falls in growth. As described in Brook and Hargreaves (2000), New Zealand's trade balance is also likely to be relatively sensitive to exchange rate changes because many New Zealand exports are commodities, where prices are determined by world markets and producers must

<sup>10</sup> Because the US economy has substantial (foreign denominated) offshore assets, but mainly locally denominated debt, their net external debt actually 'automatically' falls as the value of the US dollar declines - see Tille (2003).

<sup>11</sup> For example, see Hargreaves and McDermott (1999) or Murray (1999).

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accept the prevailing foreign currency price.<sup>12</sup> In contrast, large country exporters are typically assumed to price exports in their own currency (and thus do not reap windfall gains as their local currency falls). In a cross-country study, Bussière and Peltonen (2008) find evidence consistent with these theories – specifically that the local currency price of exports is particularly responsive to the exchange rate for New Zealand and many other small open economies, but relatively unresponsive for most larger advanced economies.

As described in box 1, borrowing by the New Zealand government and banking system from offshore is either conducted in local currency or routinely hedged into local currency. This allows the exchange rate to act as an effective shock absorber without causing the local currency value of debt to rise.

Given these conditions, the general mechanics we would expect in a severe funding crisis for the New Zealand economy would be as follows:<sup>13</sup>

### Initial shock prompts liquidity support; sharp fall in NZD

- The crisis is either caused by a fundamental solvency issue (e.g. a collapse in dairy prices threatening the farm sector with flow-on effects to the banking system) or purely driven by panic in global funding markets. If the former, it would be necessary to return the banking system to a sound position – potentially via some combination of support from existing shareholders, government support and Open Bank Resolution. Our

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<sup>12</sup> New Zealand's small size means that any increased export supply stimulated by rising NZD prices will not be sufficient to greatly affect the globally set foreign currency price. Even in the global dairy industry, where New Zealand accounts for a significant amount of world exports, we account for a fairly small proportion of global production.

<sup>13</sup> If New Zealand's trading partners were also affected, the extent that the NZD could depreciate may be limited. In this case, there would be greater risk of a more significant crisis, where tightening of borrowing constraints could lead to a debt-deflation spiral. However, because the NZD is a particularly risk sensitive currency, it might still depreciate materially against other key currencies, even if other global economies are weak and funding conditions are difficult.

focus here is how the liquidity dimensions of the crisis would play out.

- We assume the Reserve Bank would provide liquidity to the banks, and that as banks switched to obtaining funding from the Reserve Bank, they would repay their foreign creditors.
- The institutions that were borrowing NZD from offshore investors – often Kauri or Eurokiwi issuers – would settle their swap contracts with the New Zealand banks and pass NZD to their underlying offshore investors.
- These investors are only able to exit their NZD exposure at spot exchange rates (by finding a willing buyer). Given that financial markets are trying to avoid providing NZD funding, the spot exchange rate will potentially weaken considerably (perhaps falling substantially further and faster than in 2008). As the currency falls, it will ultimately be seen as a buying opportunity, prompting some NZD purchasing from international investors and domestic investors with foreign currency assets.

### Currency decline drives sharp rebalancing, net international investment position improves

- A very weak NZD would pass through fairly quickly into import prices here, creating a temporary bout of CPI inflation and reduced import demand. For example, we would be using less petrol and importing fewer and cheaper cars. Because New Zealand's trade balance is particularly responsive to the exchange rate, this would fairly quickly push the trade balance into surplus. The investment income balance would also shrink given domestic economic weakness.
- While there would be considerable economic and financial disruption, particularly in sectors reliant on imports such as retail, export industries would be earning record NZD returns.<sup>14</sup> This would help to hold up tax receipts and activity, though both would likely be quite weak.

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<sup>14</sup> There may be some tendency for the world price of NZ exports to fall as the NZD weakens – Kindleberger (1934) suggested such an effect was observable in butter prices then – but it seems unlikely this would be sufficient to significantly erode export returns.

- In terms of the net international investment position, the NZD value of New Zealand's foreign-denominated assets would rise substantially, while the NZD value of foreign equity assets in New Zealand would tend to fall. New Zealand households' foreign assets are low in official statistics, but believed to be poorly measured. These effects would reduce the net foreign liability position substantially.
- If the funding crisis were prolonged, these effects (reduced net foreign liabilities in NZD terms, nominal GDP rising via inflation, net foreign liabilities falling via sizable current account surpluses) would rapidly diminish the net foreign liability to GDP ratio. In contrast, in a country inside a currency union, many of these dynamics would not be happening. For example, they may experience deflation, which will tend to increase net foreign debt liabilities relative to GDP.

### Economic and financial impact

- Rising import prices would push up other prices: all industries use petrol and other imports to some degree and would have to reprice accordingly, and there would probably be a degree of wage compensation. However, a sustained inflation dynamic would be unlikely given the economic environment and a credible monetary policy framework focused on price stability. Thus a long-lived increase in short-term interest rates seems unlikely and long-term interest rates (following the expectations theory of the yield curve) would not be expected to rise significantly either. Investor nervousness would instead be reflecting in the NZD dynamics discussed above.
- The supply of credit is an important factor determining the degree to which the withdrawal of offshore funding to banks affects the real economy. Banks might have taken losses, and may typically be quite unwilling to write new business until they can fund on a standalone basis, so the supply of credit cannot be guaranteed. Measures may be required to encourage new lending (as in the UK and other countries recently). However, banks would be unlikely to develop the large solvency issues that can happen as a direct consequence of unhedged foreign currency liabilities during substantial exchange rate depreciation.<sup>15</sup> This should mean they would be able to manage their existing book and (potentially with some public assistance) do some new lending. A crisis-like disruption in financial intermediation and widespread bank insolvency is unlikely to occur.<sup>16</sup>
- As the net international investment position rebalances and investor confidence returns, the real exchange rate is likely to rise back towards historical average, potentially causing the price level to fall back towards pre crisis levels. However, if the initial shock was serious, the exchange rate would probably not fully recover, and this would represent a meaningful fall in New Zealand living standards (through higher import costs).
- As rebalancing occurs, we expect that credit growth would be low for some time, especially if banks were still reliant on the Reserve Bank to meet their funding gap. Banks would move towards funding through retail deposits as domestic savings increased. When investor confidence eventually recovered and banks returned to markets, we would expect that banks would again be able to tap NZD funding or hedge foreign funding, back into NZD to fund new lending – albeit at a potentially higher cost. In this way, we would expect that as market function normalised, New Zealand's current funding arrangement, which enables banks to borrow in domestic currency, would resume.

Consistent with our story that in the rare event of a severe funding crisis, a falling NZD would be an important pressure valve, Burnside (2011) recently suggested that foreign investors require quite high average interest rates on their NZD investments because they see asymmetric risks around the NZD – with the probability of a sharp fall being small, but larger than the probability of a sharp rise. Burnside's work suggests we pay (via slightly higher interest rates) for this 'insurance' during normal times, but would effectively benefit from it in a funding crisis or other severe economic event. It is interesting to note that the NZD fell very rapidly during 2008 as investor risk aversion peaked and funding

<sup>15</sup> This was an issue for many countries, including Indonesia, during the Asian financial crisis.

<sup>16</sup> Unlike in Indonesia (1998) and Argentina (2001).



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markets became difficult. This can be interpreted as the market considering that the funding crisis might last a long time and expecting that a prolonged and substantial depreciation of the NZD would result. In the end, global policy actions restored market confidence and the NZ (and Australian) currencies recovered fairly rapidly.

While we expect that adjustment of New Zealand's net liability position following an external funding shock would be relatively orderly, there are certainly valid reasons to be concerned about the external debt accumulated by the New Zealand economy.<sup>17</sup> While a falling currency can ease adjustment, it does so by reducing the purchasing power of New Zealanders, which is a genuine loss of living standards. Rising debt loads in the household, agricultural and business sectors also increase the potential for solvency problems in the banking sector in a severe downturn. For this reason, Reserve Bank *Financial Stability Reports* pay a lot of attention to the credit quality of bank lending to the major sectors of the New Zealand economy.

A scenario such as the one outlined above would undoubtedly involve significant economic and financial disruption. Indeed, any event that entails a significant loss of financial market confidence has the potential to undermine the normal functioning of the economy through a range of channels, some of which might not be easy to fully anticipate in advance. Accordingly, there is little room for complacency. The discussion in this article is simply intended to illustrate that an external funding shock may be more manageable than would be the case if the exchange rate was not able to provide an effective adjustment mechanism.

## 4 Conclusion

While many commentators have expressed legitimate concerns about the potential vulnerabilities associated with New Zealand's high external debt, we suggest in this article that a disruption in New Zealand's access to external funding might not necessarily be as damaging as international evidence suggests it has been elsewhere. In particular, it is important to not overly generalise from the historical cross-

country literature on sudden stops (or the recent European experience), as this ignores the additional flexibility provided by local currency-denominated debt and an independently floating exchange rate.

Adjustment has tended to be more painful and disruptive for countries where debt is foreign currency-denominated (as in most developing countries) or for countries without an independently floating national currency (as in the euro area) than we would expect to see for New Zealand. Because New Zealand is a small, open economy with a floating exchange rate and domestically denominated debt, we suggest that, like the US and UK, we would probably also see substantial exchange rate depreciation as the key result of foreign creditors choosing to curtail their lending to New Zealand. The nature of our exports suggests that depreciation would adjust the New Zealand trade balance relatively rapidly. While a large depreciation would certainly have some painful and disruptive effects, it would also be expected to put the country's net foreign liabilities on a path to a lower level and hence facilitate renewed market confidence in New Zealand investments.

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<sup>17</sup> See Andre (2011) and Savings Working Group (2011) for further discussion.

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## Insurer solvency standards – reducing risk in a risk business

*Richard Dean*

Significant earthquakes in Christchurch have brought the need for stability in the New Zealand insurance market into sharp focus. The ability of insurance companies to meet claims as they fall due has tremendous potential impact in such circumstances and the need for insurers to hold sufficient capital and other resources for those purposes is more visible in such difficult times. Whether in terms of meeting household claims or those for large businesses, insurance companies have a crucial role to play in rebuilding the lives, communities and economies of those affected.

Given the significant potential impact of financial weakness in the insurance sector, regulation of insurers' financial strength helps to maintain confidence in the sector (a key objective of our prudential role). The Reserve Bank seeks to ensure financial strength by applying solvency standards to insurers carrying on business in New Zealand and these differ depending on the type of insurer.

The key components in assessing the financial stability of an insurer are its solvency, capital adequacy and liquidity. Solvency is a measure of whether an insurer can cover its liabilities. It is important to note here that solvency issues are more likely to arise in relation to unexpected aspects of claims. In principle, the 'expected' aspects of claims are accounted for in the pricing of the premium for the policy.

Capital adequacy is a measure of whether or not an insurer has adequate capital backing (including reinsurance arrangements) to support the assessed risks to which the insurer is exposed. Liquidity is a measure of the insurer's ability to meet its current day-to-day financial obligations. For an insurer this usually means having enough cash readily available to pay current and near-term claims.

For example, life insurance liabilities, which tend to be longer-term than those of non-life insurance, give rise to different capital and liquidity requirements. Claims on life insurance are less frequent and tend to occur much further out into the future than claims on property and motor vehicle insurance that are usually more frequent and over a shorter time horizon.

The overall purpose of solvency standards is to require the insurer to hold enough capital so that, to the required level of probability, the insurer can continue to meet its obligations to its policyholders as they fall due. As insurance is a risk business, the solvency standards require levels of capital that cover not only business as usual claims but also make appropriate provision for unforeseen or catastrophic losses.

Insurer solvency is therefore important at the level of each individual insurer. A stable insurance industry provides confidence for a stable financial environment at both the private and commercial levels, and this stability contributes to the stability, as perceived domestically and internationally, of New Zealand as a place to do business.

## 1 Solvency exposures that face insurers

Solvency exposures are potentially faced by all insurers, to varying degrees, arising from various categories of risk. These constitute the factors included in the required minimum solvency capital and include the following:

Appropriately calibrated capital charges are applied to each of the components in Table 1 to reflect the inherent risk. (See box 1, overleaf). These capital charges are then incorporated into the calculation of Solvency Margin which is central to the solvency standard (see below).

Detailed aspects of the calculation of certain risks may vary between different insurance sectors (e.g. as between life and non-life insurers). Examples of this are the difference in approach to calculation of insurance risk and asset risk capital charges between life insurance and non-life insurance, and also catastrophe considerations (e.g. earthquake, flood, tsunami for non-life compared to pandemic for life insurance).

Table 1

Insurance risk	This is a combination of underwriting risk and run-off risk. Underwriting risk is the risk to the licensed insurer of writing unprofitable insurance business. In other words, the risk that premiums charged are inadequate for the risks assumed. To some extent this also links to the exposure of the licensed insurer to operational risk. Run-off risk is the risk to the licensed insurer of inadequate provision being made for outstanding claim liabilities, i.e. inadequate reserving for claims.
Catastrophe risk	This is the insurer's potential exposure to extreme events (e.g. earthquake, flooding, pandemic, etc).
Asset risk	This is the exposure of the licensed insurer to losses on investment assets. It includes credit risk in respect of the relevant assets as well as asset concentration risk.
Foreign currency risk	This is the risk of losses in asset values or increases in liabilities due to foreign currency movements affecting the value of assets or liabilities denominated in foreign currency, and the mismatching of assets and liabilities denominated in foreign currency.
Interest rate risk	This is the risk of losses in asset values or increases in liabilities arising from the mismatching of assets and liabilities in terms of interest rates and durations.
Related party exposures	This is the risk of losses due to financial exposures to related parties.
Reinsurance recovery credit risk	This is the exposure of the licensed insurer to losses arising from failure to fully recover on reinsurance contracts, including losses due to reinsurer failure and contract dispute.

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## Box 1

### Application of capital charges within Reserve Bank solvency standards

Insurance Risk Capital Charge:

- Non-life insurance: Factor-based charges applied to Premium Liabilities and Outstanding Claims Liabilities across identified classes of insurance business.

- Life insurance: The greater of current termination values or solvency liabilities for each related product group.

Catastrophe Risk Capital Charge:

- Non-life insurance: The net cost (after reinsurance) to the insurer of extreme events (earthquake or other) calibrated to a specified loss return period. (see later discussion).

- Life insurance: The net cost (after reinsurance) to the insurer of a pandemic event or other extreme event.

Asset Risk Capital Charge:

- Non-life insurance: Table-based factors applied to total values in identified asset classes (refer below).

Foreign Currency Risk Capital Charge: A fixed percentage charge applied to the net open foreign exchange position in each currency

Interest Rate Risk Capital Charge: A charge based on a fixed percentage revaluation shock applied to fixed interest-bearing assets and liabilities.

Related Party Exposures: In most cases, related party exposures are subject to a 100 percent asset charge, i.e. they are disallowed from capital calculations.

Reinsurance Recovery Risk Capital Charge: A factor-based charge, dependent on the financial strength rating of each reinsurer, applied to the reinsurance recovery asset in respect of each reinsurer.

## 2 The structure of Reserve Bank solvency standards

In developing its solvency standards, the Reserve Bank has sought to learn from international experience by adapting existing international best practices to its own market conditions and structure.

The Reserve Bank has the power under the Act to issue solvency standards that require an insurer to, at all times, “maintain a solvency margin in accordance with an applicable solvency standard (including requiring the insurer to maintain a minimum amount of capital in accordance with the standard)”.

“Solvency Margin” can be expressed as Actual Solvency Capital minus Minimum Solvency Capital (as a dollar figure) and must always be positive.

*Actual Solvency Capital* is defined in a very similar manner to the Reserve Bank’s definition of capital used in other New Zealand financial sectors (i.e. balance sheet capital less prudential adjustments to remove elements that do not qualify as capital for prudential purposes). Broadly speaking, to qualify for prudential purposes a capital instrument must be of a permanent nature and freely available to meet losses and would include, for example, ordinary shares, perpetual non-cumulative preference shares and reserves, with deductions from capital including goodwill, deferred tax assets and related party investments.

Unlike the banking sector, capital is a single pool, without separate tiers, and this approach generally aligns with the Reserve Bank’s assessment of capital for Non Bank Deposit Takers.

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*Minimum Solvency Capital* is the sum of all components in Table 1.

*Minimum Solvency Capital* is itself subject to a minimum required amount. For non-life insurers this is set at \$3 million, for captive insurers at \$1 million, and for life insurers at \$5 million. This minimum required amount is only expected to apply to insurers at the smaller end of the market as the risk-based capital requirement of the solvency standards will generally drive a Minimum Solvency Capital requirement well in excess of the stated minimum amounts. (Note that there is an exemption from minimum capital requirements for very small insurers, i.e. those whose annual premium income is less than \$1.5 million).

### 3 Catastrophe risk capital charge for non-life insurance

Following the earthquakes in Christchurch there has been considerable interest in the regulatory treatment of catastrophe risk protection for non-life insurers. In the Reserve Bank solvency standards the catastrophe risk capital charge is defined as “the net cost (after reinsurance) to the insurer of extreme events (e.g. earthquake or other) calibrated to a specified loss return period”. This means that the insurer must have protection, either by way of capital reserves or reinsurance, to cover its liability under insurance contracts for losses to the required level of severity that result from catastrophic events (e.g. earthquake). The higher the amount of reinsurance carried by the insurer, the lower the requirement for capital to be reserved against such losses, and vice versa. For most insurers this means that they purchase catastrophe reinsurance to significant levels in order to protect their underlying capital position in the event of catastrophic losses.

The variable in this situation is the calibration of the level of losses to which insurers are required to protect themselves, and this level is established within the solvency standard. The overall calibration of the non-catastrophe elements of the solvency standard is to cover losses calibrated to a 1 in 200 year loss return period, i.e. a 99.5 percent probability of sufficiency. The solvency standard requirement for non-earthquake catastrophe (e.g. from flood or other perils) is

set at 1 in 250 years, or 99.6% probability of sufficiency.

Earthquake risk is, however, a well-established differentiated consideration in New Zealand. For many years, insurers have taken comparatively high levels of reinsurance protection against catastrophic losses. In this context, the industry-recognised ‘benchmark’ event for the calculation of earthquake liabilities is a major earthquake affecting Wellington, which is typically calibrated in a range between 1 in 600 – 1 in 800 years. By comparison, the recent Christchurch earthquakes have been assessed at significantly more than a 1 in 1000 year event, with the exact return period unknown at this point.

There is no direct relationship between the loss return period and the Richter scale magnitude, or any other measure of physical severity, of an earthquake. A 7.4 event in Wellington may be more or less expensive than a 6.3 event in Christchurch for particular insurers: it depends on a number of factors including the geographical risk concentration of their insurance portfolio. A full explanation of this complex relationship is beyond the scope of this article, but this is why the catastrophe risk capital requirement is calibrated to severity of insurance losses rather than magnitude of earthquake however measured.

Insurer responses to a Quantitative Impact Survey and industry consultation on the catastrophe risk calibration indicated that for their own risk management purposes, many New Zealand non-life insurers, already calibrate their catastrophe risk coverage (reinsurance plus capital) to at least a 1 in 1,000 years loss return period in terms of New Zealand dollars (under previously existing reinsurance premiums and terms) – albeit that for many with Australian ownership this calibration level is driven by APRA’s 1 in 250 years requirement.

Other considerations taken into account in the calibration of the catastrophe risk capital charge include reinsurance costs (which would be passed through to policyholders) and the affordability of insurance to policyholders, the general willingness of reinsurers to remain involved in the New Zealand market, the availability of reinsurance to the levels required, the artificial threshold that solvency standards could potentially set for possible government intervention in

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a distressed market following a catastrophic event, and the regulatory position taken by other relevant jurisdictions in respect of catastrophe risk protection.

We decided on principle that, where insurance is in place, the cost of major catastrophes is optimally born by reinsurance flows – in effect paid for by insured property owners over a long catastrophe-free period – as opposed to the alternatives: the unpaid insurance claimant or the taxpayer. This is predicated on the assumption that reinsurance to the required levels will be available to insurers. In practice this means that we exceed the actual or implied catastrophe risk calibration of other countries.

The Canterbury earthquakes have also underlined how important it is to the country, the economy, the taxpayer and the financial system that insurance monies are available to meet all valid claims and enable a rebuild to happen – in other words it is desirable to set requirements for catastrophe coverage at a more conservative level than for other risks: insurer failures are rare but the worst time for them to happen is when the country is facing a major rebuilding programme and government finances are more stretched after a major catastrophe.

#### ***Catastrophe Risk Capital Charge – the Outcome***

Having taken all the factors into account, we have set the Catastrophe Risk Capital Charge as the projected net cost (after reinsurance recoverable amounts) of insurance losses faced by an insurer in the event of a catastrophe situation, calibrated to minimum loss return periods as noted below, including any gap or shortfall in the reinsurance cover, plus the cost (if any) of one reinstatement of the full catastrophe reinsurance programme.

In respect of earthquake, the standard is calibrated to a 1 in 1,000 years requirement. This will be phased in over time, with a limitation of 1 in 500 years until September 2015 and then moved upwards to 1 in 1,000 years during 2016–17.

Insurers whose catastrophe risk coverage (reinsurance plus capital) already exceeds the required levels may not reduce their protection below its current level unless that level is above the ultimate target figure of 1 in 1,000 years loss return period.

In respect of non-earthquake events, the standard is calibrated to a 1 in 250 years requirement.

However, the current period is one of significant uncertainty for the New Zealand insurance market, hence the progressive phase-in, over a period to September 2016, of the new standard towards its ultimate intended level of 1 in 1,000 years. This should enable the new “normal” market and seismic conditions to emerge as a more stable context for further decisions in respect of this measure.

The Reserve Bank will continue to monitor developments and reserves the right to reconsider its approach in the context of any further significant factors that emerge.

## **4 Other matters contained in Reserve Bank solvency standards**

The Reserve Bank solvency standards also detail a number of obligations on the licensed insurer; including the appointment of an actuary; provision of returns to the Reserve Bank and various other disclosure requirements in respect of its financial position. There are also several obligations set for the appointed actuary, most importantly to produce the insurer’s solvency calculations to the required standard. This allows policy holders and regulators alike to take comfort from the output of the solvency calculations.

## **5 Market impact of solvency standards**

The implementation phase of the Act is currently well under way, with all insurers required to have a licence (whether a provisional licence or full licence) by 7 March 2012. Full licensing is required for all insurers by 7 September 2013, which is three years following enactment of the Act.

The transitional provisions of the Act allow for a staged path for each insurer toward full compliance, with conditions of provisional licences setting the extent to which, and the dates by which, full compliance must be achieved. The application of solvency standards is included within the scope of transitional provisions.



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There has been previously no legislated solvency standard in place for non-life insurance, and only a voluntary and non-legislated standard for life insurance. The risk-based approach of the Reserve Bank solvency standards is likely to increase the capital requirement on most insurers carrying on insurance business in the New Zealand market. The extent of this impact has been tested via consultation with industry and a Quantitative Impact Survey, and the results from these exercises have informed the final solvency standards.

Recent catastrophic events have demonstrated the need for financial strength in the insurance industry. The increased capital requirements inherent in the Reserve Bank solvency standards are intended to provide reassurance to observers, both within New Zealand and internationally, of the strength of the New Zealand insurance industry.

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## DISCUSSION PAPERS

DP 2011/06

### Cyclical changes in firm volatility

*Emmanuel De Veirman and Andrew Levin*

We estimate changes in the volatility of firm-level sales, earnings and employment growth of US firms. Our method differs from existing measures for firm-level sales and employment volatility in that it not only captures longer-run changes in volatility, but also measures cyclical changes in firm volatility. We detect substantial cyclical variation in firm-specific volatility around trend. Firm-specific volatility was low in the early 1990s, rose in the mid- and late-1990s, and was high around 2000. Our results are consistent with the hypothesis, deduced from models with financial frictions, that rising idiosyncratic volatility before 2001 contributed to the coincident rise in the external finance premium and to the 2001 recession. Endogenous pricing models imply that price adjustment is less frequent, and disinflation more costly, when firm-specific volatility is low. Consistent with endogenous pricing models, we find that the output cost of disinflation was three times larger in the early 1990s than in the early 2000s.

DP 2011/07

### Forecasting house price inflation: a model combination approach

*Sarah Drought and Chris McDonald*

In this paper we use a range of statistical models to forecast New Zealand house price inflation. We address the issue of model uncertainty by combining forecasts using weights based on out-of-sample forecast performance. We consider how the combined forecast for house prices performs relative to both the individual model forecasts and the Reserve Bank of New Zealand's house price forecasts. We find that the combination forecast is on par with the best of the models for most forecast horizons, and has produced lower root mean squared forecast errors than the Reserve Bank's forecasts.

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## NEWS RELEASES

### Reserve Bank *Bulletin* released

30 September 2011

The Reserve Bank today released the September 2011 edition of the Reserve Bank of New Zealand *Bulletin*.

This edition showcases the Bank's varied responsibilities, beginning by exploring an issue brought to the fore around the world by the financial crises of recent years: how best to handle a bank failure. The article explains the Open Bank Resolution (OBR) model the Bank has been developing as an option for use in the rare event of a bank failure.

The second article turns to the policy forum, New Zealand's Macroeconomic Imbalances – Causes and Remedies, organised by The Treasury, the Reserve Bank and Victoria University. The forum looked at New Zealand's macroeconomic imbalances, the country's reliance on foreign debt and equity and its persistent relatively high real interest rates. It also considered whether policy options which could reduce these imbalances might improve our longer-term growth prospects.

Article three refocuses on another core Reserve Bank function: currency. This piece outlines recent trends in currency demand and counterfeiting figures. It also details the findings of a survey on the way New Zealanders use notes and coins.

The final two *Bulletin* articles include the Bank's recent submission to the Productivity Commission inquiry into housing affordability, focused on improving the responsiveness of residential construction to fluctuations in demand, and a summary of a workshop held by the Bank on improving New Zealand's macroeconomic and financial statistics.

### Reserve Bank releases 2010-11 *Annual Report*

3 October 2011

During a year of shocks and volatility, the Reserve Bank has focused on the resilience of the New Zealand economy and financial system, while staying on top of inflationary pressures, Reserve Bank Governor Alan Bollard said today.

Releasing the Bank's 2010-2011 *Annual Report*, Dr Bollard said the developed world is struggling to cope with the

aftermath of the global financial crisis and the very large accumulation of public and private debt in the last decade.

"It is now clear that we have a slow grind ahead, with surprises and disappointments that we cannot necessarily foresee. The Bank has been seeking to increase the resilience of the financial system, which will help reduce its vulnerability to external shocks."

The *Annual Report* chronicles a year marked by market volatility due to unsteady recovery in the US and ongoing sovereign debt crises in Europe, while the Canterbury earthquakes have caused significant disruption, destruction and economic uncertainty.

Offsetting this, domestic activity has been stronger than expected, and farm earnings have benefited from strong commodity prices, driven by growth in China, East Asia and Australia.

However, future inflation expectations have risen as tax changes contributed to a hefty rise in headline inflation. A very strong kiwi dollar has offset the inflationary impact to some extent.

"Overall, the Bank will need to monitor the situation carefully especially as there is now a real risk that global economic activity could slow sharply," Dr Bollard said.

The Bank reported a net profit of \$144 million for the year to 30 June 2011, and paid a dividend of \$210 million to the Crown.

The *Annual Report* notes that the Bank has continued its investigations into macro-prudential tools that may help bolster financial system resilience and moderate credit cycles, though Dr Bollard cautioned that expectations need to be realistic about what can be achieved.

Also featured in the *Annual Report* is the Bank's work on tighter prudential standards. These include Basel III and the implementation of capital models for housing and agriculture, recently introduced liquidity requirements, and progress on insurance regulation.

"At the same time, we have had to manage our own balance sheet to take into account big moves in the kiwi and fragility in offshore sovereign markets. Our foreign reserves

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benchmarking project will help us to do this in the coming year.”

The *Annual Report* notes that, as the New Zealand currency ages and security features mature, work has started on a multi-year banknote upgrade project.

It also recognises the improvement to the Bank’s ability to handle significant Wellington disruptions by using its new Auckland office disaster recovery capability.

“As the current environment demonstrates, we can expect more disruption and fragility ahead, much of it originating from offshore. We cannot predict all of this, but we can plan to be resilient through it.”

## **Economic impacts of seismic risk: lessons for Wellington**

**18 October 2011**

The recent earthquakes in Canterbury have provided a number of lessons that can be drawn upon to help organisations in Wellington better prepare for seismic events, Reserve Bank Governor Alan Bollard said this morning.

In his opening address entitled Economic impacts of seismic risk: lessons for Wellington, presented to a Rotary Forum held in Wellington, Dr Bollard said Canterbury’s experience had shown that events like major earthquakes have many unpredictabilities and uncertainties.

“Institutions should focus on preparedness, competency, leadership, delegation and resilience rather than detailed plans for specific situations that may not repeat themselves,” he said.

The Reserve Bank had also noted that earthquakes should not be thought of as a “short sharp event, but rather as a rolling set of shocks with a long period of continuing after-shocks. These can cause ongoing damage to land as well as buildings, continued disruption, delay assessment, and slow reconstruction,” he said.

The Bank prepared itself for such events by assigning key people from each department to support the Bank and its critical business functions should a disruptive event occur. Other preparations included establishing an Auckland office

to carry on the Bank’s core functions, should the Wellington office ever become inaccessible.

Dr Bollard also noted that disaster preparedness is necessary and desirable, but not costless. Determining the appropriate balance of such concerns in advance will always be a challenging task, he said.

Following human life and safety concerns, the Bank’s immediate focus after the Canterbury earthquakes had been ensuring essential economic activity would continue.

Dr Bollard said this had been followed by a focus on the soundness of the financial system and the financial health of key economic organisations. Throughout this period the Bank had remained focused on the aim of price stability, and had set policy appropriately to ensure this was achieved over the medium-term.

## **New bank registered**

**26 October 2011**

The Reserve Bank of New Zealand today announced that PSIS Limited has been registered as a bank in New Zealand. It will remain a co-operative company and will be changing its name to The Co-operative Bank Limited.

There are now 21 registered banks in New Zealand, which are listed on the Reserve Bank’s website.

## **OCR unchanged at 2.5 percent**

**27 October 2011**

The Reserve Bank today left the Official Cash Rate (OCR) unchanged at 2.5 percent.

Reserve Bank Governor Alan Bollard said: “Domestic activity has continued to expand at only a modest pace despite relatively strong commodity prices. More recently, domestic business confidence has fallen back somewhat. Further ahead, earthquake repairs and reconstruction in Canterbury are still expected to provide significant impetus for demand.

“As foreshadowed at the time of the September *Monetary Policy Statement*, there is a real risk that the European sovereign debt crisis could cause a further slowing in global activity, putting downward pressure on New Zealand’s

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commodity export prices. The difficult international market conditions could also result in increased New Zealand bank funding costs over the coming year.

“Annual headline CPI inflation continues to be above the Bank’s 1 to 3 percent target band. That largely reflects the one-off effect of last year’s increase in the rate of GST. September quarter inflation data suggest that, once GST and other one-off influences have passed, underlying inflation is settling near 2 percent.

“Given the ongoing global economic and financial risks, it remains prudent to continue to keep the OCR on hold at 2.5 percent for now. However, if global developments have only a mild impact on the New Zealand economy, it is likely that gradually increasing pressure on domestic resources will require future OCR increases.”

### **RBNZ consults on Basel III capital adequacy reforms**

**8 November 2011**

The Reserve Bank today released a consultation paper on the implementation of Basel III capital adequacy requirements in New Zealand.

The Basel III reforms, developed by the Basel Committee on Banking Supervision, aim to strengthen the regulation, supervision and risk management of the banking sector, in light of the global financial crisis.

Reserve Bank Deputy Governor Grant Spencer said: “Capital provides a buffer to reduce the risk of a bank becoming insolvent as a result of unexpected losses, for example arising from a severe economic downturn. Robust bank capital requirements are therefore a critical part of a sound and efficient financial system.”

The Basel capital adequacy standards apply to all locally incorporated New Zealand banks.

“The Reserve Bank is proposing to adopt most of the Basel III proposals into its standards, except for those that are less conservative than already in place, or that are not suited to New Zealand circumstances,” Mr Spencer said.

“Our New Zealand banks are well capitalised and therefore

relatively well positioned to meet the proposals set out in the consultation paper. The banks have been asked to submit a quantitative impact assessment to confirm the specific impact of the new proposals.”

The Reserve Bank welcomes submissions on the consultation paper by 27 January 2012.

### **RBNZ appoints new Head of Risk Assessment and Assurance**

**9 November 2011**

The Reserve Bank of New Zealand has appointed Steve Gordon as Head of Risk Assessment and Assurance, effective 28 November 2011. The Reserve Bank’s Risk Assessment and Assurance unit is responsible for ensuring that the wide range of risks faced by the Bank are identified, monitored and managed in line with best practice. Risks include financial, operational, and reputational risks. The unit includes the Bank’s internal audit function. Mr Gordon has been with Bank of New Zealand since 2002, where he held Head of Risk – Business Support and Head of Audit New Zealand roles. Prior to joining BNZ he worked at WestpacTrust (1995-2002) and National Bank of New Zealand (1988-1995), specialising in IT audit.

He is a Chartered Accountant and has a Bachelor of Commerce and Administration from Victoria University.

### **Turbulent global markets continue to affect NZ**

**10 November 2011**

Risks to New Zealand’s economy and financial system have increased in recent months, Reserve Bank Governor Alan Bollard said today, when releasing the Bank’s November 2011 *Financial Stability Report*.

“Despite progress in reshaping regulatory frameworks, financial systems in many countries remain under stress due to an overhang of private and public debt. Markets have been particularly concerned about the sovereign debt situation in Greece, and the potential for contagion to other European countries. This has made access to offshore debt markets more challenging for New Zealand’s banks.

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“In New Zealand, households and businesses have been containing debt, which has helped to reduce the country’s overall external imbalance. However, these efforts have been offset, in part, by rising levels of public debt.

Further, many households and farmers remain highly leveraged, which leaves them vulnerable to a sharp slowdown in global growth.”

Deputy Governor Grant Spencer said the New Zealand banking system is better placed to weather the current market turbulence than at the outbreak of the financial crisis in 2008.

“The banks have increased their capital and liquidity buffers over the past few years. They now have a stronger retail deposit base and their wholesale funding is at longer terms, making the banks less vulnerable to disruptions in offshore markets.

“Given the current market tensions, however, the Reserve Bank has decided to defer by six months its planned further

increase in the core funding ratio (CFR) which was to have occurred in July 2012. It is now intended that the CFR will increase from 70 percent to 75 percent on 1 January 2013, giving the banks more latitude in managing their funding programmes.

“We have continued to progress a number of regulatory policy initiatives. We are currently consulting with the banks on the new Basel III capital regime, with an expectation that capital requirements will be increased to match the new international standards. We have also been in discussion with the banks on pre-positioning their systems for Open Bank Resolution.

“In the insurance sector, the Bank has issued new solvency standards for insurers and is currently processing applications under the new licensing regime,” Mr Spencer said.

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## PUBLICATIONS

### Regular publications

*Annual Report*

*Financial Stability Report*

*Monetary Policy Statement*

*Reserve Bank of New Zealand Statement of Intent, 2011-2014*

Published in October each year.

Published six-monthly. A statement from the Reserve Bank on the stability of the financial system.

Published quarterly. A statement from the Reserve Bank on the conduct of monetary policy.

### Recent Reserve Bank Discussion Papers

#### 2011

DP 2011/01	Any port in a storm? The impact of new port infrastructure on New Zealand exporter behaviour <i>Richard Fabling, Arthur Grimes and Lynda Sanderson</i>
DP 2011/02	Fluctuations in the international prices of oil, dairy products, beef and lamb between 2000 and 2008: a review of market-specific demand and supply factors <i>Phil Briggs, Carly Harker, Tim Ng and Aidan Yao</i>
DP 2011/03	Evaluating density forecasts: model combination strategies versus the RBNZ <i>Chris McDonald and Leif Anders Thorsrud</i>
DP 2011/04	An estimated small open economy model with frictional unemployment <i>Julien Albertini, Güne Kamber and Michael Kirker</i>
DP 2011/05	Time-varying returns, intertemporal substitution and cyclical variation in consumption <i>Emmanuel De Veirman and Ashley Dunstan</i>
DP 2011/06	Cyclical changes in firm volatility <i>Emmanuel De Veirman and Andrew Levin</i>
DP 2011/07	Forecasting house price inflation: a model combination approach <i>Sarah Drought and Chris McDonald</i>

A full list of Discussion Papers is available from Administration, Economics Department.

### Analytical Notes

#### 2011

AN 2011/1	The macroeconomic impact of the Rugby World Cup <i>Adam Richardson.</i>
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### Pamphlets

*Explaining Currency*

*Explaining Monetary Policy*

*The Reserve Bank and New Zealand's Economic History*

*This is the Reserve Bank*

*Your Bank's Disclosure Statement – what's in it for you?*

*Snakes and Ladders – a guide to risk for savers and investors, by Mary Holm*

For further information, go to [www.rbnz.govt.nz](http://www.rbnz.govt.nz), or contact:

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## Articles in recent issues of the Reserve Bank of New Zealand *Bulletin*

### Vol. 73, No. 4, December 2010

Regulating non-bank deposit takers

Bringing financial stability legislation to the insurance industry – the Insurance (Prudential Supervision) Act 2010

Global currency trends through the financial crisis

New Zealand's imbalances in a cross-country contest

### Vol. 74, No. 1, March 2011

Making sense of international interest rate movements

We're all in this together: the transmission of international shocks to open economies

Towards better data on New Zealand debt securities markets

Submission to the Savings Working Group

Looking into the crystal ball: a forecast and some risks for the year ahead

### Vol. 74, No. 2, June 2011

Bank farm capital: does it cost the earth?

Stress testing New Zealand banks' dairy portfolios

Understanding financial system efficiency in New Zealand

New Zealand's emergency liquidity measures during the global financial crisis

### Vol. 74, No. 3, September 2011

A primer on Open Bank resolution

Conference summary: New Zealand's macroeconomic imbalances – causes and remedies

Recent trends and developments in currency

Submission to the Productivity Commission inquiry on housing affordability

Workshop on national accounts and financial statistics