
A new paradigm for NZ interest rates?

Where have we
come from....
where are we now...
and where are we
going to?

*A new paradigm for NZ
interest rates?*

3 June 2016

A discussion paper from PwC Treasury Advisory



Executive summary

New Zealand and global interest rates have been “lower for longer” for more than six years now. Whether these record low interest rates continue for many more years to come, or whether economic conditions change to force interest rates higher or lower from current levels are addressed by this discussion paper. We do not have definitive answers for readers, however our analysis and insights will hopefully clarify the debate.

Current interest rate drivers

- **Current New Zealand short-term interest rates are below the level deemed by the RBNZ to be ‘neutral’ of 4.50%.** A neutral short-term interest rate level is consistent with the economy running neither too hot nor too cold in terms of economic activity and related consumer price inflation pressures. Furthermore, the neutral level has already been markedly lower for the post Global Financial Crisis (“GFC”) period relative to the pre GFC period. A movement back up to (or above) the neutral level will require either stronger demand than supply (i.e. emergence of a ‘positive’ output gap) and/or stronger oil/domestic petrol prices pushing up headline inflation rates and inflation expectations. There is also the potential the RBNZ need to revise their judgment of the neutral short-term interest rate lower from the current 4.50% estimate.
- There is a long close correlation between US and New Zealand government bond yields because of the high level of foreign ownership of our government bonds (66.5%) and very integrated global financial/capital markets (i.e. the impact and activity of international investors).
- New Zealand 10-Year Government Bond Yields are approximately 100 basis points (1.00%) above those in the US (60% higher). The basis point premium is currently lower relative to history although interestingly the differential has been higher post GFC (1.85% average spread between New Zealand and US Government bond yields) rather than pre GFC (1.45% average). There may be scope for short-term (90-day) interest rate differentials to narrow based on the assessment of ‘neutral’ policy rates by the New Zealand and US central banks, however there may be considerably less propensity for the 10 year government bond yield differential to do so. **In percentage terms, there appears only limited scope for the premium of New Zealand 10-Year Government Bond Yields relative to those in the US to reduce.**
- Whilst the absolute level of 90 day bank bill rates and 10 year swap rates have reduced post GFC, the New Zealand 10-year swap spread (10 year swap rate less 10 year government bond yield) has not reduced by the same proportionate amount, recognising the relatively small size of the New Zealand swap market. The increased regulatory environment, higher capital requirement and less credit risk associated with central clearing houses are reasons why swap spreads could narrow. **A 10 year swap spread in the range of 0.25% and up to 0.75% still appears relevant, even in an environment of the wholesale market swap yield curve (90 day bank bill to 10 year swap rates) being between 3.00% and 5.00%.**
- **US long-term interest rates remain well below a level indicated by (higher) inflation pressures and other more upbeat US economic data; inflation pressures**

also appear set to increase. US long-term interest rates are being held at current low levels impacted by the massive bond holdings of the US Federal Reserve, with these only to be very slowly allowed to unwind/reduce. Asian investor buying and holdings of US Treasury bonds is also currently holding yields down, however these investors may become sellers, sending yields higher.

- **Global economic growth and the stage of the commodity price cycle does not auger for rapid movements higher in US interest rates.** So too the US Federal Reserve is very mindful of disrupting US and emerging market equity markets and valuations, hence the cautious approach from Janet Yellen to increase short-term interest rates. Success of European monetary policy Quantitative Easing policies to eventually re-stimulate investment markets and consumer spending would likely support higher interest rates globally relative to existing levels.
- **Global demographics of ageing populations and greater savings rates are a significant contributing factor to driving global long-term interest rates lower.** The limited universe of assets/securities in which to invest to earn a reasonable return and match long-term liabilities/commitments within pension funds and life insurers also continues to place downward pressure on US long-term interest rates. If the US economy is sufficiently strong (inflation/activity) and the US Federal Reserve tightens monetary policy by more than is currently expected by benign interest rate market pricing, US long-term bond yields would be expected to rise – and New Zealand follow. That action could create renewed divergence (not further convergence) with European/Japanese rates which are presently providing downward pressure on US / global interest rates. Global bond yields have been converging amidst negative central bank monetary policy rates in many countries and quantitative easing programs of purchasing government bonds driving longer-term bond yields very low and often negative. US inflation expectations/real rates and term premium over “neutral rates” are also at play; the ‘ratcheting lower’ of interest rates may already have occurred.
- **No amount of super-loose monetary policy may be sufficient to stimulate economic outcomes (even if measured correctly) should wider societal undercurrents (ageing population, underemployment, technological improvement, job obsolescence, income inequality) be at play with these arresting monetary policy as irrelevant.** The implication is no pressure for interest rates to increase but equally no point of lower interest rates. Big question; can the European Central Bank President Mario Draghi’s sleight of hand with non-traditional monetary policy measures match that of Ben Bernanke now that German opposition has been overcome???
- **Specific credit market drivers would argue for further widening in credit spreads over coming years.** Whilst this would normally be associated with lower wholesale market swap rates, such may not be as clear cut this time impacted by the already very low level of wholesale market swap rates and all-up yields / bond coupons. At the very least, widening credit spreads would contain the extent of rising wholesale market rates. An outlook for wider credit spreads and lower swap rates cannot be dismissed.

Implications of current interest rate drivers

There is reasonably strong evidence to suggest interest rates have fallen to their lowest levels and will remain low relative to the pre-GFC period due to the following factors:-

- **The output gap in New Zealand** (which measures the extent the economy is growing at versus the ‘potential’ growth rate that does not cause excess inflation pressures) **has remained negative, reflecting increases in supply in excess of demand.** Headline

consumer inflation in New Zealand and the US has also fallen sharply impacted by the sharp weakening in oil prices, in turn lowering inflation expectations. Latest movements in oil prices and (US market implied inflation expectations) indicate scope for this to be partially reversed.

- In October 2013 and confirmed as recently as September 2015 the RBNZ have estimated the neutral 90 day interest rate as 4.50%. **US Federal Reserve committee members' estimates of the 'long-run' US 3 month LIBOR rate is 3.25%** (although it is not crystal clear whether this can be directly compared to a neutral rate or reflects a rate closer to the top of the interest rate cycle). It would be expected it will take the US Federal Reserve some years to get to this 'long-run' rate. The 1.25% average ('neutral') differential between New Zealand and US 90 day interest rates is consistent with an approximately average 1.00% risk premium between New Zealand and US 10 year government bond yields. The bond market places a more conservative allowance for the very small size of the New Zealand market that does makes it harder to get into and out of therefore can be an inhibitor to capital and financial flows. A further factor is the relatively narrow, small-based economy (with an agricultural focus) does also create an economic risk for New Zealand. The implication of these two factors is a higher compensation for risk (i.e. wider risk premium on government bonds) represented in the 1.00% risk premium.
- US long-term interest rates remain well below a level indicated by (higher) inflation pressures, reflecting the largely successful implementation of the US Federal Reserve in their Quantitative Easing bond purchase programme driving US long-term bond yields lower. **Global 'convergence' of low long-term interest rates with Japanese and now European quantitative easing programmes (and now negative central bank policy rates and Government bond yields) has also driven US and New Zealand long-term interest rates lower.**
- **What is the final unwritten chapter of previous US Federal Reserve Chairman Ben Bernanke's Quantitative Easing ("QE") playbook to pull the US economy out of recession?** The massive QE buying of bonds to put cash into the US economy a few years back has succeeded, however Ben did not provide the answers/guidance on how to unwind the QE stimulus ('yours Janet!'). Ultimately the US Federal Reserve need to sell all the Treasury Bonds they purchased. It may take 20 years to do so, however bond yields can only go up when they start. Alternatively the Federal Reserve will hold the bonds until they mature (and ultimately not replace these).
- **Another consideration is if, when and how do the Chinese investors currently holding US Treasury Bonds reduce their holdings to generate the cash which may be necessary to shore up economic growth back in China?** The Chinese built up large Foreign Exchange Reserves through trade surpluses from 2002 to 2014 that were invested in US treasury bonds to an amount equivalent to approximately half of the holdings of the US Federal Reserve. Japanese investors hold a similar amount of US Federal Government Debt as the Chinese. Combined, the Federal Reserve, Chinese and Japanese investors hold more than one third of all US Federal Government debt.
- Implications from QE and negative monetary policy rates shows it is the central bankers largely running bonds yields at present, posing the question of whether existing western economies can survive the current low yields across all maturity terms. So far it has been everyone chasing one another down to lower yields. At some point the central banks must try to correct the existing positions, i.e. Germany and Japan no longer have any material difference between yields of any terms, with most of these also negative. **It is difficult to fathom how traditional economics can actually function (borrow at lower short-term rates, lend/invest in higher long-term rates) unless we see a massive correction upwards in credit spreads to compensate the fact that these**



economies do not have any risk free rate of return. In the current state it is difficult to see much scope for the global long-term interest rates of the big central banks doing anything resembling upward movement unless they regulate it with controls.

- **Even if central banks can carefully manipulate and reconstruct their long-term interest rates to address this structural imbalance it will have to be by small regular incremental increases to short-term interest rates with an emphasis on ratcheting long-term interest rates higher.** How will the pension funds and insurance companies survive the massive valuation erosion on their bond portfolios - what is the impact on a 10 year Treasury bond purchased today at 1.75% yield when the yield goes to 2.75%?
- If the above re-alignment of higher bond yields / lower bond prices does not occur are we going to see a massive shift in pension fund/ insurance company asset allocation policies away from bonds? Are we going to see some of these entities fail as they effectively lock in negative cashflows in terms of managing their long term liabilities (expected payouts to retirees etc.)?
- Until the investment monies at very cheap cost dry up (as all the money has been invested) the situation is unlikely to change. No-one knows when that will happen. **Borrowers have never had it so cheap and thus corporate bond issuance and residential mortgage borrowing has increased.** However, to date the volume of debt issued has not matched the amount of liquidity sloshing around the world looking for a home. US Corporate Bond issuance has averaged USD1.5 trillion per annum for each of the last four years and is being easily absorbed by the market.
- **An aspect of the very low level of inflation and interest rates in Japan and Germany is due to consumer deleveraging in the aftermath of the GFC.** Rather than spend money, people didn't have, Finance Ministers and Governments told people to save...which they may have done perhaps too successfully. The burden of (longer) retirements under changing demographics is also occurring where government finances may be struggling to fund these, and there are limited returns on (low risk) fixed income investments meaning people may be staying in work for longer.

Are we in a new Paradigm, and if so, what does it look like?

The following section directly addresses the question of whether there has been a shift to a new paradigm for interest rates, and if so what does it look like? We also summarise and address what the likely future drivers of interest rates (US 10 year government bond yields and New Zealand 10 year swap rates) will be.

The following table shows the average New Zealand 90 day bank bill rate, US 10 year government bond yield and New Zealand 10 year swap rate over the two distinct periods (pre and post GFC), as well as the current market rates.

	New Zealand 90 day bank bill rate	US 10 Year Government Bond Yield	NZ 10 Year Swap Rate
1999 – 2008	6.25%	4.70%	6.20%
2009 – 2016	2.95%	2.50%	4.40%
Current (May 2016)	2.40%	1.85%	2.95%



The background presented in our more in depth analysis (summarised above) indicates clear evidence of a paradigm shift in interest rates either side of the GFC. The question is whether the shift is moving further away? Domestically the shift is reflected in the RBNZ estimate of the neutral 90 day bank bill rate of 4.50%, whereas prior to the GFC it was 6.50%. However, there remain questions over the shape and form of the new paradigm in relation to what level for US 10 year government bond yields this implies, and also whether the neutral short term interest rate in New Zealand is actually lower again. Furthermore, what do some of the New Zealand specific drivers of bond spreads relative to the US (i.e. risk premium) and also New Zealand swap rates relative to New Zealand Government bond yields (the 'swap spread') indicate for New Zealand 10 year swap rates?

We highlight some of the alternatives below as to the shape and form of the new paradigm along with key drivers, probability weightings and our preferred outlook. Note that some of the components in practice would be overlapping. Note also for ease of presentation we have given a point estimate for each interest rate level rather than a narrow range.:-

US 10 Year Govt Bond Yield	Justification	Probability Weighting
<p data-bbox="300 1317 384 1346">1.50%</p> <p data-bbox="268 1749 416 1845">= NZ 10 year swap rate 2.50%</p>	<ul data-bbox="451 949 1294 1720" style="list-style-type: none"> • Quantitative Easing Programmes in Europe and Japan remain in place indefinitely (and are not successful). Therefore, further pressure lower on long-term bond yields in those sovereigns, with global convergence (lower) of bond yields continuing, dragging US, New Zealand and Australian long-term rates further lower. • Ongoing negative monetary policy rates in those countries also and in the likes of Sweden, Switzerland... • Strong business competition / strong supply means underlying services and good price inflation very low (or falling) • Perennially low inflation driven by technological advancements, job obsolescence, underemployment... • Ageing, income inequality, geopolitical unrest, rising protectionism, the environment – rising and ongoing fear factor within society and consumers means spending very contained • These above factors imply monetary policy irrelevance when it comes to impacting inflation and growth – interest rates are a central bank manipulation but are all but ineffective at moving the real economy • Regulatory environment with higher capital requirements for banks, reduced dealer balance sheet capacity and bank credit risk reduction amidst central clearing houses lowers credit risk / swap spreads. <p data-bbox="451 1738 1289 1944">Implication for New Zealand Interest Rates: US 10 year government bond yield of 1.50% + 75 basis point government bond spread / risk premium for New Zealand + 25 basis point swap spread = 2.50% New Zealand 10 year swap rate. Also 2.50% New Zealand 90 day rate = 'flat' difference between short-term interest rates and long-term interest rates.</p>	<p data-bbox="1378 1317 1433 1346">15%</p>

<p>2.00%</p> <p>= NZ 10 year swap rate 3.50%</p>	<ul style="list-style-type: none"> • Policy rates remain negative in many of the countries listed above for a good while longer • Spending continuing to be restrained as many continue to deleverage, and money is saved for retirement • Limited universe of investment alternatives continues to see demand for long-dated bonds with ongoing strong investor demand for long-dated assets to match long-dated liabilities • Increased Basel III banking regulations / capital requirements increasing banks demand for bonds (mainly short-dated) also widening credit spreads (inverse to swap rates / bond yields) • Not the doomsday scenario, but mediocre to modest growth and weak inflation continues... <p>Implication for New Zealand Interest Rates: US 10 year government bond yield of 2.00% + 100 basis point government bond spread / risk premium for New Zealand + 50 basis point swap spread = 3.50% New Zealand 10 year swap rate. Also 3.50% New Zealand 90 day rate = 'flat' difference between short-term interest rates and long-term interest rates.</p>	<p>20%</p>
<p>2.50%</p> <p>= NZ 10 year swap rate 4.00%</p>	<ul style="list-style-type: none"> • Cyclical US economic recovery (QE worked) • Gradual unwinding of QE over time (due to the US Federal Reserve eventually not re-investing maturing bonds) • CPI inflation is not completely dead, periods of higher commodity price movements (supply 'shocks', geo-political events) pushes headline CPI higher, services inflation remains above 3.0% due to ongoing rising health care costs, rents. Goods sector inflation remains muted around 0%, monetary policy still effective • Deflationary slide arrested in many other ageing demographics however underlying economic growth only modest • Other international bond and capital markets emerge as viable asset classes for investors, e.g. China, India... <p>Implication for New Zealand Interest Rates: US 10 year government bond yield of 2.50% + 100 basis point government bond spread / risk premium for New Zealand + 50 basis point swap spread = 4.00% New Zealand 10 year swap rate. Also 4.00% New Zealand 90 day rate = 'flat' difference between short-term interest rates and long-term interest rates.</p>	<p>40%</p>
<p>3.00%</p> <p>= NZ 10 year swap rate 4.75%</p>	<ul style="list-style-type: none"> • Strong and ongoing US economic recovery a locomotive for global economic growth and recovering global inflation pressures • QE eventually works in Europe, consumers borrow / spend • Credit spreads reduce as global risks also reduce and costs associated with increased regulation not as bad as feared, demand for sovereign assets eases • Chinese/Japanese investors ultimately scale back holdings of US Treasury bonds <p>Implication for New Zealand Interest Rates: US 10 year government bond yield of 3.00% + 125 basis point government bond spread / risk premium for New Zealand + 50 basis point swap spread = 4.75% New Zealand 10 year</p>	<p>15%</p>

	<p>swap rate. Also 4.00% New Zealand 90 day rate = moderately 'steeper' difference between short-term interest rates and long-term interest rates.</p> <p><i>Risk premium spread to the US is widening due to market liquidity in New Zealand becoming tighter.</i></p>	
<p>3.50%+</p> <p>= NZ 10 year swap rate 5.50%</p>	<ul style="list-style-type: none"> • QE leads to strong inflation (was initially feared in the US, however little evidence in the seven years since). • Older citizens spend freely (but more difficult for governments to fund safety net, also individuals more fearful and working longer) • Plentiful jobs (would seem to run against automation trend unless these occur in lower value wages services sectors such as retail, tourism) • Widening universe of quality assets to invest in • Regulatory environment reverses (elements may occur as post GFC knee-jerk responses partially unwound) • [...No-one is talking about the prospects for the US 10 year government bond yield averaging 4.0% or above...] <p>Implication for New Zealand Interest Rates: US 10 year government bond yield of 3.50% + 150 basis point government bond spread / risk premium for New Zealand + 50 basis point swap spread = 5.50% New Zealand 10 year swap rate. Also 4.50% New Zealand 90 day rate = larger 'steeper' difference between short-term interest rates and long-term interest rates.</p> <p><i>Risk premium spread to the US is widening due to market liquidity in New Zealand becoming tighter and also higher New Zealand domestic inflation is leading to higher short-term interest rates.</i></p>	<p>10%</p>

CONCLUSION

Our conclusion is the new paradigm in the two to five year forward period will be reflected in the following New Zealand 10-year swap rates with related probabilities:-

There is an approximately 80% probability that 10 year swap rates will be above their current level of 2.95%.

There is a 65% probability that 10 year swap rates will be at 4.00% or above.

There is a 75% probability that 10 year swap rates will be at 4.00% or below.

Please note we see the most likely 'point' estimate as the 10 year swap rate being at 4.00% (a 40% probability weighing).



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Introduction

In this paper we consider the factors that have driven the New Zealand and global long-term interest rates, pre and post 2008 Global Financial Crisis (“GFC”), and assess why current short-term and long-term interest rate settings are now where they are at record lows. We consider the factors that are expected to continue to drive long-term interest rates, and what new factors may be emerging as drivers of long-term interest rates.

The paper considers aspects such as:

- Historical drivers of New Zealand short-term interest rates and inflation and what the ‘neutral’ short-term interest rate is
- The risk premium of New Zealand long-term interest rates relative to those in the US, and whether this has changed over recent years
- Historical spreads between New Zealand long-term swap rates and New Zealand long-term government bond yields
- Traditional US drivers of US long-term interest rates and whether these still hold as accurate lead indicators
- What are the other US and global influences that have emerged as drivers of US long-term interest rates
- What is the impact of other global long-term interest rates on those in the US and NZ
- What is the outlook for the regulatory environment and credit spreads and what are their implications for ‘base’ rates
- What are some non-traditional factors and trends that may be emerging as drivers of long-term interest rates
- **Are we in a new interest rate paradigm and if so what is it?**

Background and context

Inflation, and hence interest rates, have been on a downward trend since the 1980s owing to a combination of factors including:-

- The focus of Central Banks around the world to target inflation within their monetary policy mandates
- The impact of globalisation with easy transferability of goods and services across borders effectively creating additional supply and competition driving down prices
- The impact of technology; more efficient, cheaper, quicker ways of doing things at a lower unit cost equals lower inflation (in some cases deflation)
- The integration of low cost Chinese manufacturing into the global economy thereby 'exporting' low inflation / deflation to other countries

The factors above have helped to instil greater competition on a global basis and have been in motion since well before the Global Financial Crisis ("GFC"), driving inflation and interest rate trends lows.

Since the GFC inflation rates have fallen further, also impacted by:-

- Overcapacity as demand has not matched supply and resources remain unutilised, therefore low goods costs and prices
- High indebtedness (a contributing cause to the GFC) that is constraining future borrowing activity hence economic activity, and also containing price increases (despite low interest rates)
- Excess savings being created amidst deleveraging and the shoring up of personal balance sheets, but with constrained consumer spending leading insufficient demand and price pressures
- More recently, lower oil and commodity prices have also been a factor in driving headline inflation rates lower (but core inflation rates that excludes these are also low)

Possible implications of the current situation of low inflation and low interest rates include the following:-

- The creation of better conditions for servicing/repayment of debt by highly indebted individuals, businesses, corporates and governments
- However, a poor environment for savers particularly in the context of ageing population demographics and the need to fund retirement
- Further, pension funds and life insurance providers have long-term liabilities/commitments to be met, and need to match these with long-term assets achieving an appropriate return. How do they do this? This necessity also potentially means there is a limit to how negative interest rates could go as a return must be earned to meet future commitments

But what happens if the Central Banks are unable to meet their inflation targets/mandates indefinitely?

- In that instance another form of monetary policy would be required, these may already be being considered although this should not yet be seen as *a fait accompli*
- The inflation fighting targeting mainly through short-term policy interest rates has been very successful over the last 30 or so years in driving inflation rates down substantially
- Previous eras have also brought different policy frameworks, e.g. the Bretton Woods fixed foreign exchange rates regime that was in place until 1971 but was curtailed at that time amidst rising inflation in some countries and growing imbalances



- Even now countries like Singapore use Foreign Exchange Rates to set monetary policy, the US has a dual mandate to manage inflation and also full employment, and until 1999 New Zealand set monetary policy based on a combination of interest rates and the exchange rate (the Monetary Conditions Index)

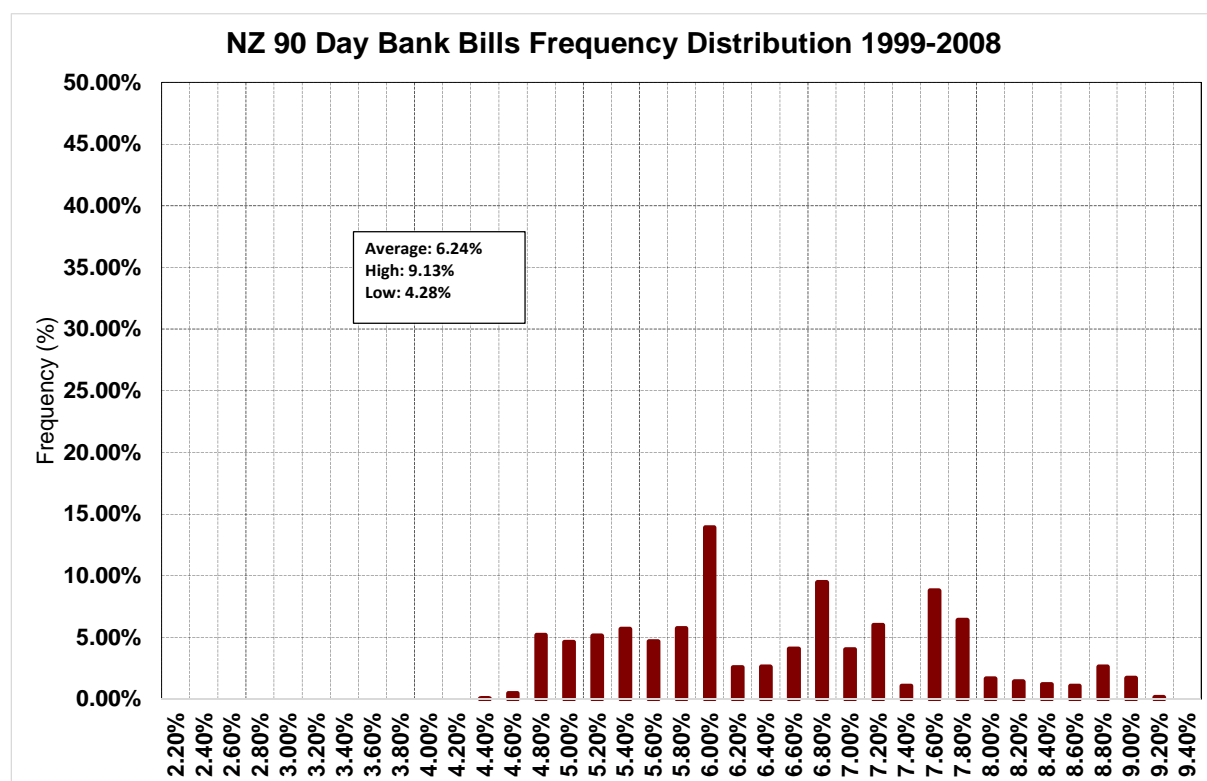
It still appears too soon to discard inflation targeting achieved through short-term interest rates, however if the objective are not satisfied over the next say 5 to 7 years then alternative frameworks would be developed and implemented by Central Banks.

1. NZ short-term interest rates and their traditional drivers

Since March 1999 the Reserve Bank of New Zealand (“RBNZ”) has set the level of short-term interest rates using the Official Cash Rate (the “OCR”) to manage consumer price inflation over the medium term (current ‘target’ 2.00%). Historically there have been a range of economic indicators that have acted as important and accurate ‘leads’ for future inflation pressures and by implication domestic monetary policy / interest rate settings.

Neutral nominal short-term interest rate of 6.50% pre Global Financial Crisis

Between 1999 and 2008, i.e. before the onset of the Global Financial Crisis (“GFC”), the 90 day bank bill rate (closely aligned to the OCR) averaged 6.25%. This average rate broadly aligned with a ‘neutral’ OCR setting in the range of 6.00% to 6.50%¹. A neutral short-term interest rate level is consistent with the economy running neither too hot nor too cold in terms of economic activity and related consumer price inflation pressures.

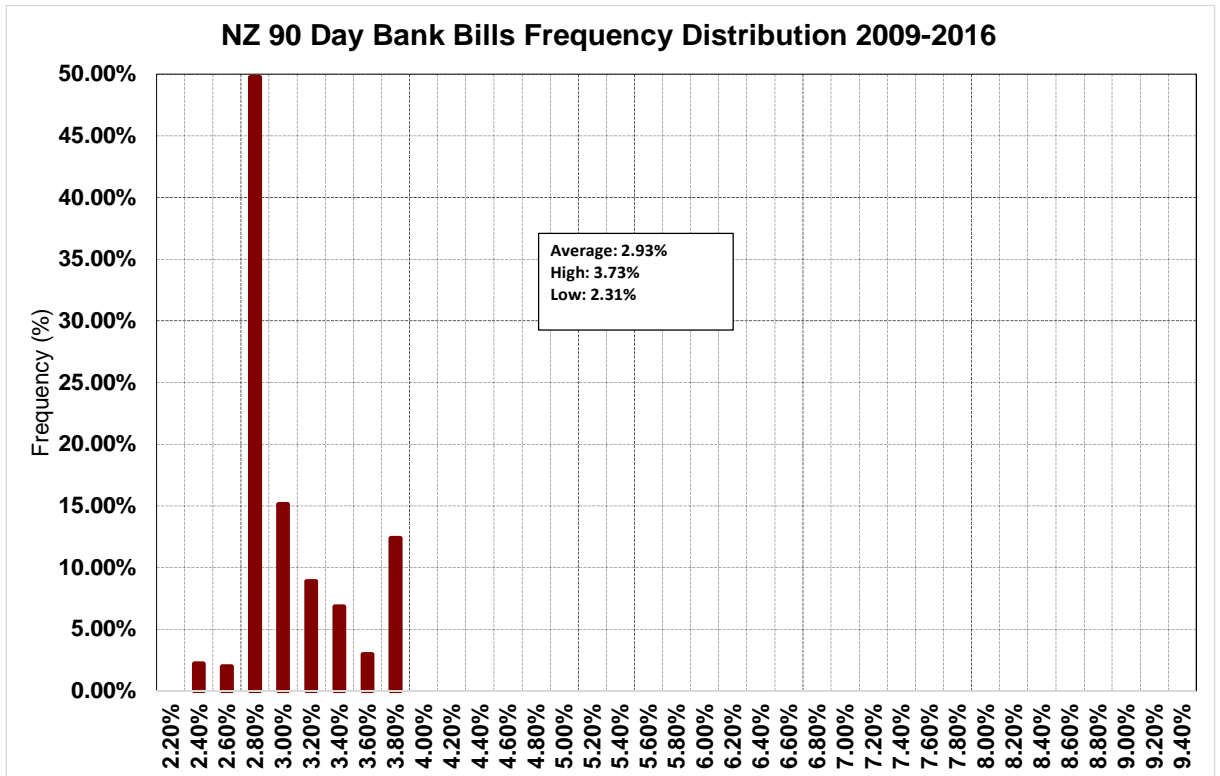


¹ Reserve Bank of New Zealand “Neutral interest rates in the post-crisis period” published November 2013 indicates a wide range for the neutral ‘real’ short-term interest rate of 3.00% to 6.00% for the period from the early 2000s until just prior to the GFC. Taking this midpoint being 4.50% and the midpoint of the 1.00% to 3.00% CPI inflation target range over the medium-term (i.e. 2.00%) gives a point estimate for the (nominal) neutral rate of 6.50% prior to the GFC.



Neutral nominal short-term interest rate of 4.50% post Global Financial Crisis

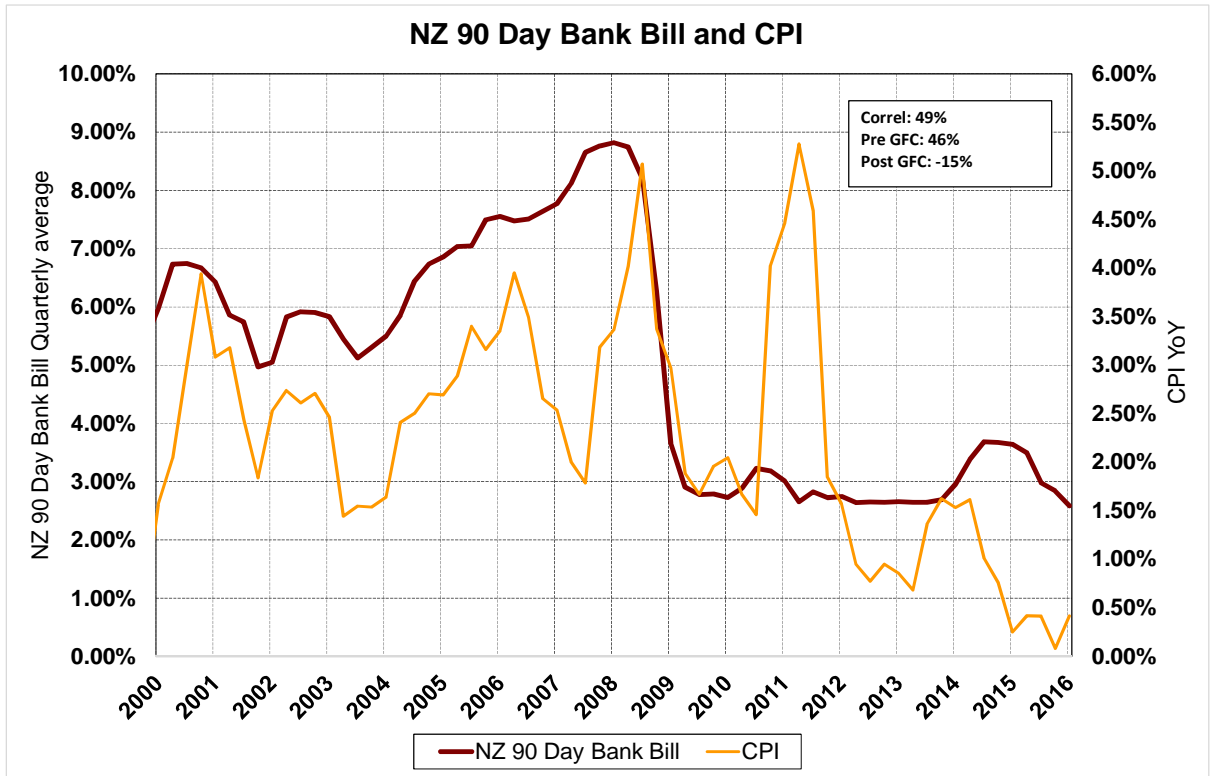
From 2009 the 90 day bank bill rate has averaged just under 3.00%, and has reflected a very “left-hand side skew” frequency distribution observed relative to the prior (pre-GFC) period. Note the RBNZ deems the ‘neutral’ 90 day bank bill rate to now be in the order of 4.50% (+/-0.50%)² and not necessarily as low as 3.00% (or the current actual lower level of 2.40%).



² In a speech by RBNZ Deputy Governor McDermott on 02 October 2013 “Shifting gear: why have neutral interest rates fallen?” In September 2015 an RBNZ Analytical Note “Estimating New Zealand’s neutral interest rate” by Richardson and Williams noted ‘...these estimates suggest the nominal neutral 90-day interest rate sits between 3.8 and 4.9 percent currently. The mean of these indicators is 4.3 percent. The Bank currently judges that the nominal neutral 90-day interest rate sits at 4.5 percent - within the range of estimates and close to the mean of these estimates’.

CPI a less useful indicator of domestic interest rates post GFC

In the ‘pre-GFC’ period there was a reasonable correlation between the Consumer Price Index (“CPI”) and 90 day bank bill rates. Since the GFC the relationship has been weak, and also CPI inflation has been low and falling from 2012 onwards (right hand axis on chart).

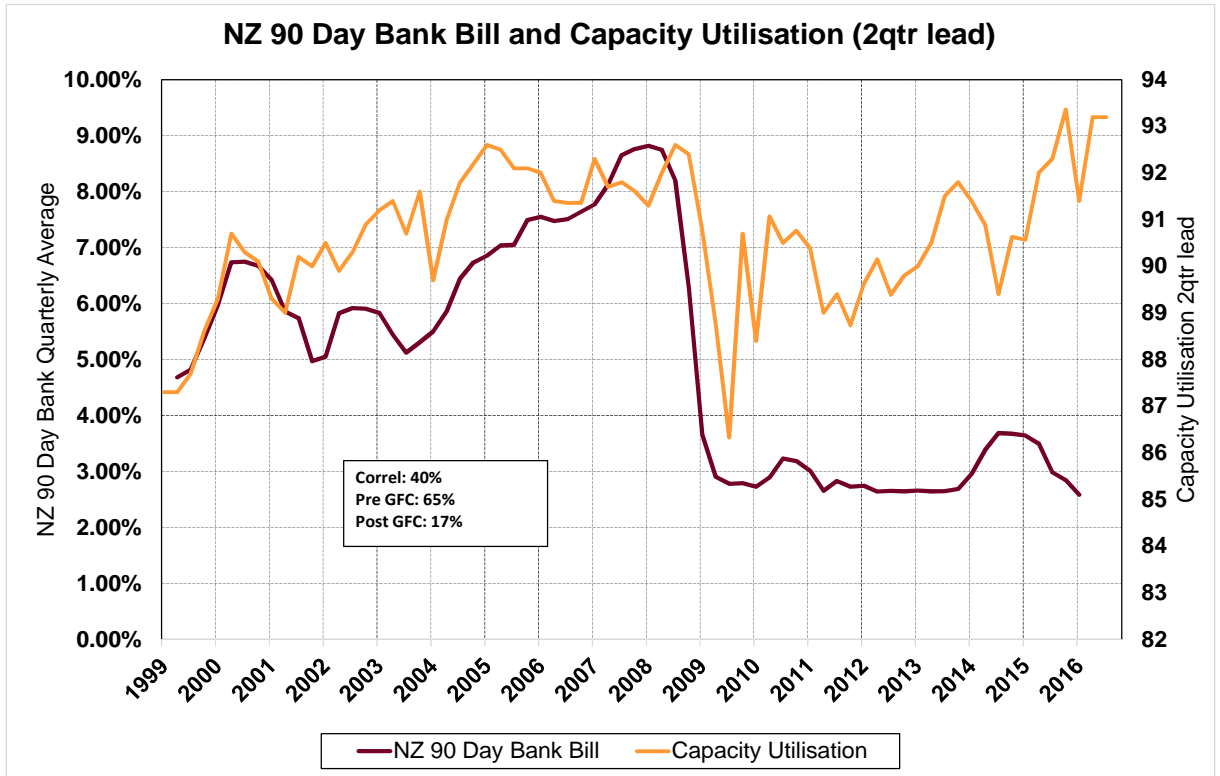


Note: 2008 spike oil/petrol price related and 2011 spike due to an increase in the rate of GST



Capacity Utilisation a less useful indicator of domestic interest rates post GFC

Prior to 2008 there was a close relationship between the rate of capacity utilisation (measured by the New Zealand Institute of Economic Research) and the level of 90 day bank bill rates. Immediately following 2009, both the level of capacity utilisation and 90 day bank bill rates fell sharply. The rate of capacity utilisation has increased from 2014 through 2016 although this has not been matched by a consistently higher 90 day bank bill rate.

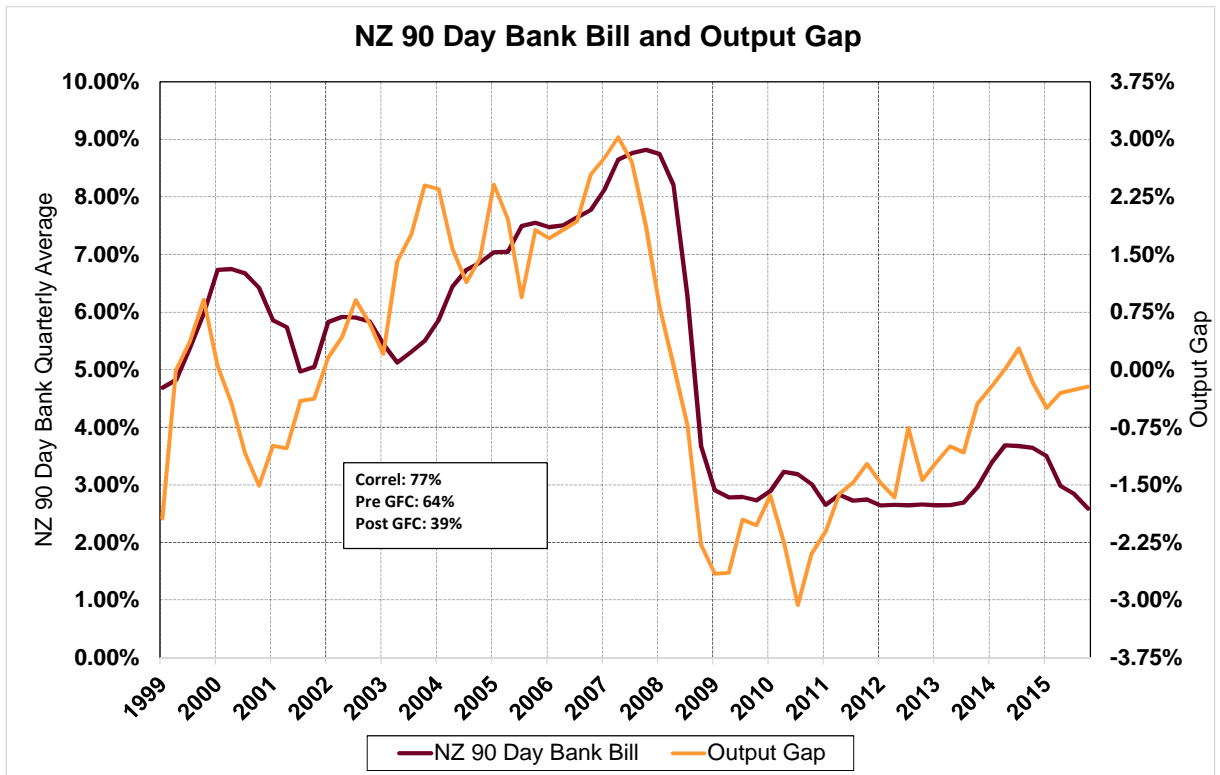




Relationship between output gap and domestic interest rates remains; supply is meeting demand

The output gap (calculated by the RBNZ) measures the degree to which real Gross Domestic Product (“GDP”) growth within the economy is performing either above or below the ‘potential’ growth rate. Potential growth reflects the extent and speed the economy can grow without creating excess inflation pressures. Consideration of the output gap (actual growth less potential growth) shows the relationship between the 90 day bank bill rate and the output gap has been reasonably consistent both pre and post GFC.

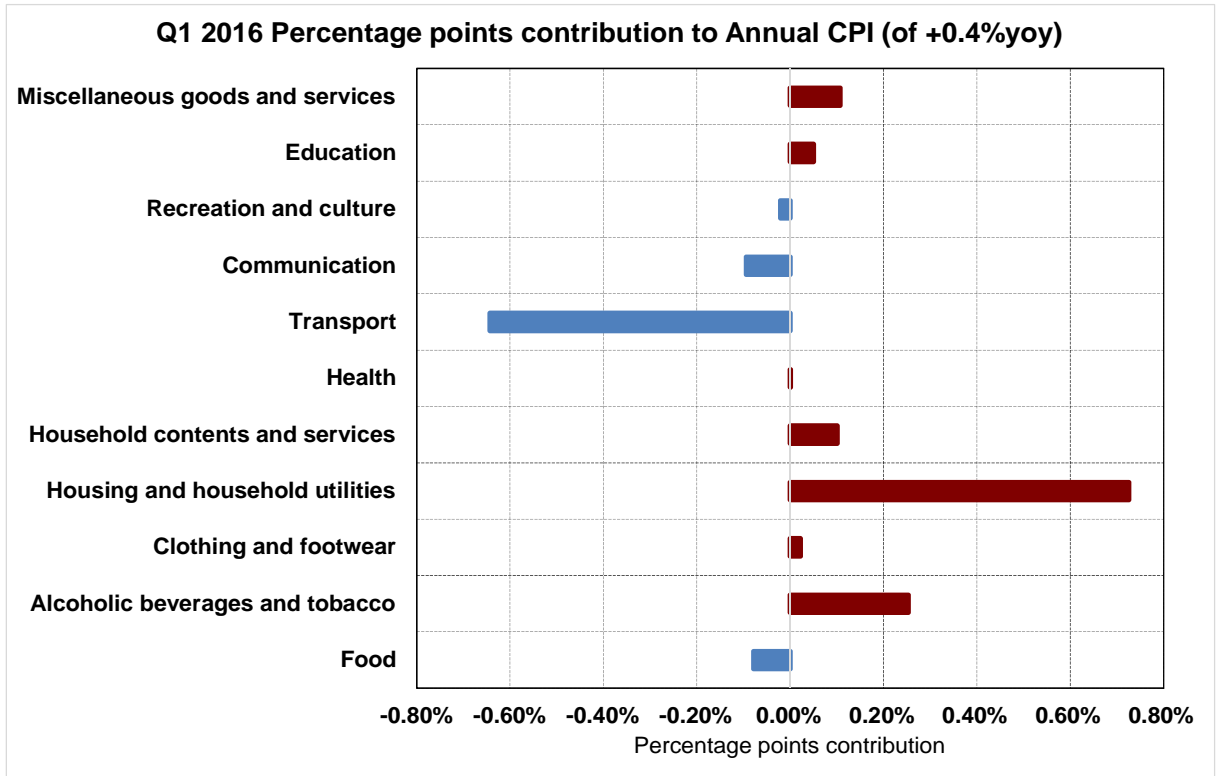
The calculated output gap since the GFC has not been ‘positive’ therefore the New Zealand economy has not created excess inflation pressures. In the years immediately following the GFC the ‘negative’ output gap was likely caused by weak demand. In the last few years stronger growth in supply (including labour supply) has likely also assisted in boosting the potential growth rate of the economy despite reasonably strong actual economic growth [the output gap essentially balances the two]. **It can be observed the 90 day bank bill rates setting has been broadly appropriate for the level of the output gap post GFC.**



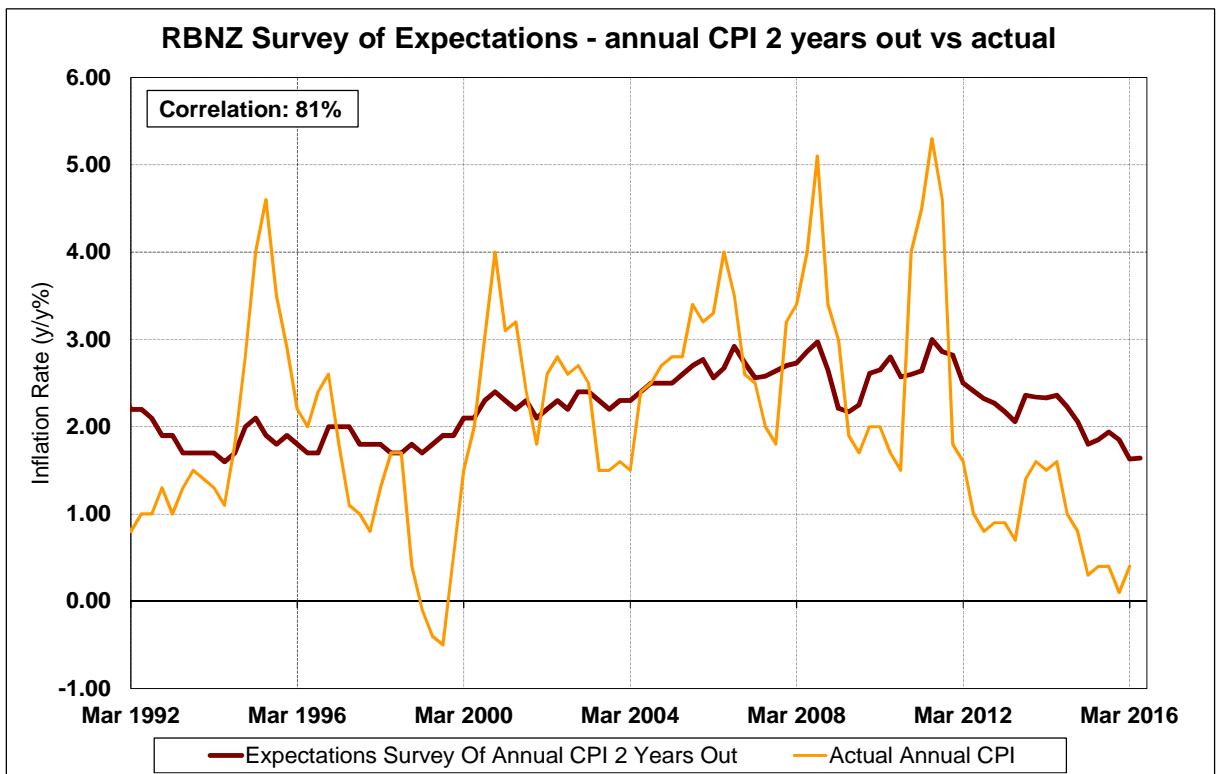


Lower transport CPI (petrol prices) offsetting higher housing and utilities inflation

The current New Zealand CPI inflation breakdown for the year to March 2016 is as follows:-

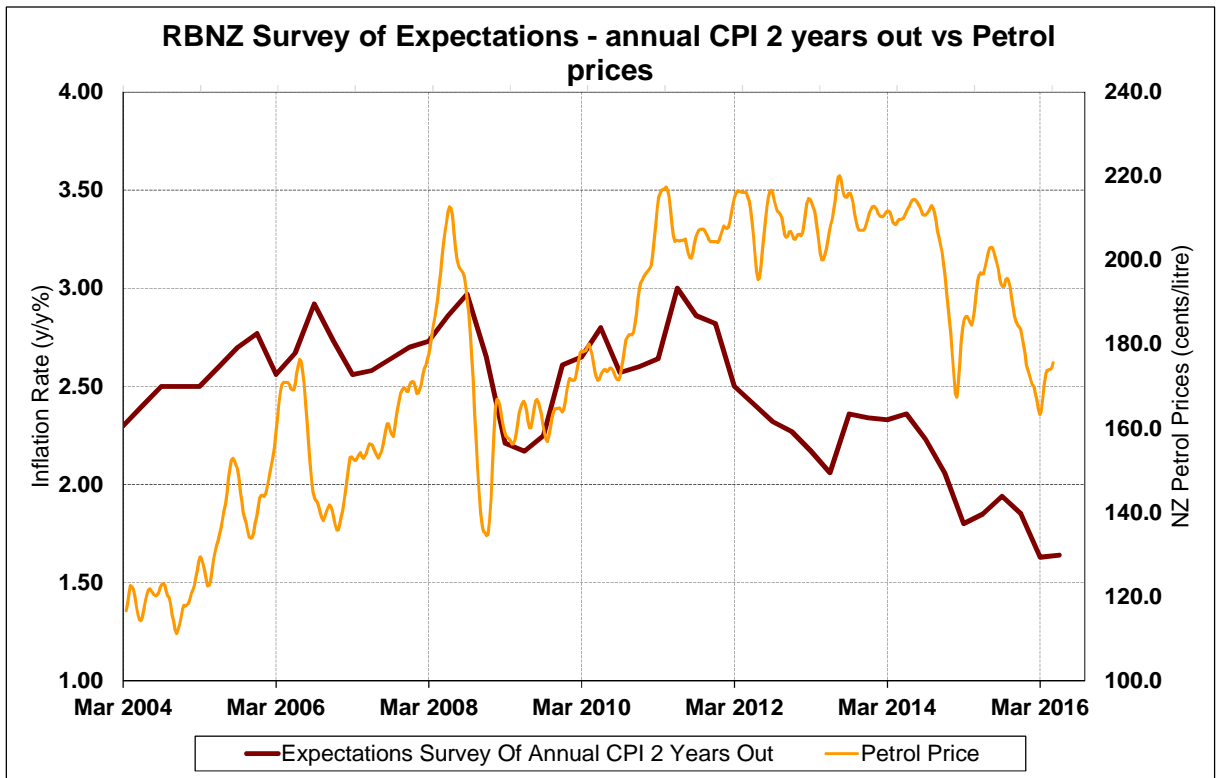


New Zealand inflation expectations (for two years forward) are currently very low, dragged down by the low current actual headline inflation rate

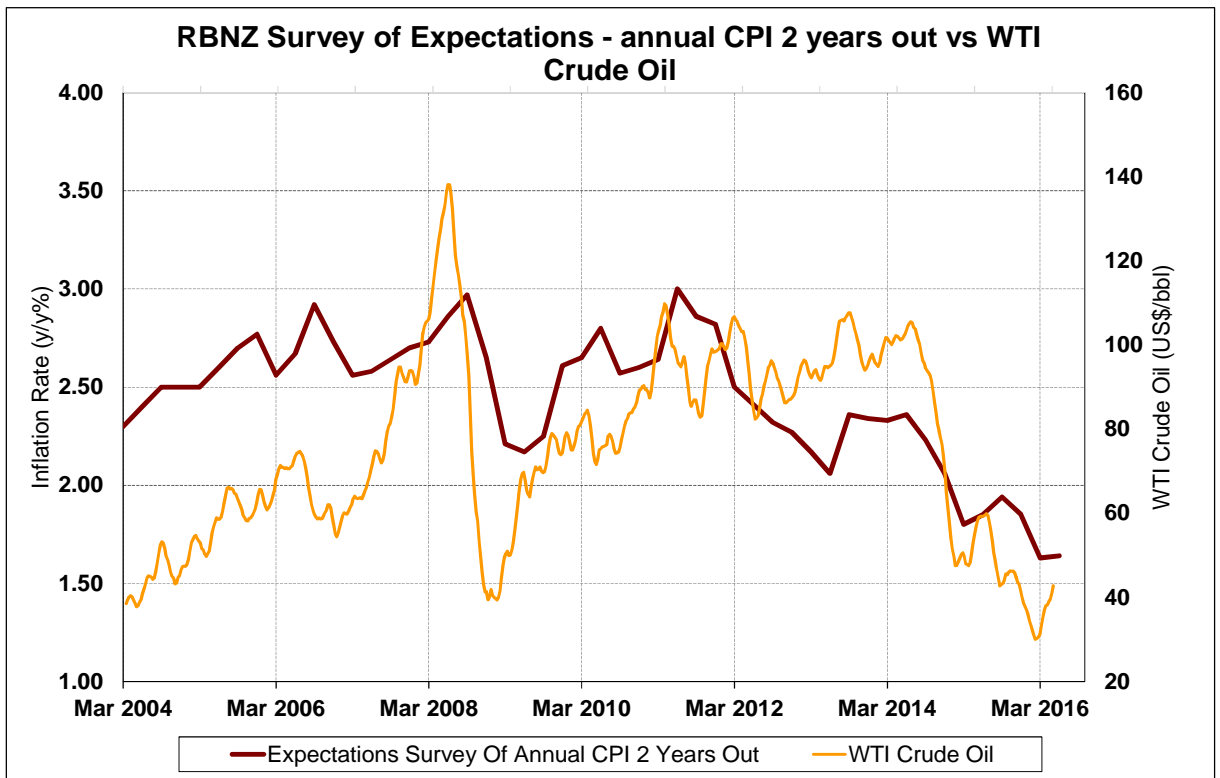




Falling petrol prices have also helped drag New Zealand inflation expectations lower...



...as global oil prices have also fallen sharply (although are now moving higher).



SUMMARY – New Zealand Short-Term Interest Rates

The following summarises the main points of the New Zealand short-term interest rates analysis:-

The RBNZ estimates the neutral level of the New Zealand 90 day bank bill rate as being 4.50%, lower than the 6.50% estimated for prior to the Global Financial Crisis.

Historical measures such as CPI and the rate of Capacity Utilisation have been less useful guides for the level of 90 day bank bill rates since the GFC, however 90 day bank bill rates have broadly been at levels consistent with the output gap balancing economy-wide supply with demand.

Inflation expectations have moved lower consistent with lower current headline inflation, driven at least in part by lower petrol / oil prices, albeit these appear to now be reversing higher.

CONCLUSION: Currently New Zealand short-term interest rates are below the level deemed by the RBNZ to be ‘neutral’. Furthermore, the neutral level has already been markedly lower for the post GFC period relative to the pre GFC period. A movement back up to (or above) the neutral level will require either stronger demand than supply (i.e. emergence of a ‘positive’ output gap) and/or stronger oil/domestic petrol prices pushing up headline inflation rates and inflation expectations. There is also the potential the RBNZ need to revise their judgment of the neutral short-term interest rate lower from the current 4.50% estimate.

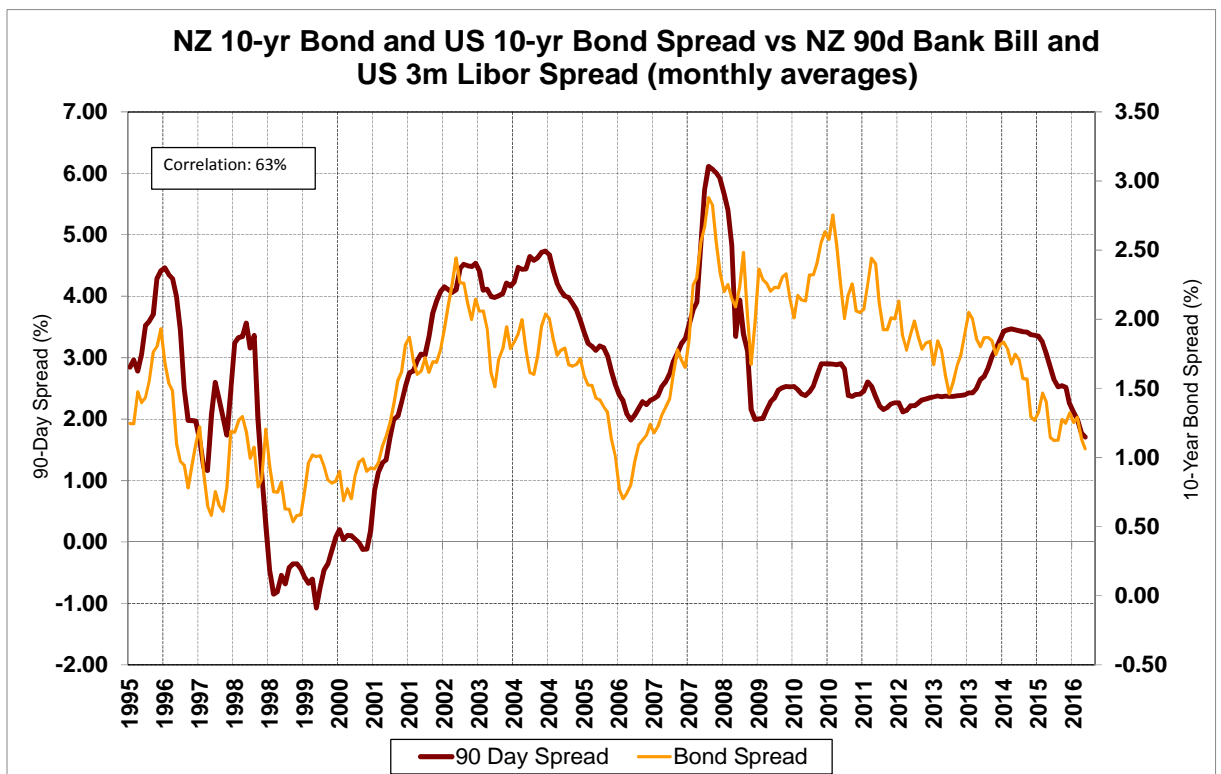
2. The risk premium of NZ long-term rates to US long-term rates

New Zealand risk premium

Whilst domestic New Zealand monetary policy drives the movements in the Official Cash Rate and interest rates out to two or three years, New Zealand interest rates beyond approximately three years (i.e. to 10 years and potentially longer) are primarily driven by US (and global) long-term interest rate markets. There is a long close correlation between US and New Zealand government bond yields because of the high level of foreign ownership of our government bonds (66.5%) and very integrated global financial/capital markets (i.e. the impact and activity of international investors). However, there is also a risk premium between New Zealand and US long-term government bond yields. The risk premium reflects the reliance on foreign investment to fund our current account deficit (that is structural in nature). Furthermore, New Zealand will always have a positive risk premium owing to our relatively small and narrowly focussed economy that does still retain an agricultural focus, i.e. economy-wide risks are apparent. These factors and the relatively small size of our government bond market results in the risk premium that can also be seen as assisting liquidity.

New Zealand long-term risk premium has reduced from 1.60% (pre GFC) to approximately 1.00% (currently)

The chart shows how this risk premium – the ‘spread or differential’ between New Zealand and US 10 year government bond yields - has varied over the last 20 years averaging 1.60% and ranging between 0.50% and 2.90%. There is a reasonable (63%) correlation between the 10 year government bond ‘spread or differential’ and the differential between 90 day interest rates (New Zealand 90 day bank bills less US 3 month LIBOR).





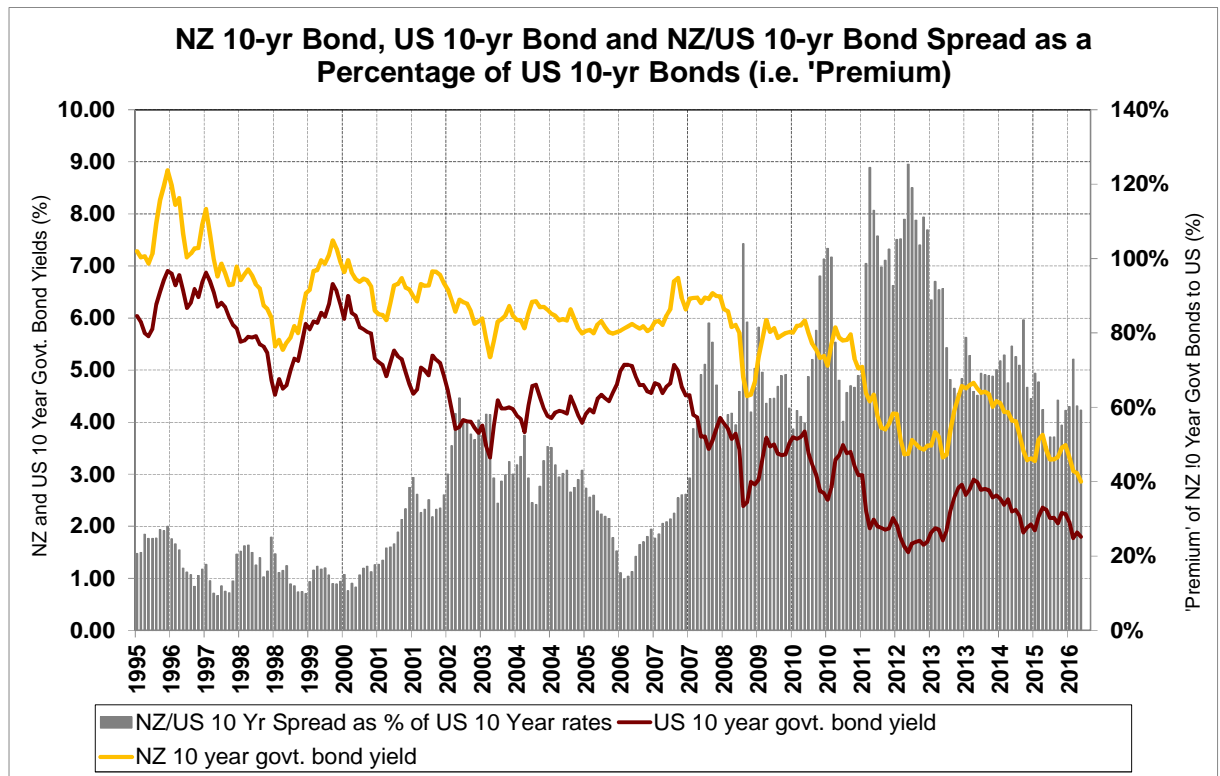
This 90 day differential has ranged between +6.10% and -1.10% over the last 20 years, and averaged 2.70%. Interestingly the differential between the NZ/US 10 year government bond yield has actually had a higher average post GFC (1.90%) than pre GFC (1.45%). The New Zealand / US 90 day interest rate differential has had a similar average post GFC (2.55%) as pre GFC (2.75%).

The 90 day interest rate differential is currently 1.70% coinciding with a 10-year government bond differential of 1.05%.

New Zealand long-term risk premium unlikely to narrow further

New Zealand has had long-term interest rates effectively propped up by an average risk premium of 160 basis points over US long-term interest rates over the past 20 years (comparing US 10 year Treasury bond yields to New Zealand 10 year Government bond yields). It can be argued that New Zealand will always need to have a positive differential / risk premium for as long as we rely on overseas capital and have the economic risks associated with a small, open economy. However 160 basis points now appears to be too high in light of the absolute lower level of (short-term) interest rates, and the propensity to take on additional risk to earn a relatively better return at absolute low interest rate levels.

The following chart shows the relationship between the US 10-Year Government Bond Yield, the New Zealand 10-Year Government Bond Yield and the spread between the two as a *percentage* of the US 10-Year Government Bond Yield. The chart shows that this New Zealand ‘premium’ increased markedly in percentage terms around the time of the GFC (and also the major period of US quantitative easing from 2011 through 2013). The premium has reduced somewhat over the last three years albeit has averaged 65% during this time, relative to 30% between 1995 and 2008.



For further guidance on how the short-term interest rate differentials and also long-term bond differentials/ spreads may develop over time we can appeal to the respective central bank estimates of their neutral short-term interest rates. For the RBNZ the best estimate of this remains 4.50%. For the US Federal Reserve, the 16 March 2016 summary of economic projections showed the “central



tendency” within US Federal Reserve (Open Market Committee) members as estimating the ‘long-run’ Federal Funds Rate at 3.00% to 3.50% (i.e. 3.25% ‘midpoint’); this gives a US 3 month LIBOR rate of approximately 3.50%. It is not crystal clear whether this long-run rate refers to a ‘neutral’ level, or perhaps more where interest rates would be getting close to being at the top of the interest rate cycle. As such, it could be argued the ‘neutral’ US 3 month LIBOR rate may be lower than 3.50%

Another factor that needs to be assessed when determining the size of the New Zealand risk premium is to conceptualise the size of the New Zealand market; in a global context this is essentially just the size of a city and a somewhat insignificant presence from a global perspective. The very small size of the New Zealand market does makes it harder to get into and out of and therefore can be an inhibitor to capital and financial flows. A further factor is the relatively narrow, small-based economy (with an agricultural focus) does also create an economic risk for New Zealand. The implication is a higher compensation for risk (i.e. wider risk premium on government bonds).

Following from the rationale above we provide an estimate for the ‘neutral’ short-term interest rate ‘spread’ between New Zealand and the US in the order of 1.25% and for the 10 year government bond spread of approximately 1.00% using the (still relevant) historical relationship between short-term and long-term differentials/spreads. The recognition of the slightly wider risk premium for the small market and the economic risks of a small narrow based economy requires compensation.

In percentage terms, there appears only limited scope for the premium of New Zealand 10-Year Government Bond Yields relative to those in the US to reduce.

SUMMARY – New Zealand Risk Premium

The following summarises the main points of the New Zealand Risk Premium analysis:-

The RBNZ have estimated the neutral 90 day interest rate as 4.50%. US Federal Reserve committee members’ estimates of the ‘long-run’ US 3 month LIBOR rate is 3.25%. The 1.25% differential between New Zealand and US 90 day interest rates is consistent with an approximately 1.00% (100 basis point) risk premium between New Zealand and US 10 year government bond yields.

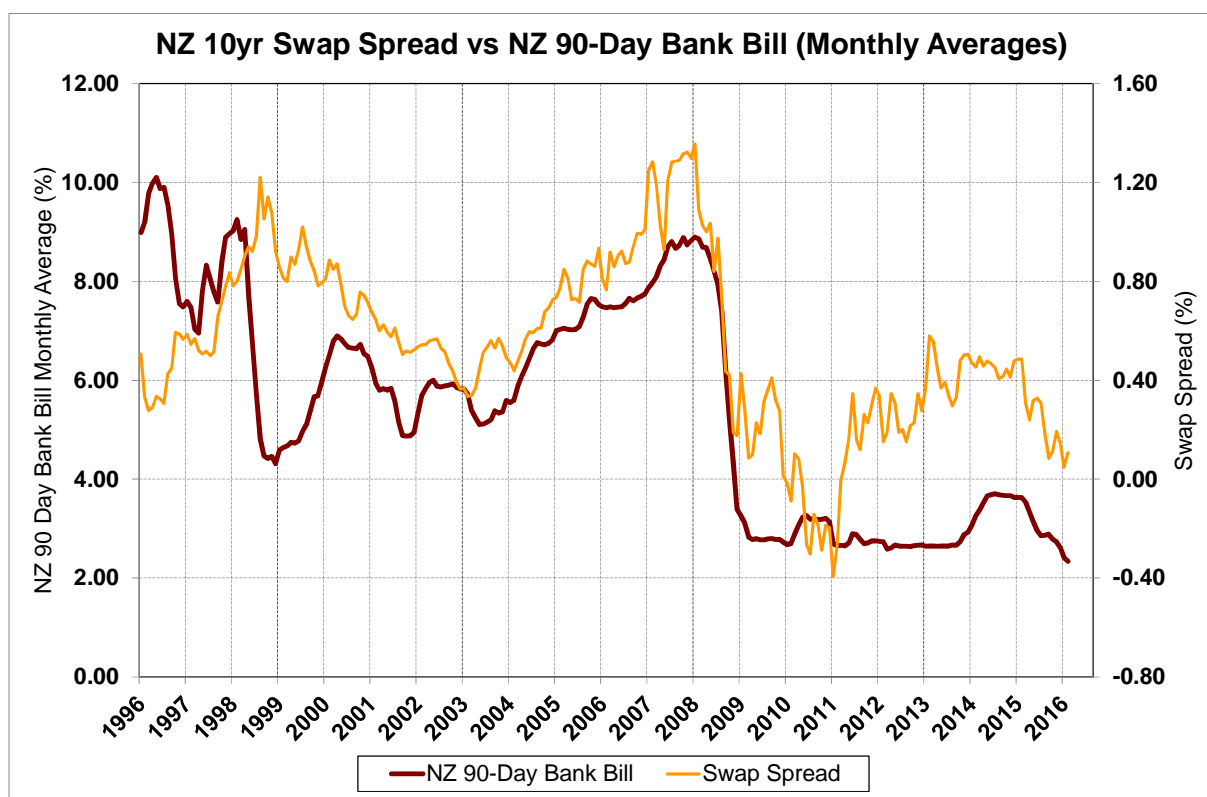
The premium/percentage of New Zealand 10-Year Government Bond Yields being above those in the US has been 60%+ over the last three years. This is below the levels of over 100% during the height of Quantitative Easing in the US, but above the 30% premium prior to the GFC.

CONCLUSION: New Zealand 10-Year Government Bond Yields are approximately 100 basis points above those in the US (60%). There may be scope for short-term (90-day) interest rate differentials to narrow based on the assessment of ‘neutral’ policy rates by the New Zealand and US central banks, however there may be considerably less propensity for the 10 year government bond yield differential to do so. In percentage terms, there appears only limited scope for the premium of New Zealand 10-Year Government Bond Yields relative to those in the US to reduce.

3. Historical New Zealand swap spreads

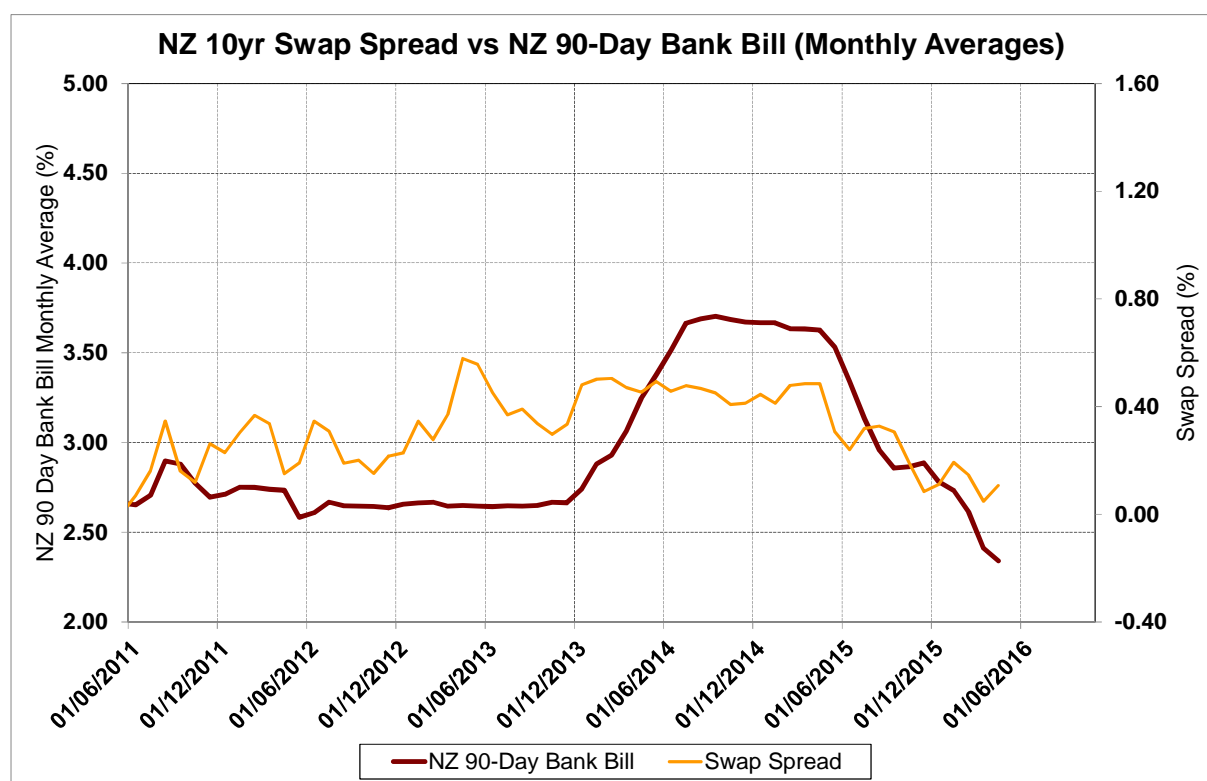
New Zealand 10 year swap spread

The following chart shows the spread between the New Zealand 10 year swap rate and the New Zealand 10 year government bond yield (the “10 year swap spread”) against the level of the 90 day bank bill rate. For the 1996 to 2008 period pre GFC, the New Zealand 10 year swap spread averaged 75 basis points and the 90 day bank bill rate averaged 7.00% with a correlation between 1999 and 2008 of +75%. Since 2009 the 10 year swap spread has averaged 25 basis points and the 90 day bank bill rate has averaged 3.00%.



Limit to how low the New Zealand 10 year swap spread can go owing to limited size of the New Zealand market

The following chart more closely focuses on the period since the GFC and more specifically since 2011. Since 2011 there has been a 53% correlation between the New Zealand 10 year swap spread and the 90 day bank bill rate. Since 2011 the New Zealand 10 year swap spread has averaged 30 basis points with the 90 day bank bill rate averaging 3.00%.



The swap spread can also be thought of as reflecting the size of the New Zealand wholesale interest rate markets. There is a relatively small size for the New Zealand swap market (market estimates tend to indicate a volume of between \$200 million and \$500 million 5-year swap equivalent absorbed under normal circumstances on any given day) hence we would assess the lower end of this range at \$200 million as reflecting ‘normal’ market volume that can be absorbed for 10-year swap equivalent. The New Zealand swap market can be very susceptible to one-sided fixed-rate “payer” flows, pushing swap rates up (relative to bond yields) therefore widening the swap spread.

A contrary viewpoint that would place pressure on swap spreads to narrow concerns the regulatory environment. Swap rates usually trade above the equivalent maturity bond yields as swap transactions involve credit risk around counterparties, whereas sovereign bonds are typically perceived to be risk-free. Recently in the US, swap spreads have turned negative with tighter macro prudential regulation, higher capital requirements for banks and reduced dealer balance sheet capacity all mooted as reasons for this. Furthermore, bank credit risk is also considered to have reduced on the back of central clearing houses (rather than bi-lateral exposures) that has lowered swap credit risk. The prospect that not all government bonds may be included as risk free on banks’ balance sheets (e.g. Greek sovereign debt) is another reason seen as driving the potential shift in swap spreads (to negative – i.e. swaps trading below government bond yields) or at least with a narrower spread.

SUMMARY – New Zealand Swap Spread

The following summarises the main points of the New Zealand Swap Spread Premium analysis:-

The New Zealand 10 year swap spread (10 year swap rate less 10 year government bond yield) can be seen as relative to the size of the underlying wholesale interest rate market (i.e. small in the instance of New Zealand) hence subject to one-sided fixed-rate “payer” flows pushing the swap rates higher and swap spread wider.

A contrary viewpoint that would lead to lower/narrower swap spreads involves the regulatory environment with higher capital requirements for banks and reduced dealer balance sheet capacity mooted as reasons for negative swap spreads in the US (swap rates below bond yields). Bank credit risk is also considered to have reduced on the back of central clearing houses (rather than bi-lateral exposures) that has lowered swap credit risk.

CONCLUSION: Whilst the absolute level of 90 day bank bill rates and 10 year swap rates have reduced post GFC, the New Zealand 10-year swap spread (10 year swap rate less 10 year government bond yield) has not reduced by the same proportionate amount, recognising the relatively small size of the New Zealand swap market. The increased regulatory environment, higher capital requirement and less credit risk associated with central clearing houses are reasons why swap spreads could narrow. A New Zealand 10 year swap spread in the range of 25 and up to 75 basis points appears relevant, even in an environment of the wholesale market swap yield curve (90 day bank bill to 10 year swap rates) being between 3.00% and 5.00%.

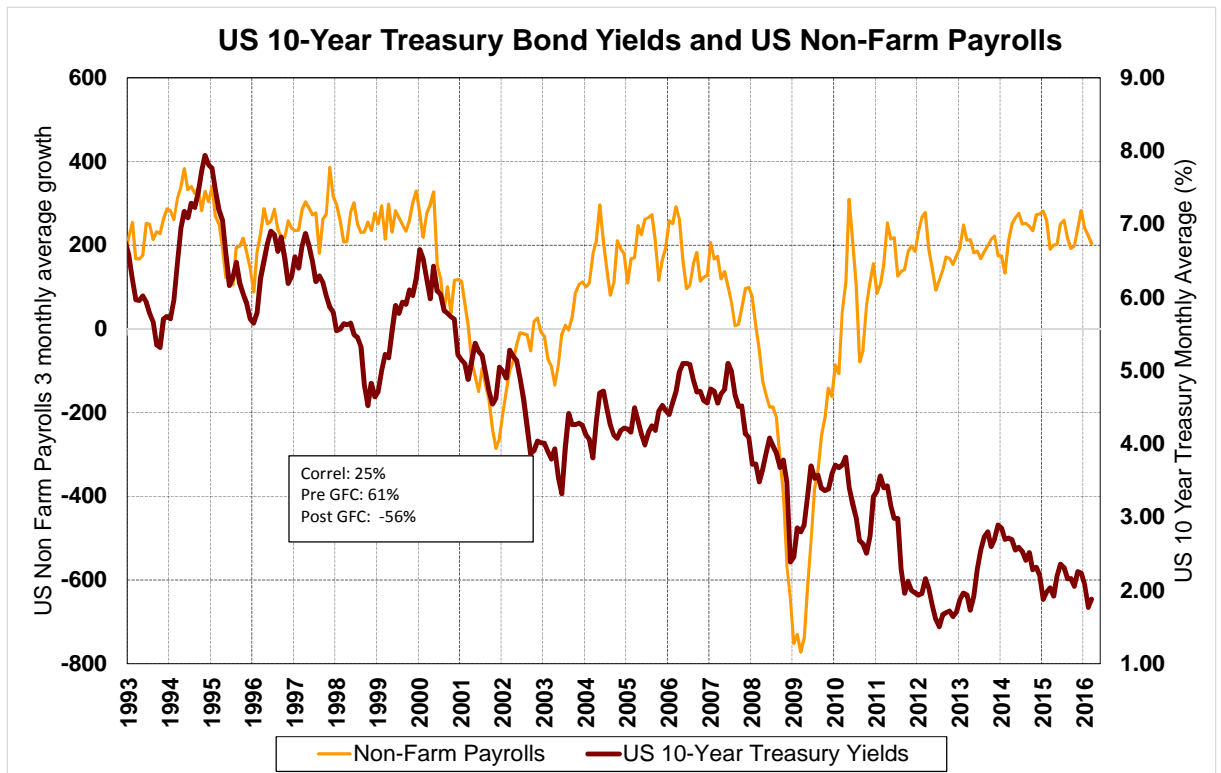
4. Traditional US long-term interest rate drivers

US economic drivers

A key, but not the only, driver of US long-term interest rates is cyclical economic data with these creating expectations for movements in the US Federal Funds Rate, anticipated by the bond market.

Employment growth a driver of bond yields pre-GFC, not post GFC

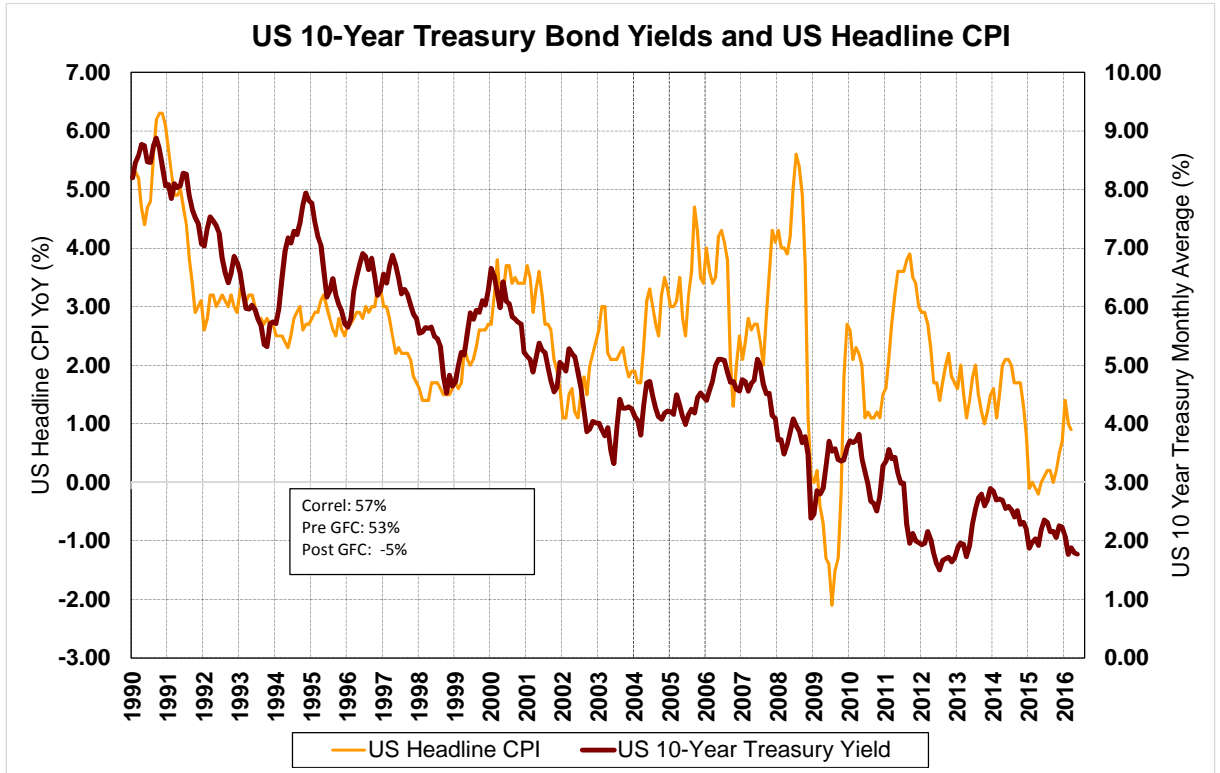
The US Federal Reserve has a 'dual' mandate to maximise employment growth and also to manage inflation at 2.0%. There was a +61% correlation between 1993 and 2008 between US 10 year government bond yields and US non-farm payrolls employment growth (3 month average). Post the GFC there has not been an intuitive relationship between US employment growth and US 10-year government bond yield (-56%).





US 10-year government bond yields below a level indicated by US Headline CPI...

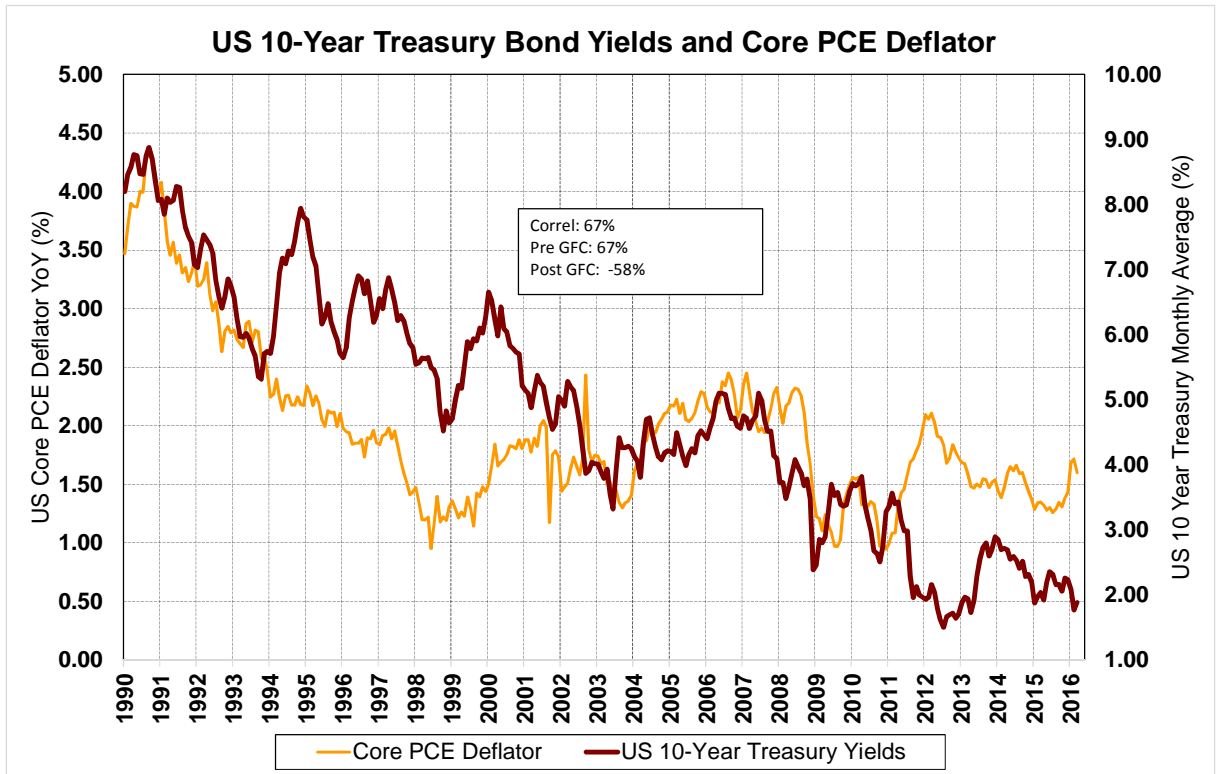
There has been a reasonable relationship overall between the US (Headline) Consumer Price Index and the US 10-year government bond yield over the last 25 years in total, however this relationship has not held since the GFC with bond yields generally lower than a level implied by headline CPI.





US 10-year government bond yields below a level indicated by US Federal Reserve's favoured core inflation measure...

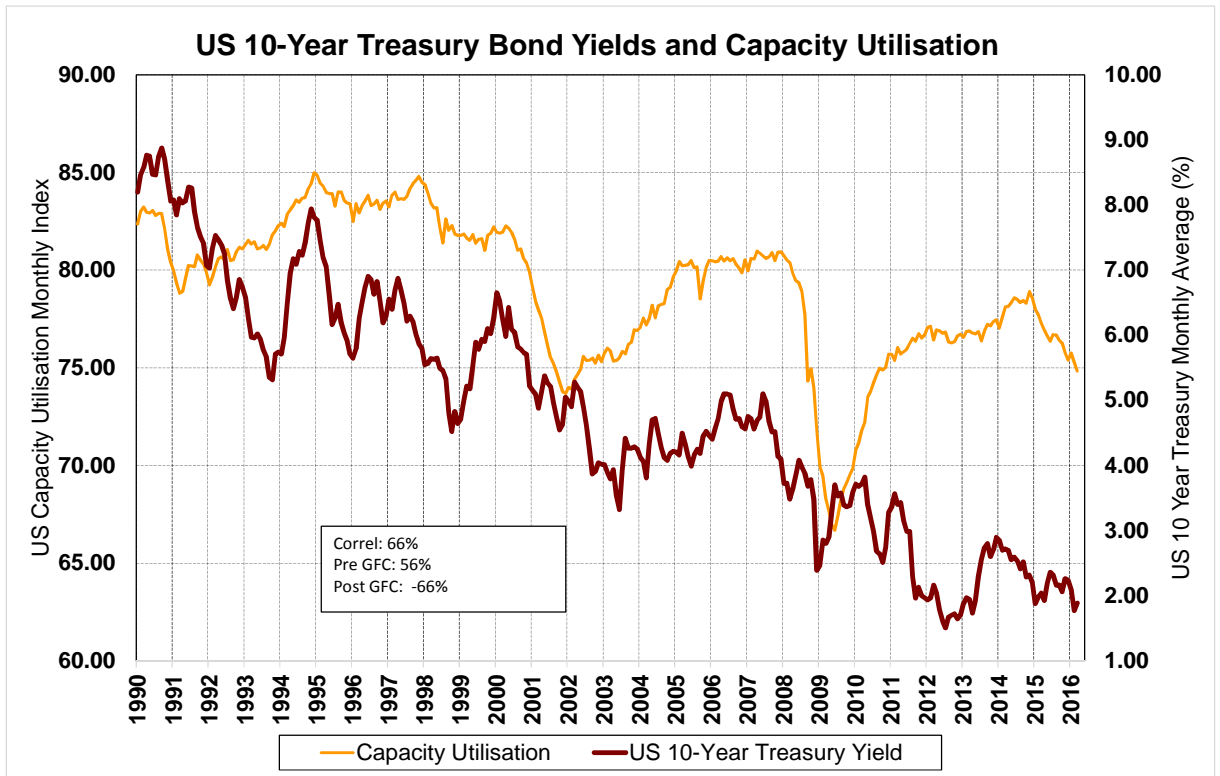
The favoured inflation measure of the US Federal Reserve is the Core (ex. Food and Energy) Personal Consumption Expenditure Deflator with this also having shown a break-down in the relationship after the GFC where higher US government bond yields would typically be expected.





US 10-year government bond yields are below a level indicated by the rate of capacity utilisation

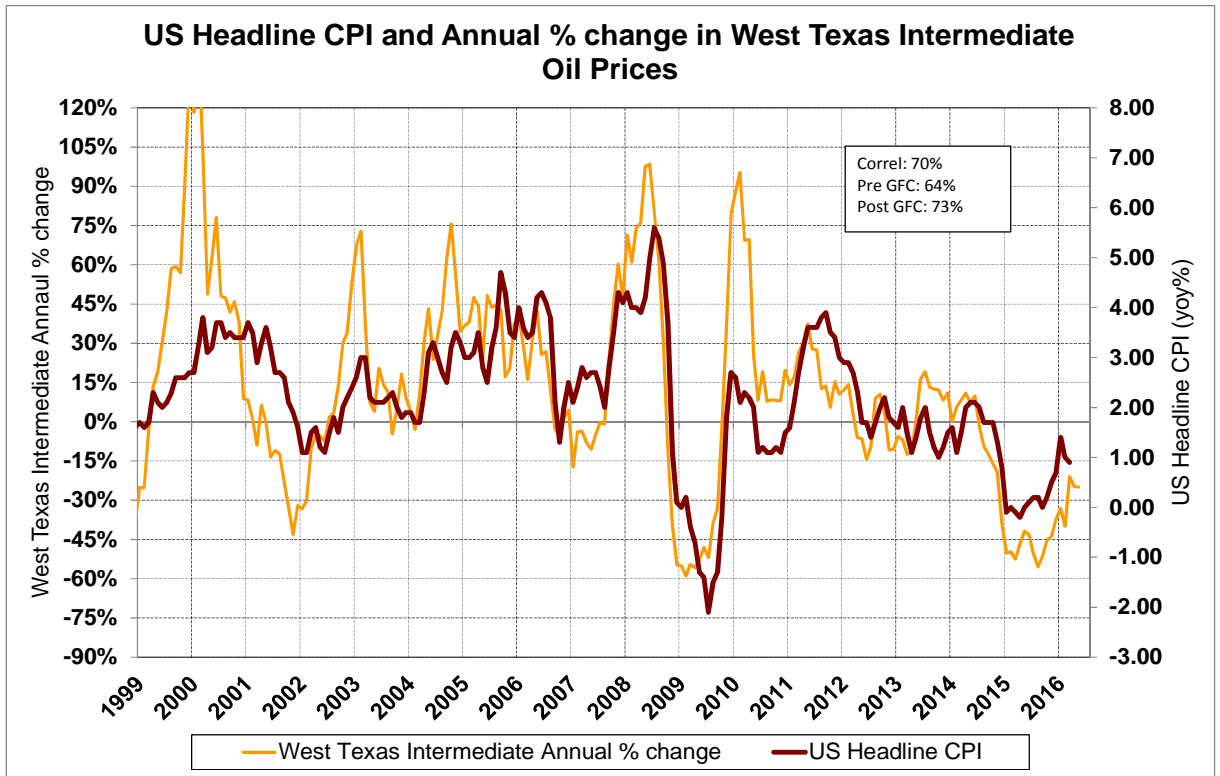
The rate of capacity utilisation in the US has historically been a good indicator for the US 10 year government bond yield. This relationship has also broken down since the GFC. However, interestingly the rate of capacity utilisation has been falling over the last 12+ months (albeit with this somewhat driven by transitory factors such as shale oil industry under-utilisation), broadly consistent with the lower US 10 year government bond yields.





The influence of falling oil prices has also been an important factor driving US headline CPI inflation lower

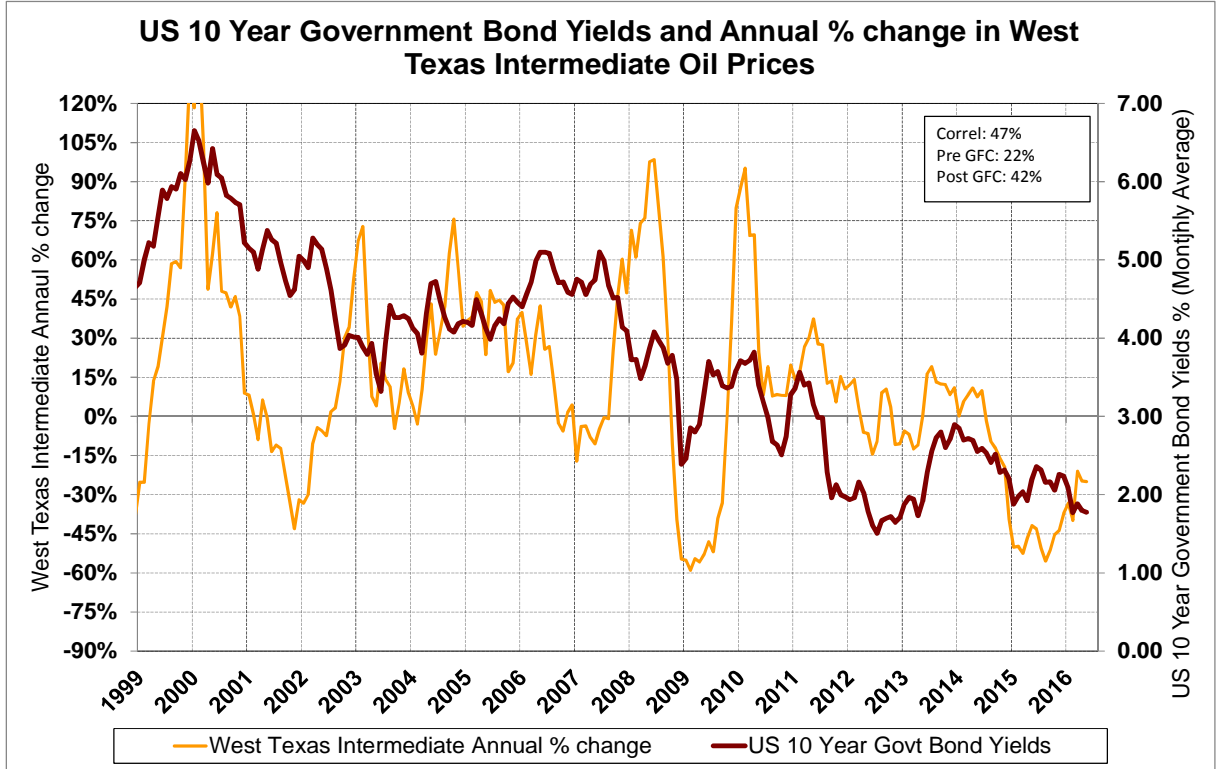
There has been a good correlation between the annual rate of percentage change of oil prices and headline US CPI also in annual percentage change terms. The relationship has been similar both pre and post GFC.





Lower oil prices (weakly) consistent with lower bond yields

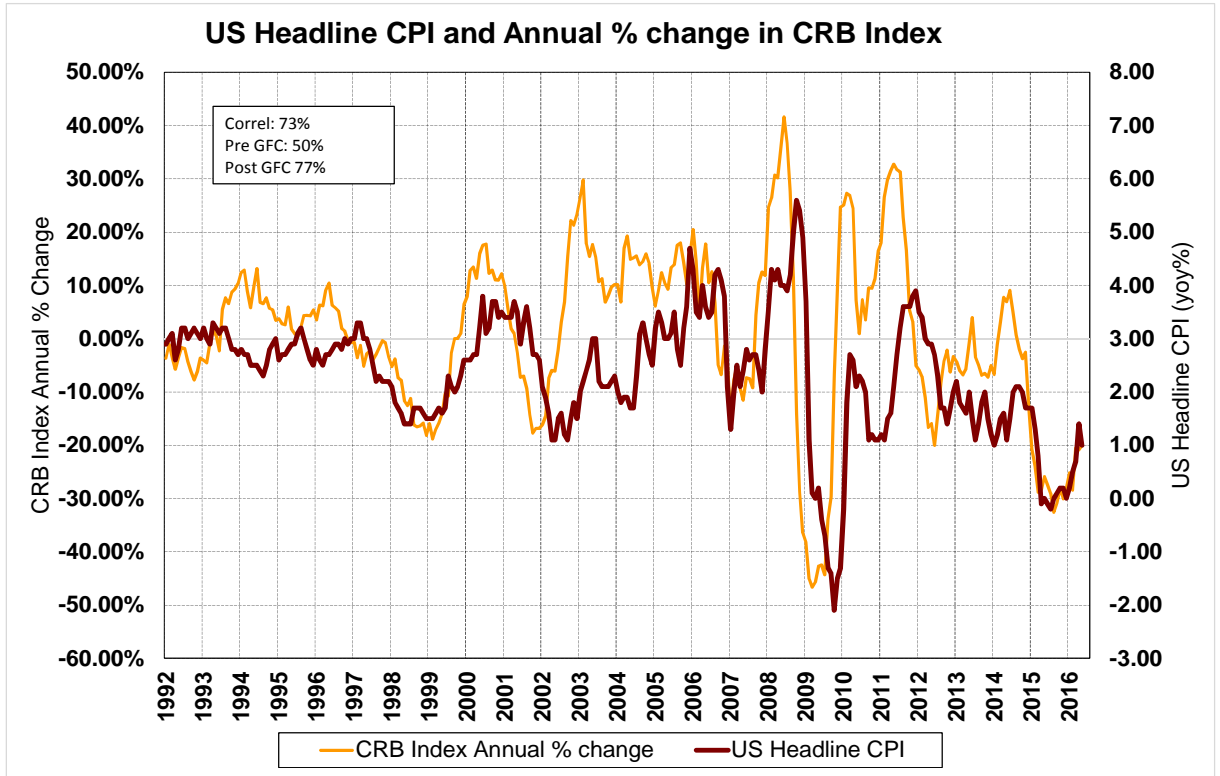
There is a weak but intuitive relationship between US 10 year government bond yields and the annual percentage change in oil prices, with this relationship having remained broadly intact since the GFC.





Lower broader commodity price measures also driving headline CPI lower

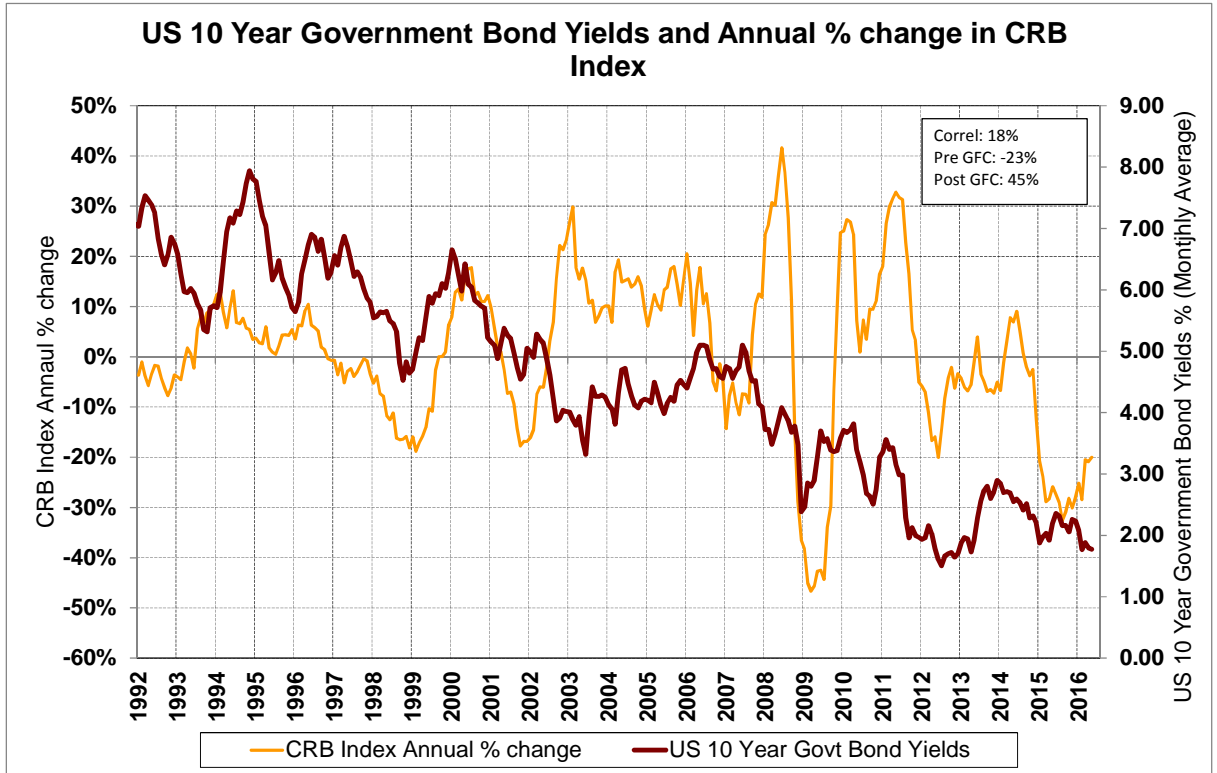
The influence of falling commodity prices more broadly (as captured in the Commodity Research Bureau (“CRB”) Index) has also been an important factor driving US headline CPI inflation lower. There has been a strong correlation both pre and post GFC between annual percentage changes in the CRB Index and US Headline CPI also in annual percentage change terms.





Lower commodity prices are (weakly) consistent with lower bond yields.

The correlation has increased notably from pre GFC to post GFC (-23% to 45%). Sentiment in the commodities market appears to have become an influence behind monetary policy settings.

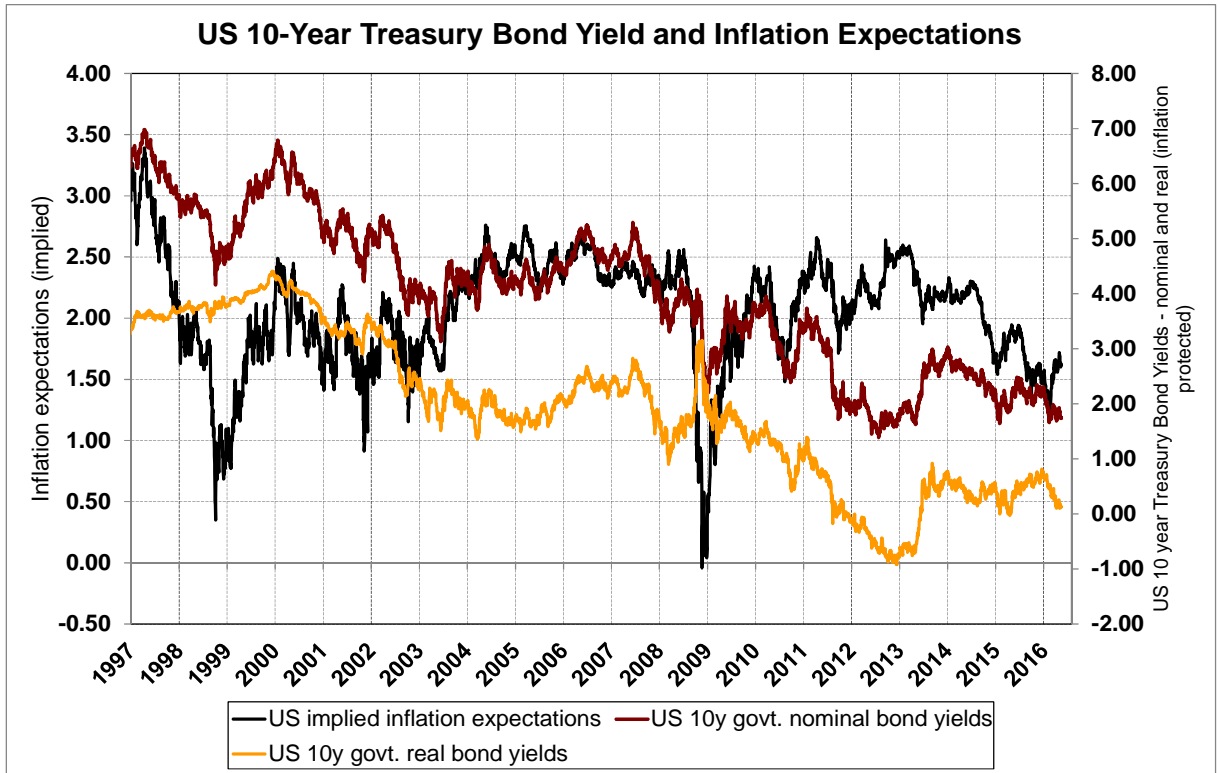




Market implied measures of US inflation expectations have fallen from 2013 onwards

US market implied inflation expectations are defined as the difference between the US 10 year nominal bond yield and the equivalent 10 year real (or Treasury Inflation Protection Securities yield) also known as “TIPS”. Among other factors, the following chart shows the ongoing fall in the ‘real’ yield through 2011 and 2012 amidst the Quantitative Easing programme of the US Federal Reserve, and also the ‘taper’ tantrum of higher nominal yields from May to August 2013.

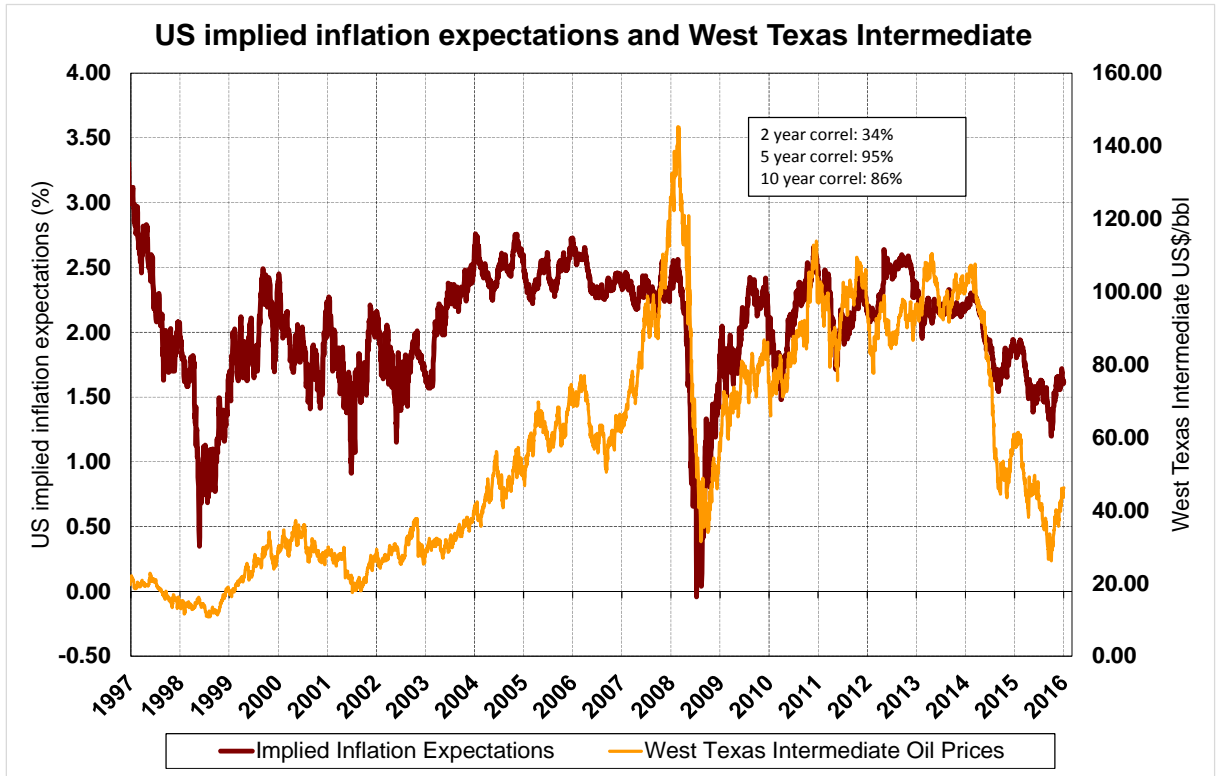
The chart also shows the general slide in market based measures of inflation expectations from 2013 onwards (black line).





Sharply lower oil prices a key factor in pushing inflation expectations lower, trend in oil prices has surprised in the extent it has reversed, and driving market implied inflation expectations higher

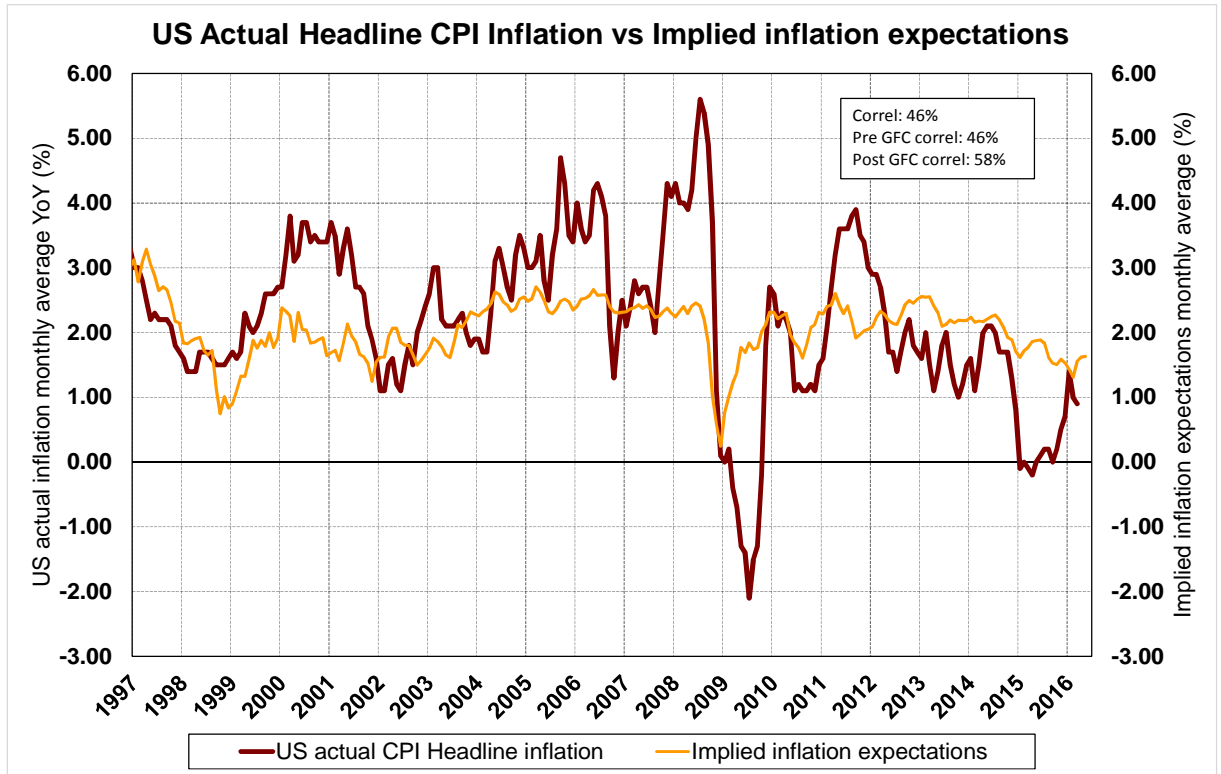
The following chart shows the relationship between West Texas Intermediate Oil prices and US implied inflation expectations and shows the close correlation between the two. The chart shows the recent pick-up in both West Texas oil prices and market implied inflation expectations.





US inflation close to breaking back above inflation expectations

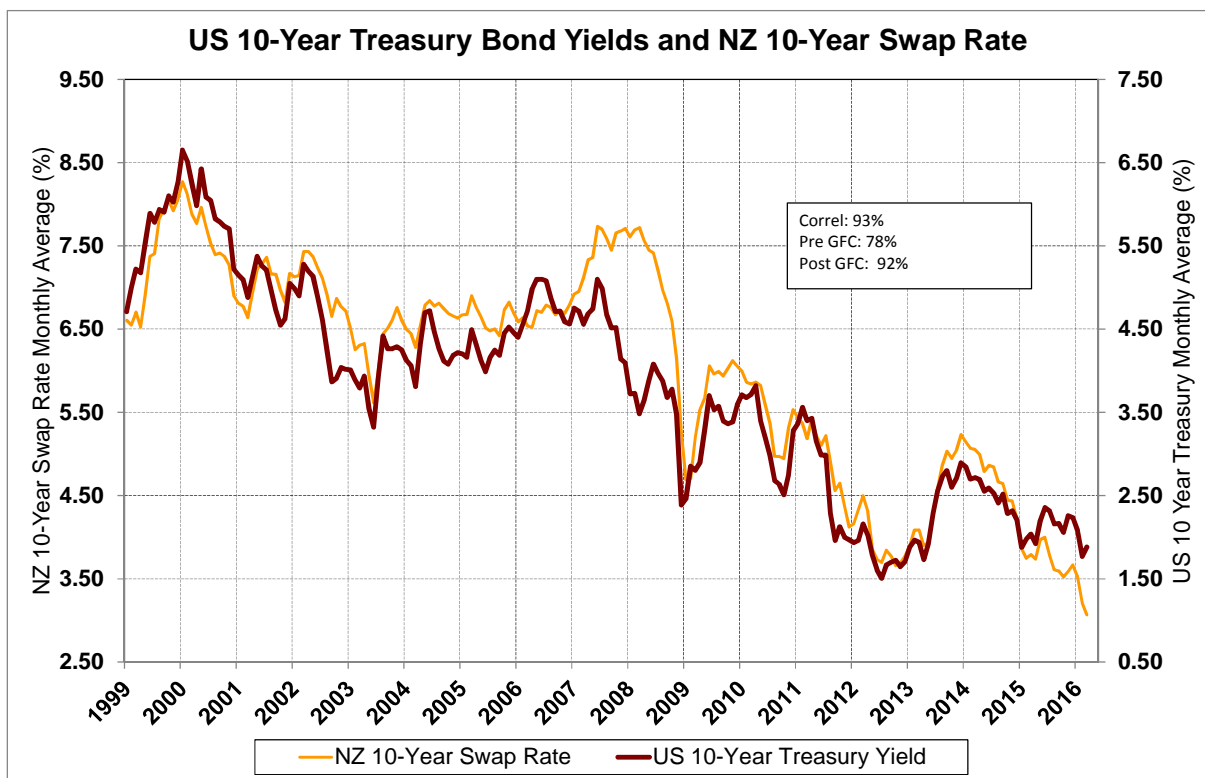
The following chart shows the relationship between the US actual headline CPI inflation rate and market implied inflation expectations generated from the difference between nominal yields and the real/TIPS yield. The chart shows the ongoing fall in inflation expectation from 2014 and the initial sharp fall, and then increase, in headline CPI. At some point actual CPI inflation is likely to increase above inflation expectations, which may result in pushing both of these measures higher. A period of relative stability in oil prices over coming months (that sees prior annual decreases turn to increases) would assist this move.





Where US 10 year government bond yields go, so too New Zealand 10 year swap rates will follow...

The correlation between US 10 year government bond yields and the New Zealand 10 year swap rate remains very strong, with the lower New Zealand 10-year swap rates having been consistent with the lower US 10-year government bond yields, albeit arguably over-shooting such an implied level.



SUMMARY – US economic drivers of US long-term interest rates

The following summarises the main points of the US economic drivers of US long-term interest rate section:-

Since the GFC, US employment growth, the core PCE deflator and the rate of capacity utilisation have not been intuitive indicators of the US 10 year government bond yield. US 10 year government bond yields have also been below a level consistent with headline CPI.

Falls in West Texas Intermediate Oil prices and broader measures of commodity prices such as the Commodity Research Bureau Index have been consistent with lower headline CPI, lower inflation expectations and lower US 10 year government bond yields. Latest movements higher in oil prices (for now) – and at least stabilisation in broader commodity price measures - is seeing a reversal higher in headline CPI and inflation expectations and (to a modest extent) US 10 year government bond yields.

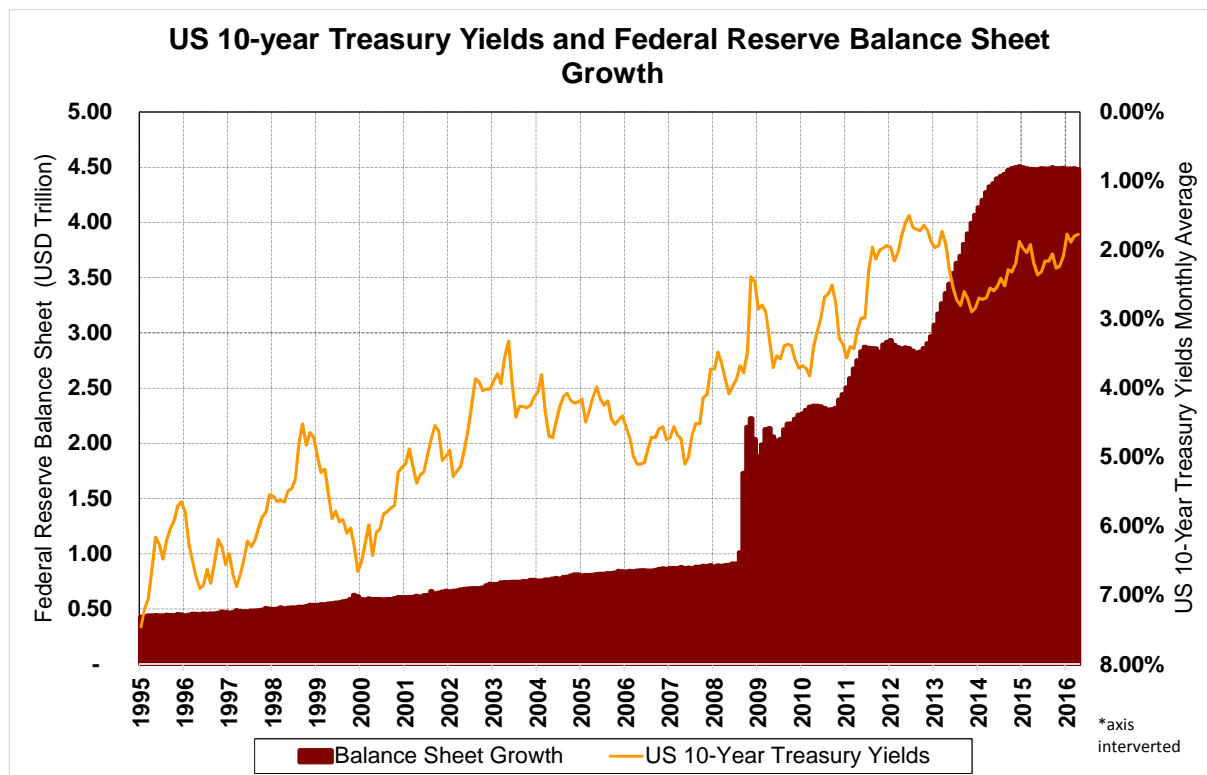
The perceived sustainability of oil as an energy source, or alternatively use of other energy sources, and lower demand and prices for oil will be a determinant of headline inflation and bond yields, albeit alternative energy sources may have higher prices associated with them.

CONCLUSION: US long-term interest rates remain well below a level indicated by (higher) inflation pressures and other more upbeat US economic data; inflation pressures also appear set to increase.

5. Additional US drivers of US 10-year government bond yields

The massive US Quantitative Easing programme of the US Federal Reserve to purchase US government bonds to push down yields and support equity and housing markets and consumer spending has worked...what next?

The US Quantitative Easing (“QE”) Programme of purchasing predominantly US government bonds initially implemented in November 2008 (USD1.725 trillion), extended in November 2010 (an additional USD600 billion) and further added to from November 2012 has seen the size of the US Federal Reserve’s ‘Balance Sheet’ grow from approximately USD1 trillion in late 2008 to USD4.5 trillion by the end of 2014 where it has since remained broadly stable. The purchase of US government bonds has driven US bond yields lower (inverted axis on chart) motivated to also cheapen the cost of borrowing in the US and support the housing market, equity market and consumer spending. The impact of the QE programme must be assessed as largely successful to date in meeting its goals.

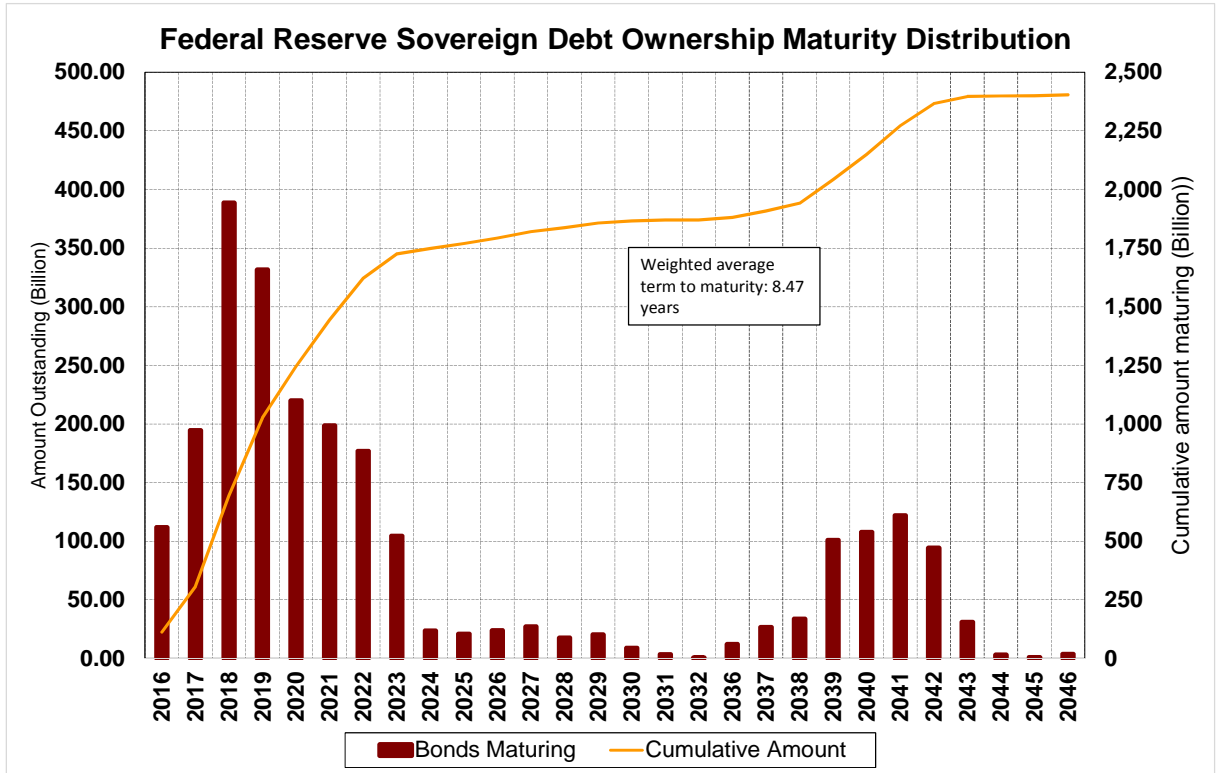


What is the final unwritten chapter of Ben Bernanke’s QE playbook to pull the US economy out of recession? The massive QE buying of bonds to put cash into the US economy a few years back has succeeded, however Ben did not provide the answers/guidance on how to unwind the QE stimulus (‘yours Janet’!). Ultimately the Federal Reserve need to sell all the Treasury Bonds they purchased. It may take 20 years to do so, however bond yields can only go up when they start. Alternatively the Federal Reserve will hold the bonds until they mature (and ultimately not replace these).

The following chart shows the maturity profile of the US Treasury Bonds owned by the US Federal Reserve. The Portfolio has USD1.0 trillion of the USD2.4 trillion Treasury debt maturing through 2019 and USD1.6 trillion maturing by 2022. The US Federal Reserve do not intend to increase their USD2.4 trillion holding and anticipate slowly unwinding their positions as inflation returns to the target level of 2%. The current reinvestment plan is to continue reinvesting coupons and rolling over existing



bonds maturing. Over time the US Federal Reserve is expected to decrease the amount being reinvested in relation to those bonds maturing. Thus the current expectation is **the US Federal Reserve will not be selling any bonds outright but will be gradually reducing the amount being re-invested to slowly unwind the size of the portfolio.**

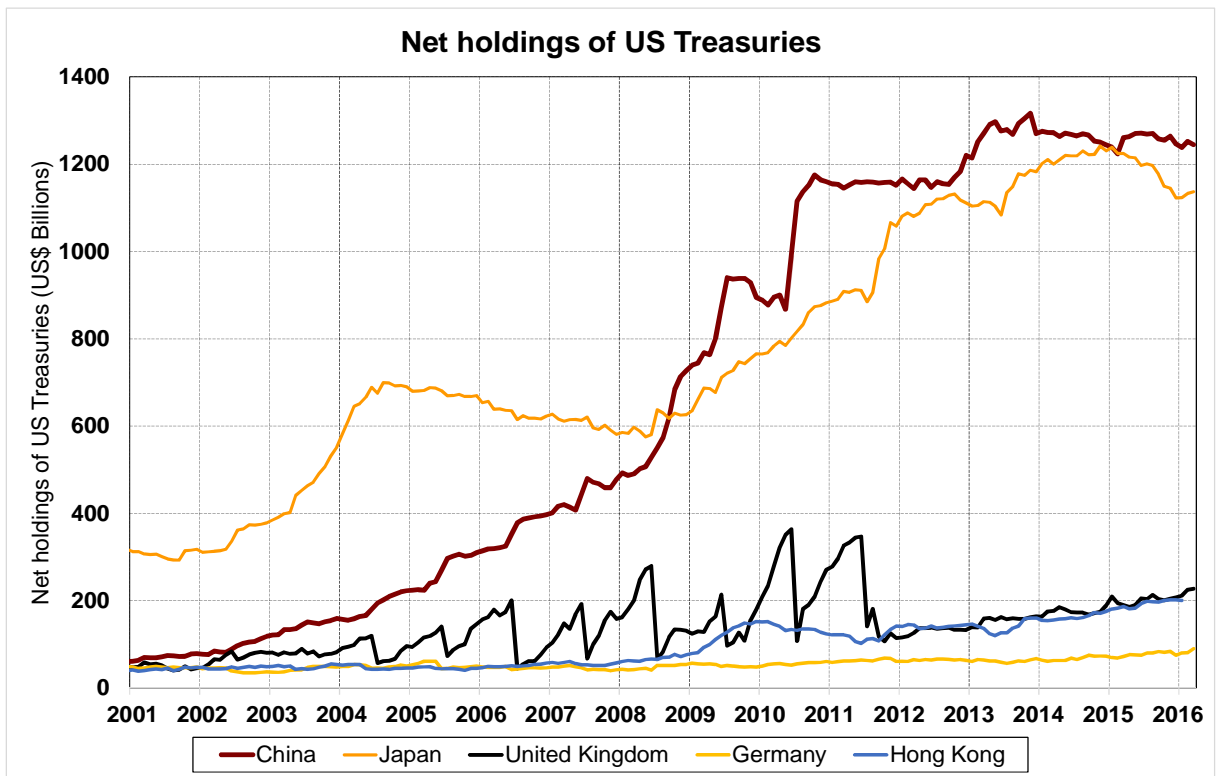




Massive Chinese buying of US government bonds with FX Reserves (trade surpluses) also constraining yields

Another consideration is if, when and how do the Chinese investors currently holding US Treasury Bonds reduce their holdings to generate the cash which may be necessary to shore up economic growth back in China? As the Chinese built up large FX Reserves through trade surpluses these have from 2002 through 2014 significantly been invested in US treasury bonds to an amount equivalent to approximately half of the holdings of the US Federal Reserve. Japanese investors hold a similar amount of US Federal Government Debt as the Chinese, while German investor holdings are modest. The third and fourth largest holders of US Government Debt (being the UK and Hong Kong) are also markedly smaller than mainland China and Japan.

Combined, the Federal Reserve, Chinese and Japanese investors hold more than one third of all US Federal Government debt. As at the end of 2015 there was USD13.2 trillion outstanding US Federal Debt with a further USD2.0 trillion in “Agency” debt.



SUMMARY – Additional US drivers of US long-term interest rates

The following summarises the main points of the Additional US drivers of US long-term interest rates section:-

The massive purchase of US Government Bonds by the US Federal Reserve under Quantitative Easing has been a significant factor since 2008 in maintaining low bond yields.

The US Federal Reserve is currently re-investing coupons and also importantly re-investing maturing bonds. Once short-term interest rates are normalised with inflation stabilising at 2.0% the US Federal Reserve will reduce the size of their holdings of US government debt by not re-investing all of maturing bonds that they hold.

Chinese and Japanese investors combined hold a similar amount of US Government debt as do the US Federal Reserve. There is the potential for Chinese investors to reduce their holdings to generate the cash to shore up economic growth back in China.

CONCLUSION: US long-term interest rates are being held at current low levels impacted by the massive bond holdings of the US Federal Reserve, with these only to be very slowly allowed to unwind/reduce. Asian investor buying and holdings of US Treasury bonds is also currently holding yields down, however these investors may become sellers, sending yields higher.

6. Global economic growth, asset bubbles and risk implications for US long-term rates

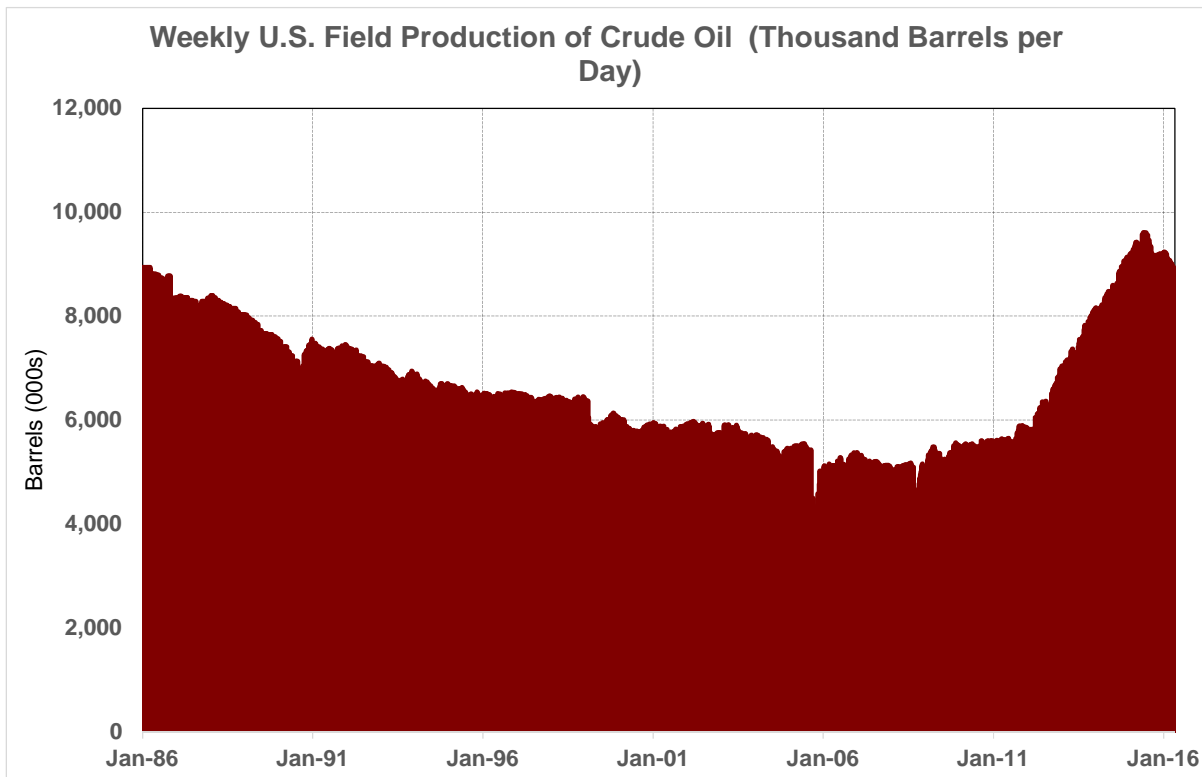
Global economic growth considerations

Global economic growth and commodity prices (CRB index) have tended to move in unison consistent with growth and demand factors such as industrial production being a key driver of commodity prices (in addition to supply considerations). The moderation in global demand evidenced in the slower pace of real GDP growth has been consistent with weaker commodity prices.

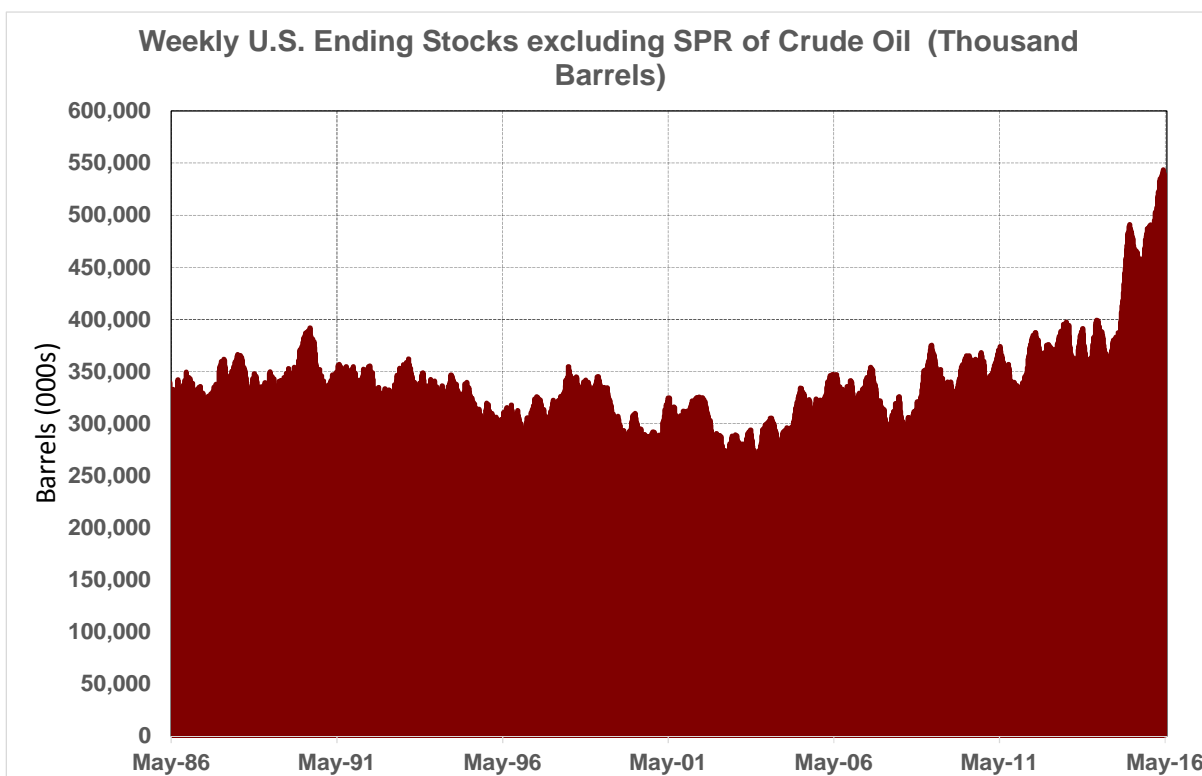




From a supply perspective the previous period of rising US oil production amidst the shale oil revolution has been an important factor behind lower oil prices.



Rising production is also being met with rising stocks. Based on current inventory and supply levels, it is difficult to see a material sustained recovery in oil prices at this time back towards previous 'equilibrium' levels in the order of USD100/barrel.

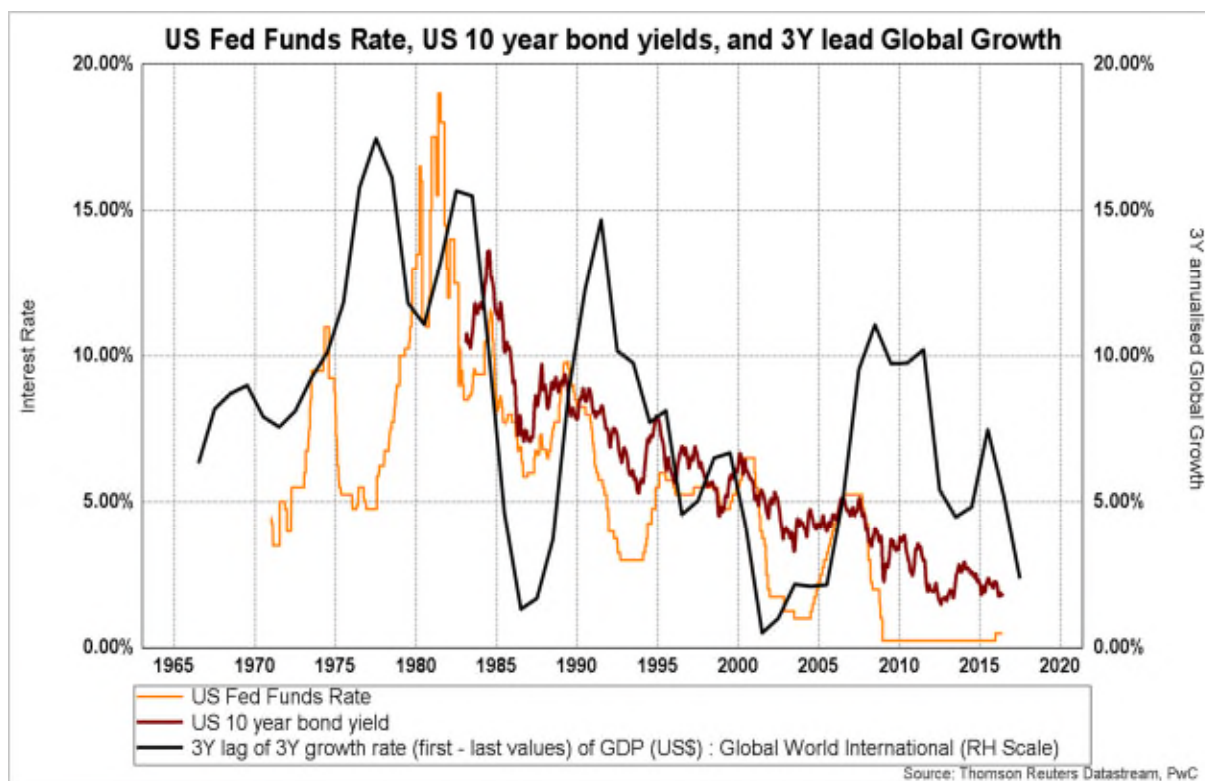




We need to be cognisant that US oil production accounts for less than 10% of that globally, although is considerably assisting the US becoming much more self-sufficient on internal oil production (i.e. rather than reliant on imports).

It is also the case that dynamics in the oil (and other commodities) markets have always been very sensitive to marginal production impacting disproportionately on prices, such that relatively small shifts in supply and demand (causing disequilibrium or 'imbalances') can have a relatively large impact on prices.

Since 1980 global economic growth rates and US interest rates (10 year government bond yield and Federal Funds Rate) have trended lower. Global economic growth has an approximately 3 year lead on US interest rate movements. The immediate implication based on this relationship is that for higher sustained US interest rates global economic growth needs to recover.

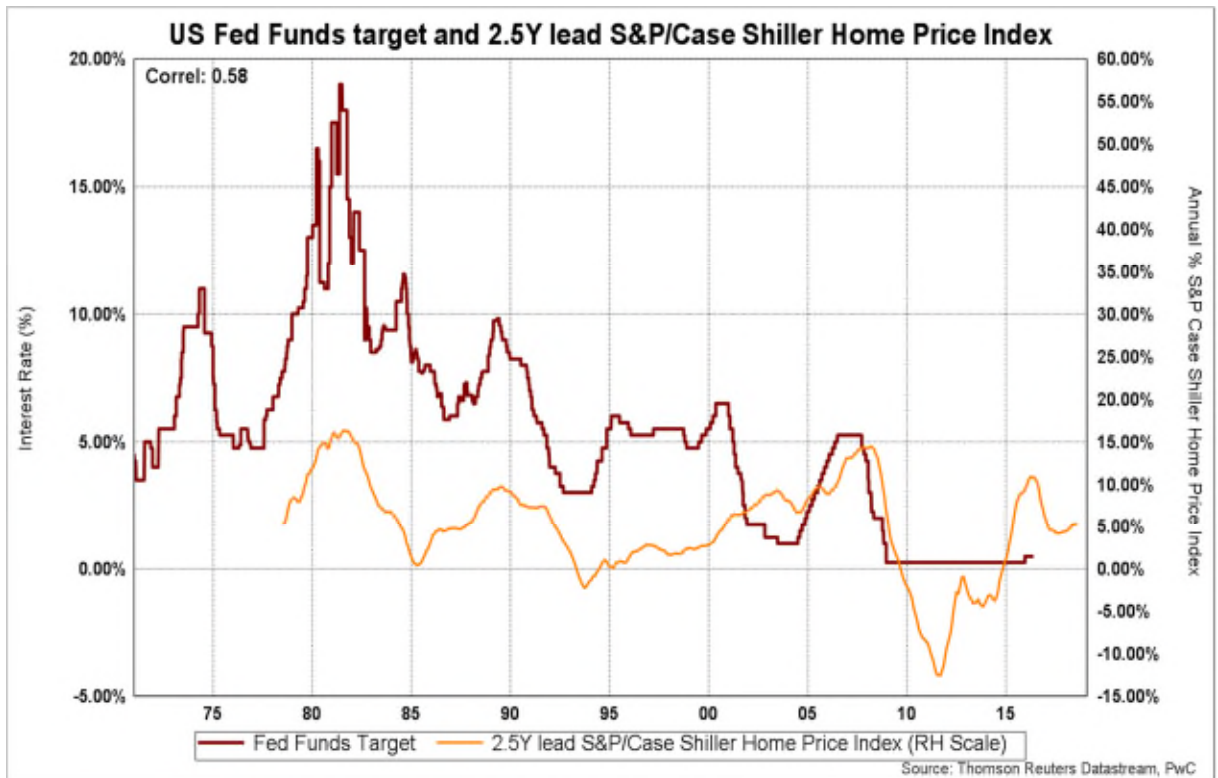




US Asset Bubbles?

There is a positive correlation between the current rate of house price inflation in the US and future levels of the Federal Funds Rate (i.e. in two and a half years' time). The link is that rising house prices will ultimately be met with higher interest rates to combat these and also general inflation and potentially financial stability concerns. Furthermore, in the intervening two and a half year period (that the lead encompasses), lower interest rates will likely assist the progression higher in house prices.

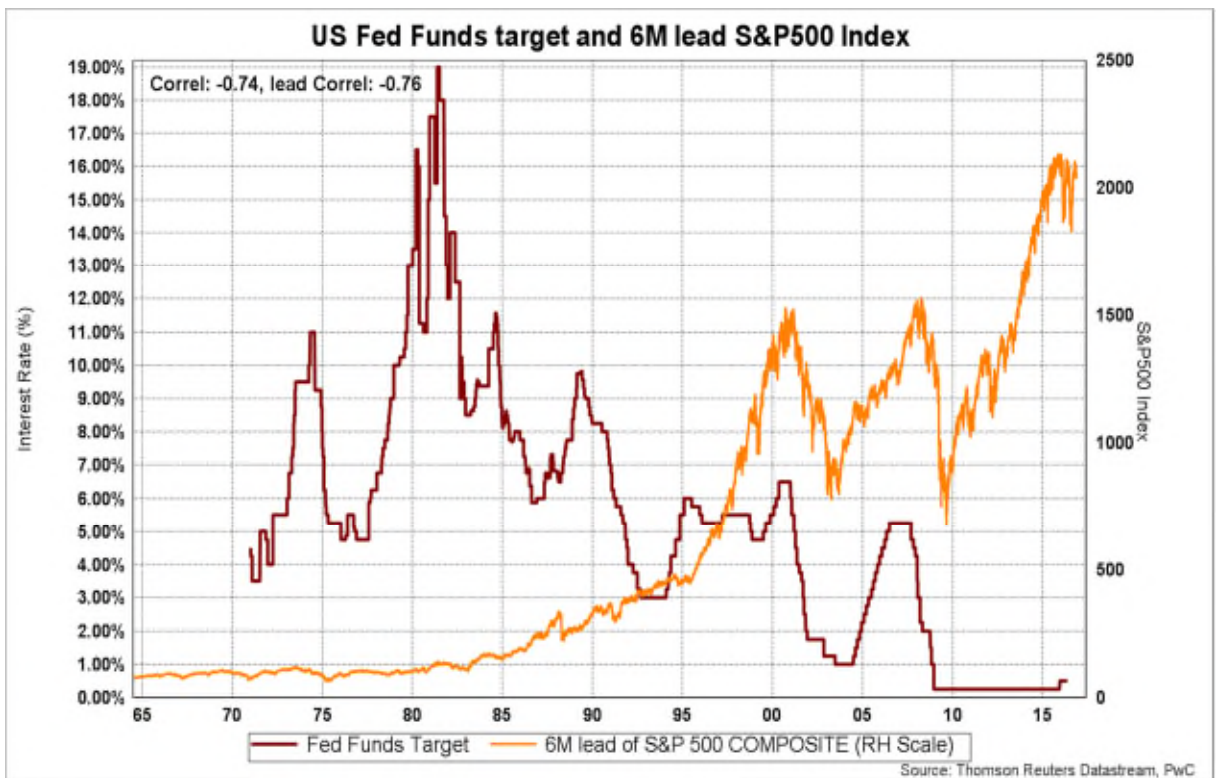
At existing house price appreciation rates, the recovering US housing market does not appear to be a bubble and indicates being able to withstand an outlook for rising US interest rates.





There is a strong inverse correlation over long time periods between interest rates and equity markets. Specifically periods of low interest rates have driven higher equity markets over the last six years. The period of sharp movement higher in equity markets also co-incides with Quantitative Easing designed to boost equity markets. Lower discount factors/rates for equity earnings/valuations based on the very low level of base interest rates has also been a contributing factor to high equity valuations/prices.

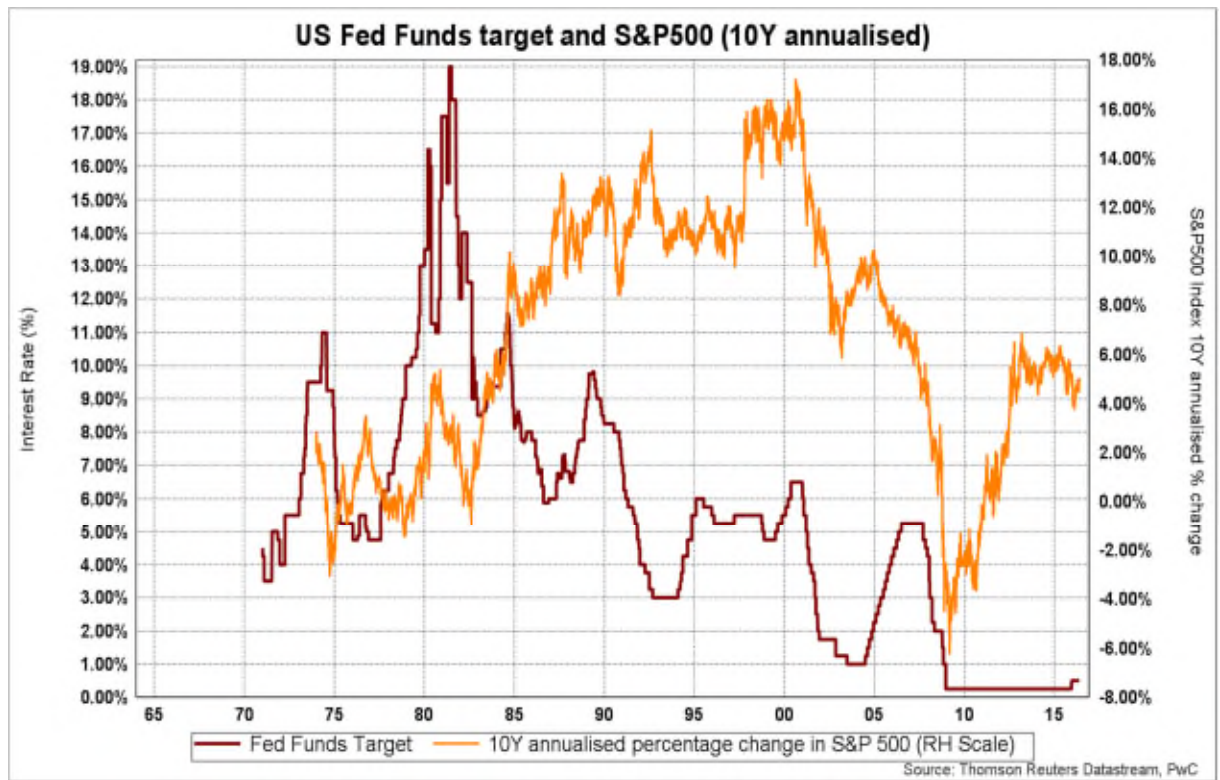
The lofty level of equity valuations and the potential for a severe correction in the event the monetary policy ‘candy’ as supplied by the US FOMC is taken away is expected to limit the pace of US Federal Funds interest rate increases. Expectations earlier this year for higher US interest rates contributed to lower equity markets at the time, more recent expectations for higher US interest rates appear to have been taken in the stride of equity markets.





The chart below shows the 10 year annualised percentage change in the S&P 500 Index versus the US Federal Funds rate. The purpose of annualising the 10 year percentage change is to smooth out the changes in the S&P500 as there has been a clear trend higher in the Index (as shown below). The 10 year annualised growth rate is calculated using the logarithmic change between the S&P Index price today and S&P Index price 10 years ago and annualising this figure. The chart shows that in periods of monetary policy easing – when the Federal Funds rate is lowered – US equities will generally rally as borrowing costs become lower and net present values increase, making more projects profitable, and also making leveraged positions into the equity markets cheaper to fund, and equity investments much more appealing than “cash”.

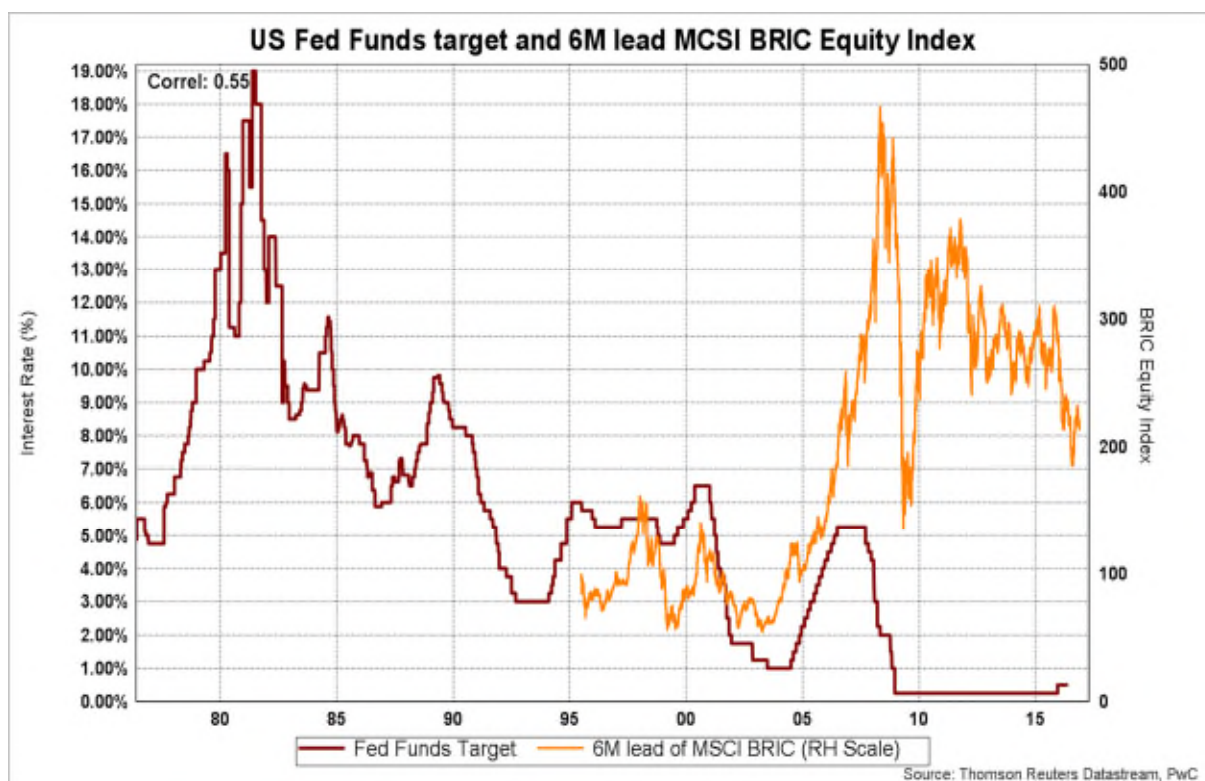
With the large amounts of QE since 2009 in the US, equity markets have swollen to a point whereby they will be an influence on future monetary policy. Tightening monetary conditions will be expected to be conducted very slowly (as signalled by Janet Yellen and the Federal Reserve) to allow US equity markets to adjust appropriately rather than risk a severe correction lower.



Emerging markets

From a BRIC/emerging market perspective, the period between 1995 and 2009 broadly exhibited a positive correlation between BRIC equity markets and US interest rates (Federal Funds Rate). The connection between these being that periods of stronger US economic growth and inflation (associated with times of higher US interest rates) was also positive for these emerging markets equity bourses. In the aftermath of the GFC much of these prior gains in emerging market equities have since unwound.

Whilst historical patterns may suggest otherwise it would be difficult to envisage Emerging equity markets doing well in a period of higher US interest rates. Indeed, expectations for higher US interest rates has been a material factor behind the movements lower in emerging market equities. In the lead up to the first Federal Funds rate increase late 2015, BRIC equity markets moved markedly lower. However, when the US Federal Reserve presented a more dovish than expected policy statement delaying future forecast hikes in early 2016, BRIC equities bounced back.



SUMMARY – Global economic growth and asset bubbles

The following summarises the main points around global economic growth and asset bubbles:-

Current relationships between global economic growth, commodity prices and US interest rates do not signal strong upward pressure on US interest rates. The question/debate may be that whilst the US economy is strong enough to look after itself it may not be able to lead the global economy. Based on this relationship, global economic growth needs to recover for US rates to normalise with any great pace.

There is also debate whether the outlook for term interest rates will be fundamentally dependent on global growth in particular emerging economies. If it is no longer China, as it goes through its transitional growth realignment, who is it? India. Where is the industrial production growth coming from to fundamentally support commodity prices...which will ultimately lead to higher headline inflation and assist higher term rates?

There is no evidence to suggest that the US housing market is approaching bubble territory or severely at risk of rising interest rates. Evidence around US equity markets do indicate the risk of movements sharply lower in these in the instance of more aggressive movements higher in interest rates – something US Federal Reserve Chair Yellen is very mindful of contributing to the very cautious monetary policy tightening approach.

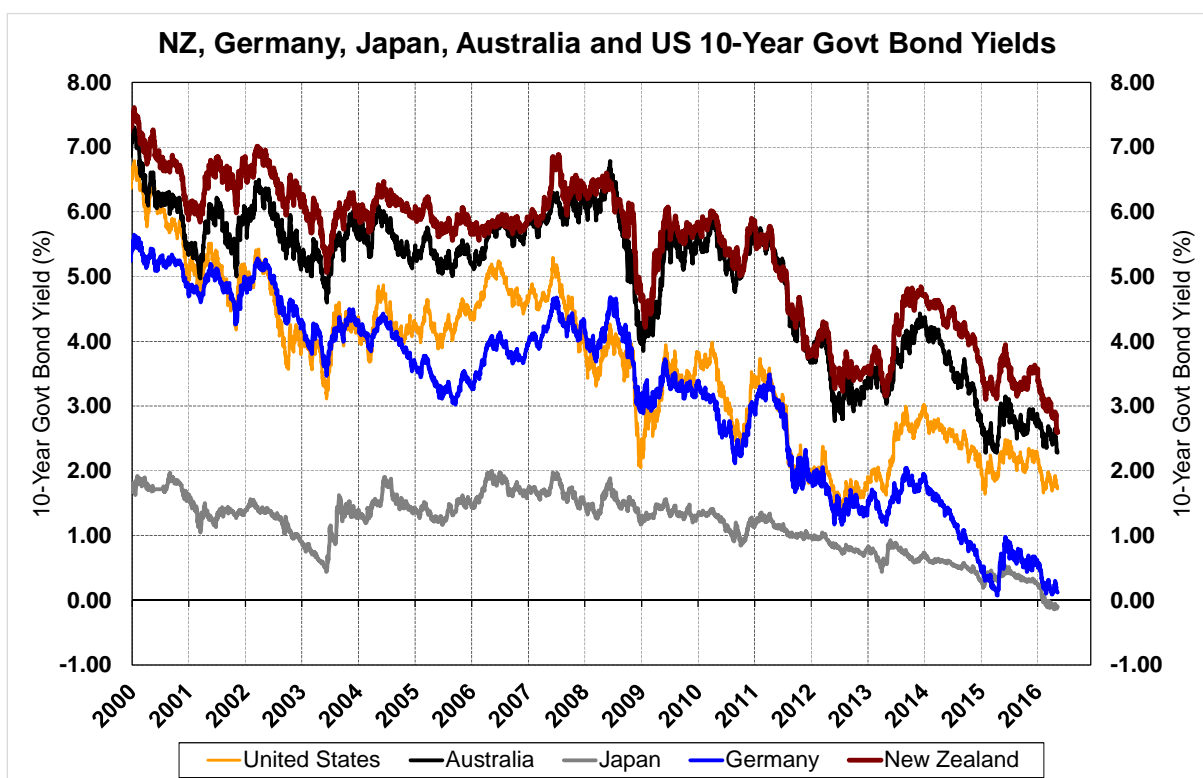
Evidence of emerging market equity market valuations and US interest rates is mixed. Where higher US interest rates have reflected stronger US economic growth and inflation this has been favourable for emerging market equities. The current situation is one where emerging market equity valuations appear at least in part reliant on loose US monetary policy, therefore risk of reversal. Market jitters and US Federal Reserve awareness of such is already apparent.

CONCLUSION: Global economic growth and the stage of the commodity price cycle does not auger for rapid movements higher in US interest rates. So too the Federal Reserve is very mindful of disrupting US and emerging market equity markets and valuations, hence the cautious approach from Janet Yellen to increase short-term interest rates. Success of European monetary policy Quantitative Easing policies to eventually re-stimulate investment markets and consumer spending would likely support higher interest rates globally from existing levels.

7. Global government bond yields and drivers

'Convergence' of global long-term interest rates with Japanese and European QE and negative policy rates

Quantitative easing in Japan and Europe over recent years and the implementation of negative short-term interest rates in those (and other) countries has produced a global wave of investment cash looking for a yield return as the money has not been on-lent by the banks to households and companies. That weight of money keeps bond yields very low around the world further accentuating the lower yields in the US and dragging down the (comparatively higher) yields in New Zealand and Australia also.



It is estimated by Citibank that at present there is the equivalent of USD39 trillion of outstanding G10 sovereign debt. G10 debt with a negative yield has increased to USD13.7 trillion being 35% of all G10 debt. Within this the proportion of short-term debt (defined as less than 12 months) is approximately USD2.6 trillion and rising.

Japan accounts for almost 58% of all negative yielding G10 sovereign debt followed by France at 11% and Germany at 10.50%.

The US accounts for almost 60% of all positive yielding debt and 89% of the positive yielding G10 sovereign debt which has a tenor less than 12 months. Also, US debt accounts for 74% of the positive yielding G10 sovereign debt in the 1 to 5 year sector.

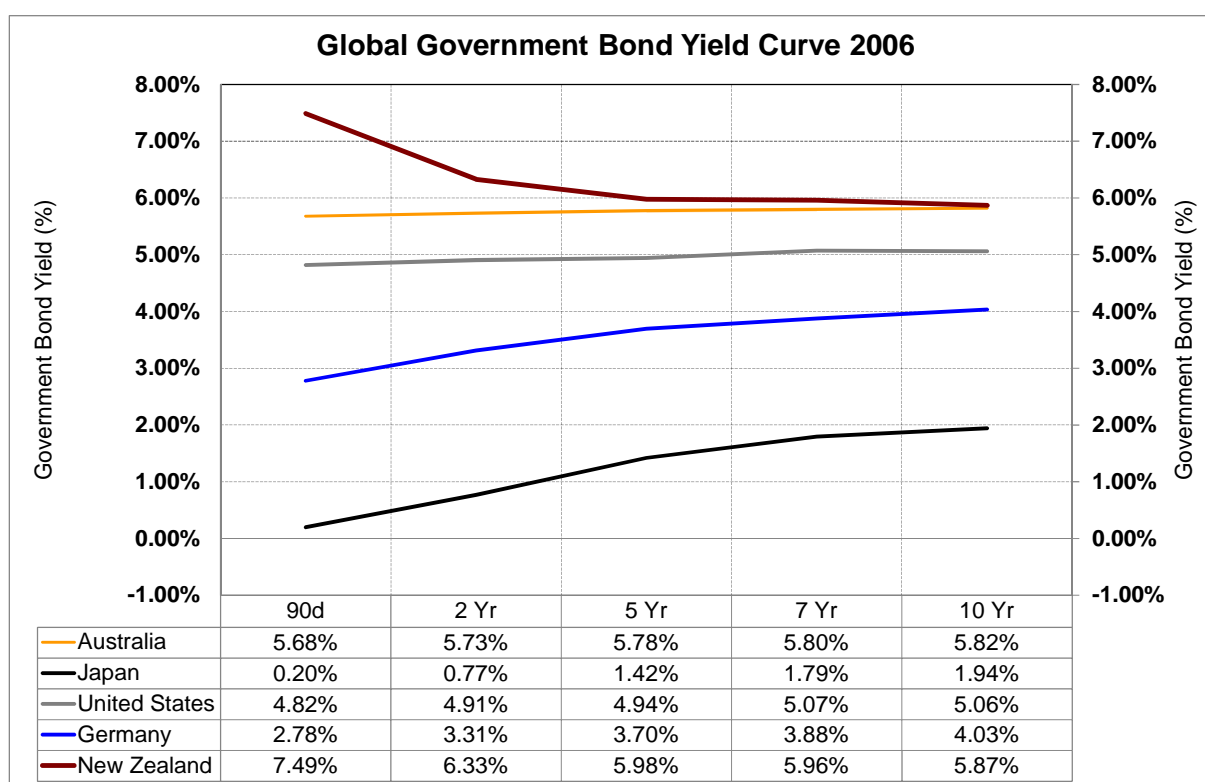
The conclusion of Citibank is: *Thus, given that USD denominated debt is still extremely attractive versus most high grade sovereign debt, we expect a structural increase in demand from foreign investors that are seeking refuge from a negative rate environment. And, given that USD debt*



accounts for most of shorter maturity positive yielding debt, the front end is likely to stay well supported and could richen further (i.e. higher prices / lower yield).

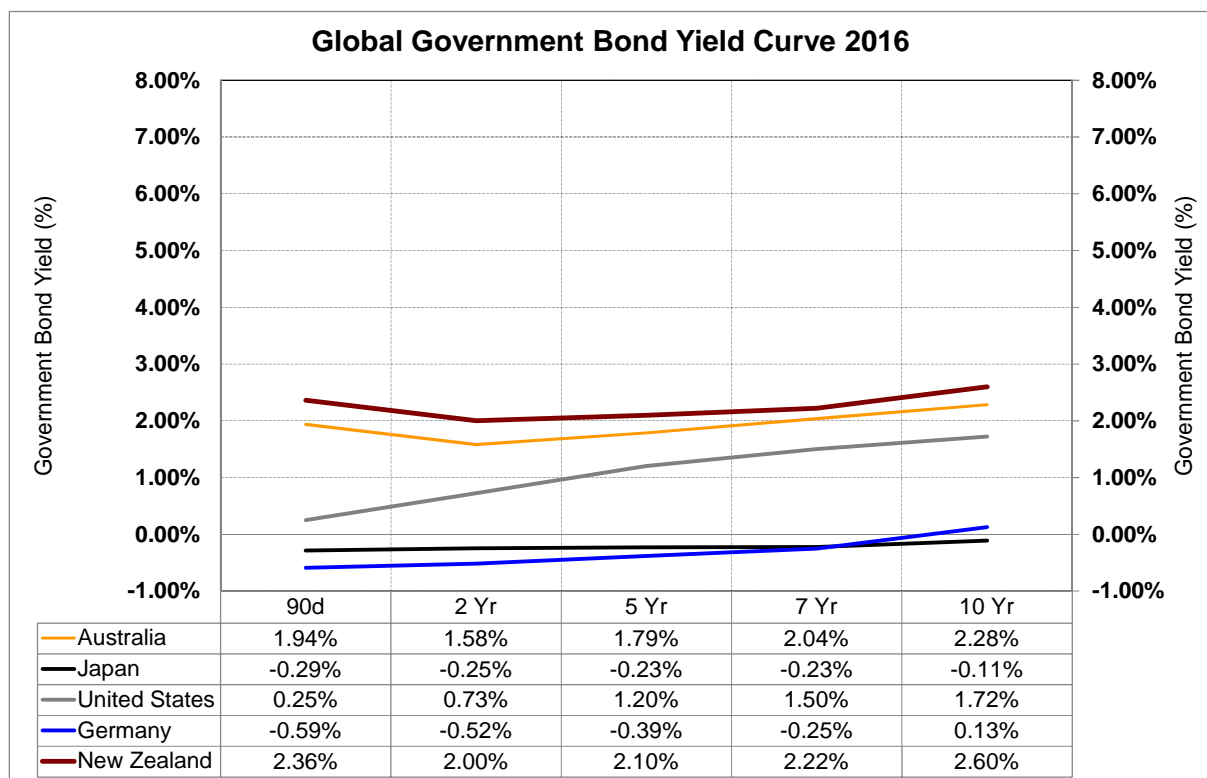
An alternative viewpoint is whether there is a re-divergence of global bond yields as the Federal Reserve continues to tighten monetary policy at a pace quicker than the very benign pace expected by the interest rate markets as the US inflation and economic activity data print more strongly than expected.

In May 2006, nearing the completion of the US Federal Reserve's previous monetary policy tightening cycle, the US Government Bond Yield curve was flat with the Australia yield curve flat at high levels, New Zealand downward sloping (inverted) in the short-term rates at high absolute levels, and Japan and Germany traditionally 'normally' upward sloping with relatively lower short-term rates but higher long-term rates.





Fast forward to the situation in May 2016 which is markedly different (same scale on chart), with the US gradually upward sloping at very low rates, New Zealand and Australia slightly inverted in the short-term rates and slightly up-ward sloping in the long-term rates (at very low levels) and Japan and Germany essentially flat at slightly negative interest rates across the yield curve out to 10 years and 7 years respectively.



The charts above and implications from QE and negative monetary policy rates shows it is the central bankers largely running bonds yields at present, posing the question of whether existing western economies can survive the current low yields across all maturity terms. So far it has been everyone chasing one another down to lower yields. At some point the central banks must try to correct the existing positions, i.e. Germany and Japan no longer have any material difference between yields of any terms, with most of these also negative. It is difficult to fathom how traditional economics can actually function (borrow at lower short-term rates, lend/invest in higher long-term rates) unless we see a massive correction upwards in credit spreads to compensate the fact that these economies do not have any risk free rate of return.

Even if central banks can carefully manipulate and reconstruct their long-term interest rates to address this structural imbalance it will have to be by small regular incremental increases to short-term interest rates with an emphasis on ratcheting long-term interest rates higher. How will the pension funds and insurance companies survive the massive valuation erosion on their bond portfolios - what is the impact on a 10 year Treasury bond purchased today at 1.75% yield when the yield goes to 2.75%?

If the above re-alignment of higher bond yields / lower bond prices does not occur are we going to see a massive shift in pension fund/ insurance company asset allocation policies away from bonds? Are we going to see some of these entities fail as they effectively lock in negative cashflows in terms of managing their long term liabilities (expected payouts to retirees etc.)? In recent years equity prices and bond prices (yields lower) have done very well providing outsized returns for funds and assumingly some ability to withstand some period of flat (or modestly negative) returns.

Work force also aging as ‘retirement’ needs to be funded...spending delayed until later

An aspect of the very low level of inflation and interest rates in Japan and Germany is also likely due to consumer deleveraging in the aftermath of the GFC. Rather than spend money, people didn't have, Finance Ministers and Governments told people to save...which they may have done perhaps too successfully.

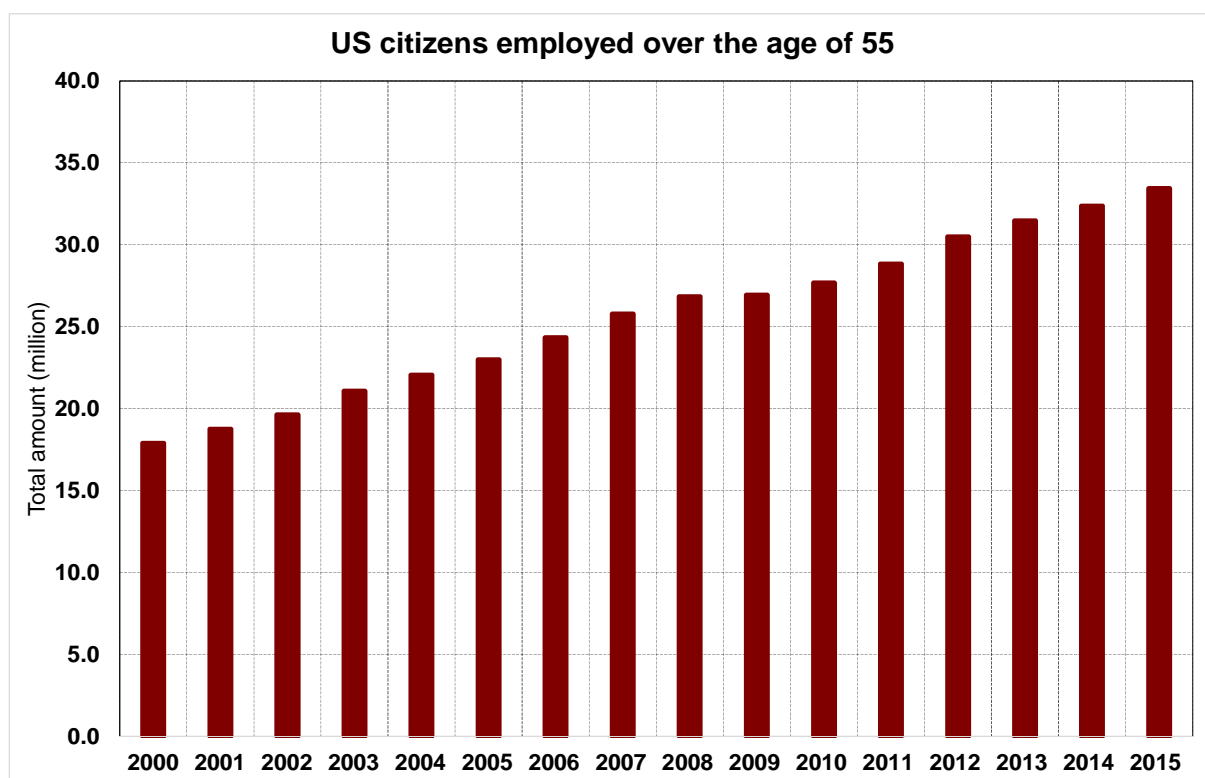
The burden of (longer) retirements under changing demographics also where government finances are struggling to fund these, and there are limited returns on low risk fixed income investments means people may be staying in work for longer. Interest rates currently being very low may also be delaying retirement and keeping younger people out of work. The greater number of older workers may be maintaining less spending and potentially less upward pressure on inflation and interest rates. Furthermore, older people may be more prepared to be working for the same wage rates as a supplement to their retirement incomes, rather than pushing for higher wages. This propensity to accept the status quo may be another contributing factor around the lack of price pressures.

From a New Zealand perspective there is also potentially the impact of an ageing population at play. Previously their investment threshold retail yield was 6% but now this appears closer to 4%, as they satisfy their need to maintain their income levels, in a limited universe of investment securities. Their inflation expectations have realigned accordingly.

The total number of US citizens over the age of 55 employed has grown from 17.9 million to 33.4 million between 2000 and 2015, or by 15.6 million people (87%, or 5.8% per annum).

Over the same period total non-farm payrolls employment has grown from 132.5 million to 143.1 million between 2000 and 2015, or by 10.6 million people (8%, or 0.5% per annum).

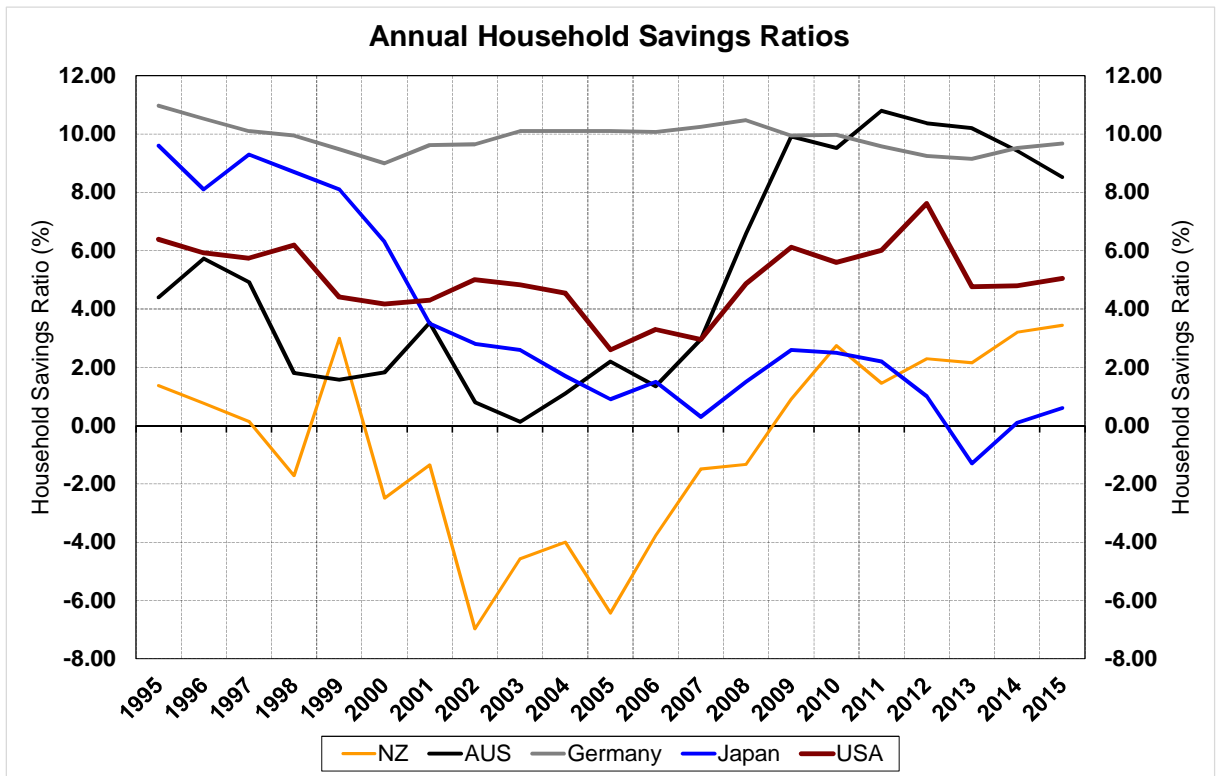
Perhaps the two sets of figures cannot be directly compared, but if they could, it would tell us there are 5.0 million *fewer* jobs for under 55s than there were 15 years ago.



Rising household savings rates means less spending

There has been a higher household savings rate after the GFC in most countries, but surprisingly not Japan. Lower bond yields have required household consumers to save a greater amount of their income in order to achieve the same amount of return. Greater savings and the lack of spending have also meant reduced demand pressures, hence lower inflation and interest rates. People have been asked to deleverage which they have. The chart shows that relative to the early-mid 2000s:-

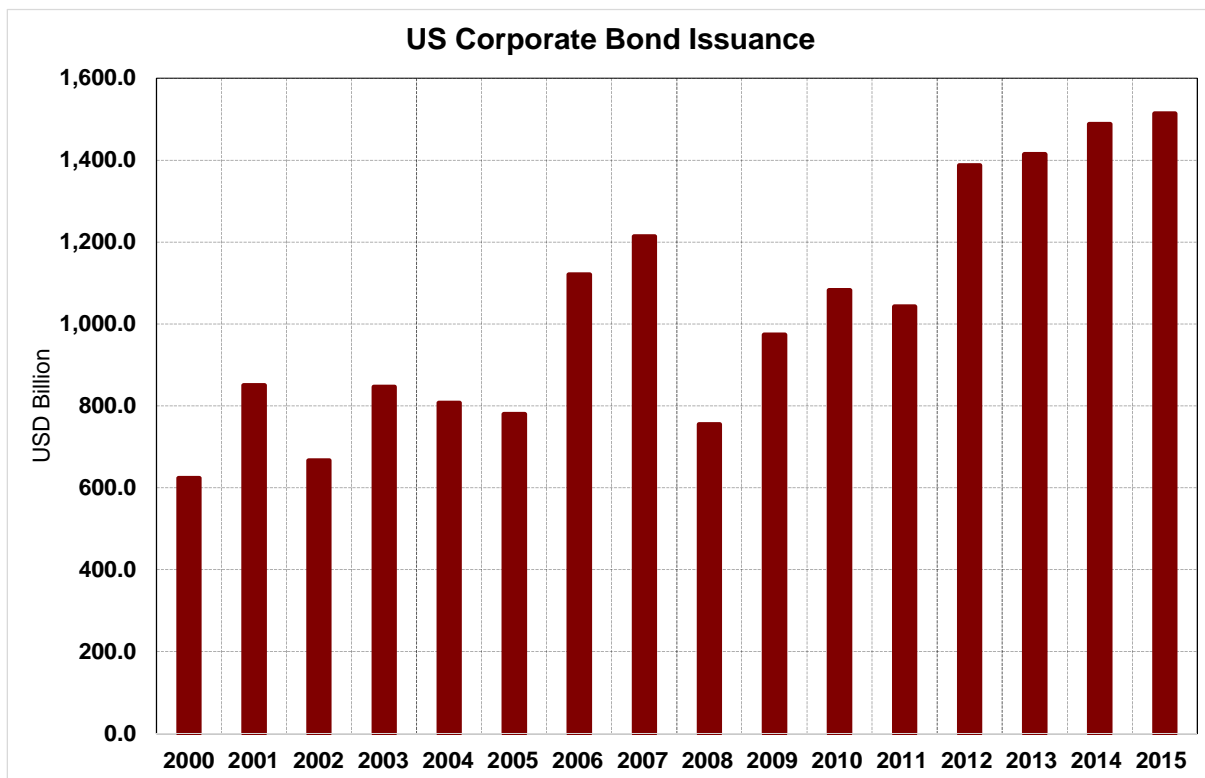
- Germany household savings rates has been stable at +10%
- New Zealand has increased from -6% to close to +4%
- Australian has increased markedly from +1% to +9%
- US has moved from +3% to +5%
- Japan has been close to 0% (trending lower).





US Corporate Bond issuance approximately USD1.5 trillion per annum for each of the last four years...being absorbed by the market

Until the investment monies at very cheap cost dry up (as all the money has been invested) the current situation is unlikely to change. No-one knows when that will happen. Borrowers have never had it so cheap and thus corporate bond issuance and residential mortgage borrowing has increased. However, to date the volume of debt issued has not matched the amount of liquidity sloshing around the world looking for a home.



SUMMARY – Global government bond yields and drivers

The following summarises the main points of Global government bond yield and drivers:-

Negative interest rates in Japan, Germany/Europe (and other) is helping drive down/converge global bond yields

The absolute level of interest rates does not need to go as high as pre-GFC, given negative interest rates and super-loose monetary policy settings maintain the interest rate differential between different economies.

Demographics are also at play – older populations need to keep working for longer, replacing jobs otherwise of younger people, but also with interest rates low need to earn more for retirement (self-reinforcing cycle?). Older workers may also be doing work for cheaper, as do not need the wage growth, just need to supplement incomes at existing wage rates.

Savings rates have increased as consumers have deleveraged as instructed.

Global investment funds have done very well in recent years therefore able to absorb a period of falling bond prices (higher yields) – sharp fall in equity prices could be more of a concern – key risk for Yellen.

But what of the potential of China (and other) bond markets to emerge as new supply with greater integration into global capital and financial markets over future years?

CONCLUSION: Global demographics of ageing populations and greater savings rates are a significant contributing factor to driving global long-term interest rates lower. The limited universe of assets/securities in which to invest to earn a reasonable return and match long-term liabilities/commitments within pension funds and life insurers also continues to place downward pressure on US long-term interest rates. If the US economy is sufficiently strong (inflation/activity) and the US Federal Reserve tightens monetary policy by more than is currently expected by benign interest rate market pricing, US long-term bond yields would be expected to rise – and New Zealand follow. That action could create renewed divergence (not further convergence) with European/Japanese rates which are presently providing downward pressure on US / global interest rates. Global bond yields have been converging amidst negative central bank monetary policy rates in many countries and quantitative easing programmes of purchasing government bonds driving longer-term bond yields very low and often negative. US inflation expectations/real rates and term premium over “neutral rates” are also at play; the ‘ratcheting lower’ of interest rates may already have occurred.

8. Emerging non-traditional drivers of US long-term interest rates

There are broader societal shifts at play that potentially may also be containing the level of interest rates in the US and globally and suppressing traditional indicators of US bond yields (such as robust employment growth) from exhibiting their more traditional relationships. The impact of these factors are difficult to quantify, and as always will be only 'proved' in retrospect, but include aspects such as the following:-

- Whether measures such as GDP growth and CPI are actually relevant variables used to steer an economy or whether there are more relevant and appropriate alternatives - such as measures of job security, the environment, health of the elderly...
- Global Income inequality - is income skew distorting traditional measurements (consumption, disposable income, GDP etc.); whilst aggregates may look fine, the level of detail behind these may indicate very disproportionate distributions.
- Employment data containing estimation bias given the large levels of underemployment. A larger numbers of people are working less than they want yet are not accurately captured by this classification in headline employment measures. This may include people working in industries with declining wages not to mention those that have given up entirely on work, and are not captured by the headline figures. Underemployment figures may be staggeringly high and also set to jump sharply higher over the next 10 years with robotic breakthroughs.
- Are people not spending because of a real lack of certainty around what may be around the corner? We are lacking good lead indicators of fear driving savings and consumption patterns. Declining incomes for some who cannot work as much as they want, actual living costs that go up by far more than 'official' CPI figures, and fear of labour market obsolescence, ageing, income inequality, geopolitical unrest, rising protectionism, the environment - these are all paramount in people's minds. The fear not of today (i.e. current economic indicators or old correlations) but of the future and it looks grim for the majority of the middle/lower class who are not going to share in future wealth accumulation ("Trumpism"!).
- What is the impact of the crippling debt overhang the globe is dealing with? Unfortunately there is no longer any fiscal bullets to help out. Endogenous consumption is only way out of this debt / deflation trap and that doesn't look likely anytime soon for many parts of the world. **Will the (very belated) European Quantitative Easing Programme work as it has done in the US??**
- Perennially low inflation driven by technological advancements, job obsolescence, and underemployment... rising and ongoing fear factor within society and consumers means spending is very contained.
- Has monetary policy now done its job, as its influence on market (retail) interest rates/credit growth/real economy is less effective? It would mean loose monetary policy stays with us longer, as it offsets higher banks costs from increased credit spreads and regulatory costs. We should not underestimate the regulatory cost burden that the regulators will inflict on banks. Fiscal policy changes will need to step up and provide the growth momentum across the real economy. Is there confidence that the politicians can deliver what it takes?

These above factors could imply monetary policy irrelevance when it comes to impacting inflation and growth – interest rates are a central bank manipulation but are all but ineffective at moving the real economy.

SUMMARY – Emerging non-traditional drivers of US long-term interest rates

The following summarises the main points of Emerging non-traditional drivers of US long-term interest rates:-

CONCLUSION: No amount of super-loose monetary policy may be sufficient to stimulate economic outcomes (even if measured correctly) should wider societal undercurrents (ageing population, underemployment, technological improvement, job obsolescence, income inequality) be at play with these arresting monetary policy as irrelevant. The implication is no pressure for interest rates to increase but equally no point of lower interest rates. Big question; can the European Central Bank President Mario Draghi's sleight of hand with non-traditional monetary policy measures match that of Ben Bernanke now that German opposition has been overcome???

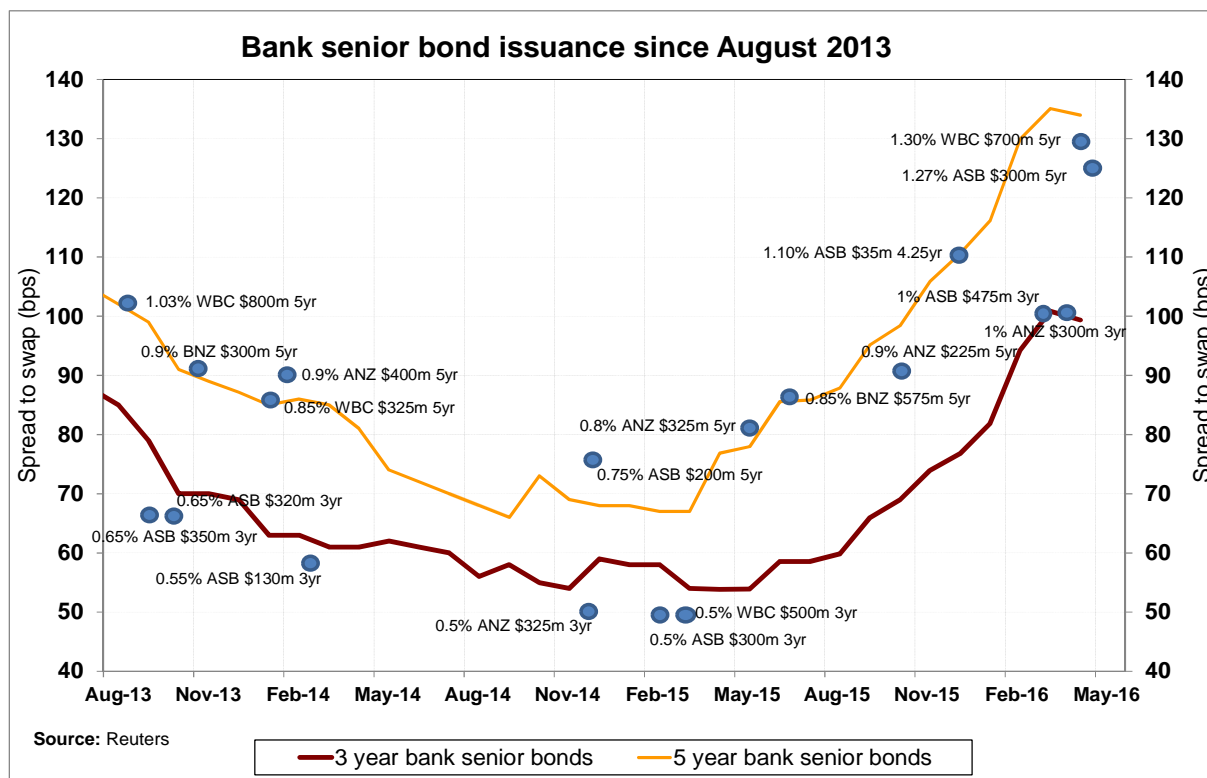
9. Regulation, credit spreads and their implications for base rates

Credit spreads typically move with an inverse relationship to wholesale market swap (interest) rates, or underlying sovereign government bond yields. Furthermore, it is often the case that investors may require a ‘minimum’ yield per category of risk, therefore when wholesale market swap rates fall, credit spreads may rise as an offset to ensure a minimum investor all-up return of the credit spread plus swap rate.

Regulatory environment; additional regulation expected to lead to wider credit spreads

Credit spreads appear set to slowly grind higher in coming years with a contributing factor additional regulation that increases bank costs of funds. The costs associated with reforms are expected to lead to a similar structural shift in credit spreads to that observed following the increase in Basel III mandated capital requirements in January 2015. These requirements (which meant banks had to hold 6% tier 1 capital³) led to an upward shift in credit spreads as lenders looked to maintain traditional margins, whilst facing tighter lending restrictions. Future reforms are likely to increase these requirements further, as regulators focus on strengthening balance sheets and reducing sensitivity to sector shocks, which suggests credit spreads will likely rise over time.

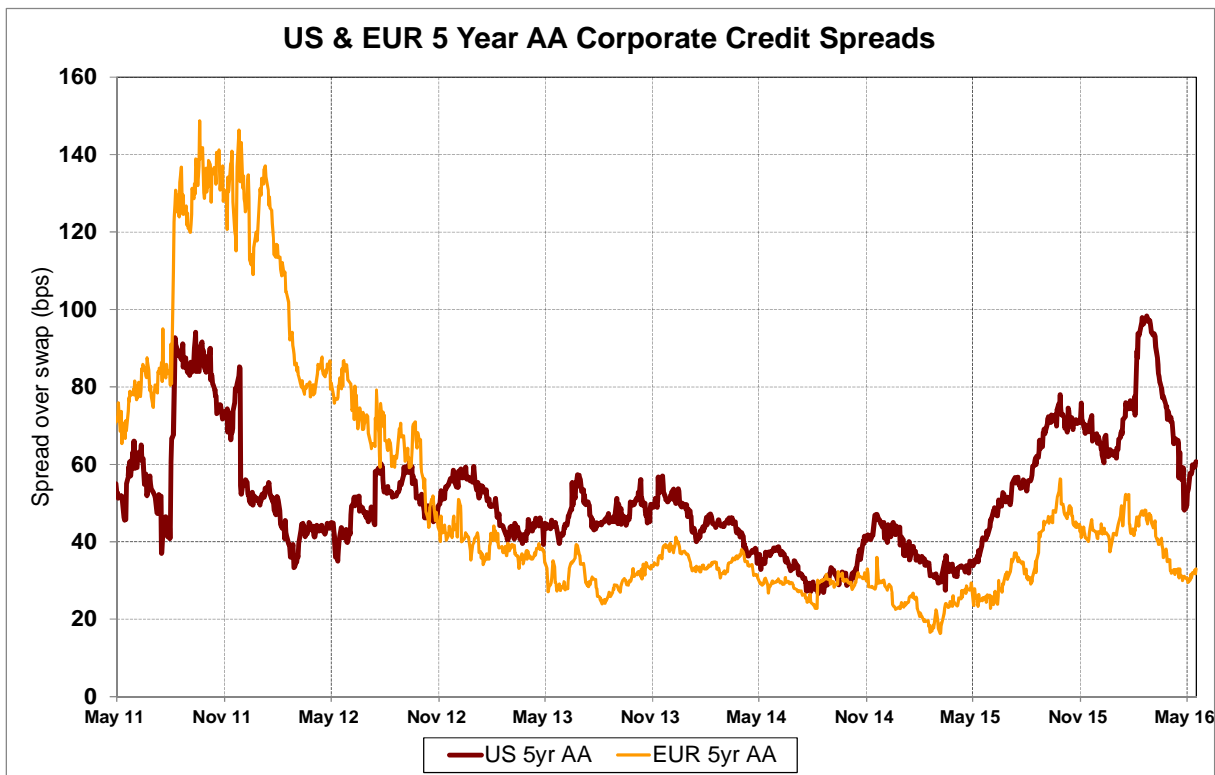
The chart below displays New Zealand bank issuance spreads since August 2013. Prior to the implementation of the Basel III capital requirements, spreads can be seen tracking lower however these rose sharply in early 2015, upon the implementation of greater capital requirements.



³ Defined as shareholders equity plus retained earnings.

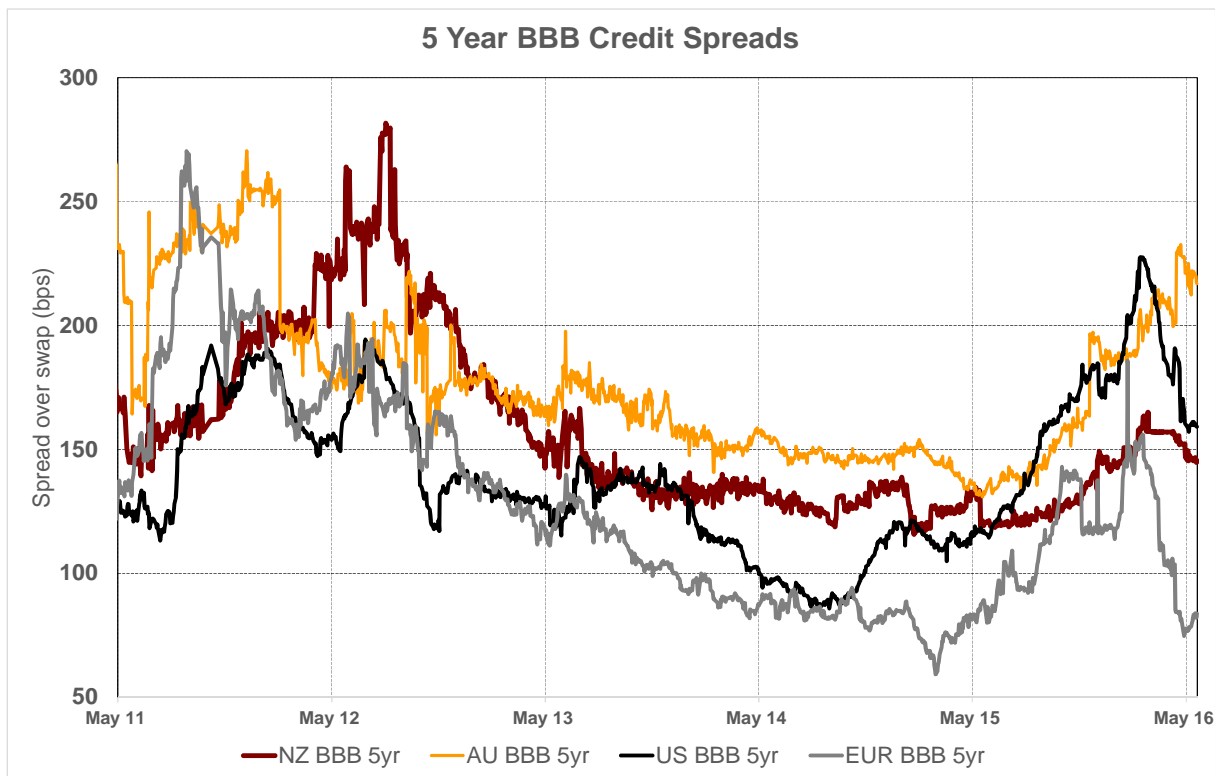


A similar occurrence can be observed in overseas credit markets as a result of the capital requirements. The following chart displays EUR and US credit spreads on an index of AA rated entities. With these indices dominated by banks domiciled in these regions, the chart can be used as a proxy for bank costs of funds in the regions. Although credit spreads in both regions have tightened in recent months, they have not returned to levels seen prior to the Basel III capital requirements, exhibiting a similar trend overall to that observed in the New Zealand market.



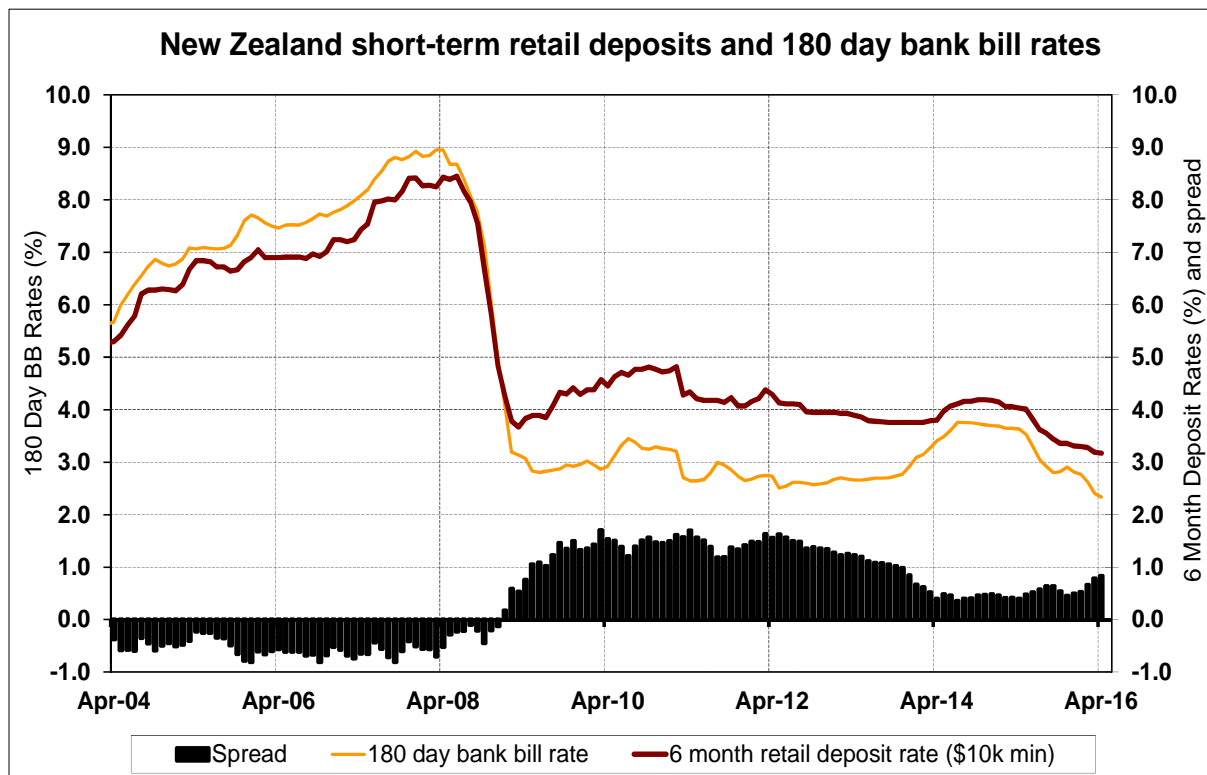


The flow through effect of these reforms can be observed in the BBB corporate credit spread market. With banks passing on the increase in cost, BBB spreads rose sharply and remain at elevated levels relative to the history of mid 2013 through mid-2015, despite some tightening in recent weeks/months.





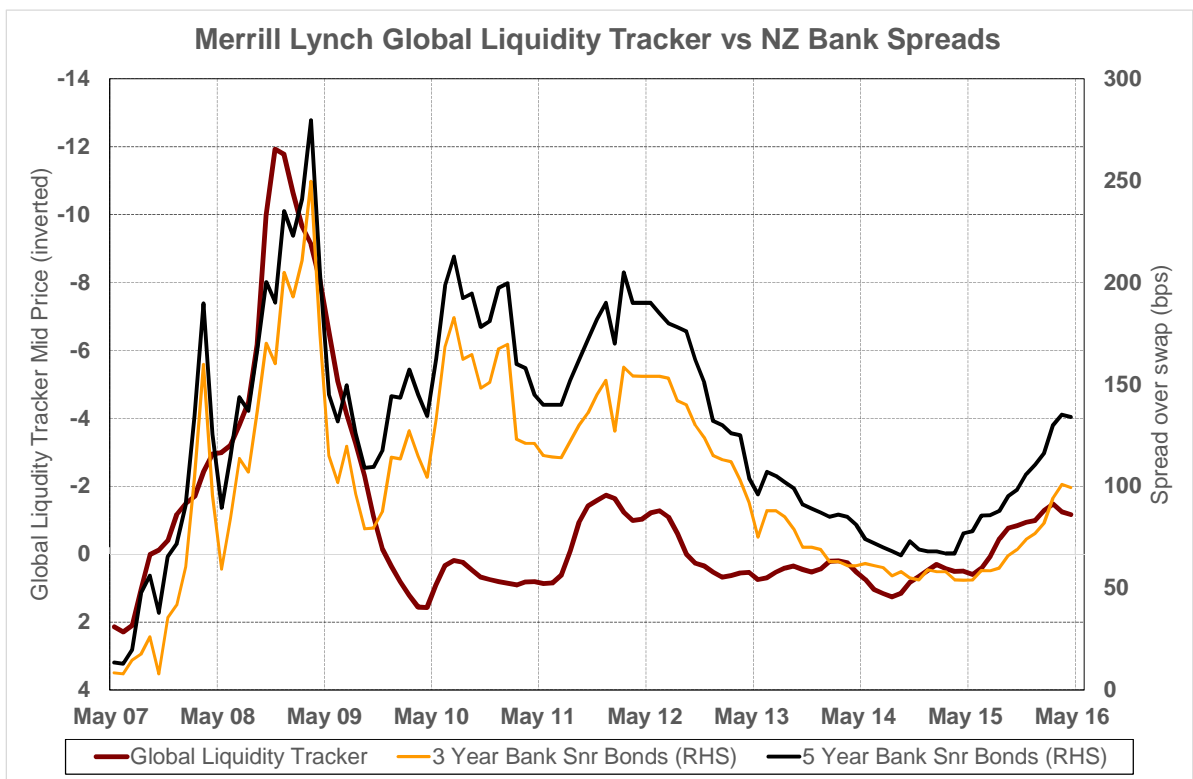
From a domestic perspective the regulatory cause and effect relationship has been very evident since the GFC. Prior to the GFC the environment was such that retail term deposit rates were typically **below** wholesale market rates, by up to 100 basis points during the 2004 to 2008 period. The GFC saw a rapid change in this environment with regulatory change including measures such as the core funding ratio introduced where domestic banks were forced to fund more from the domestic market and/or longer maturity terms to place less reliance on short-term foreign capital, but at an additional cost. The chart shows at times funding in the retail term deposit market has been up to +200 basis points above the wholesale rate but has since moved down to +100 basis points, i.e. still representing a shift in margins of close to 200 basis points relative to prior to the GFC.





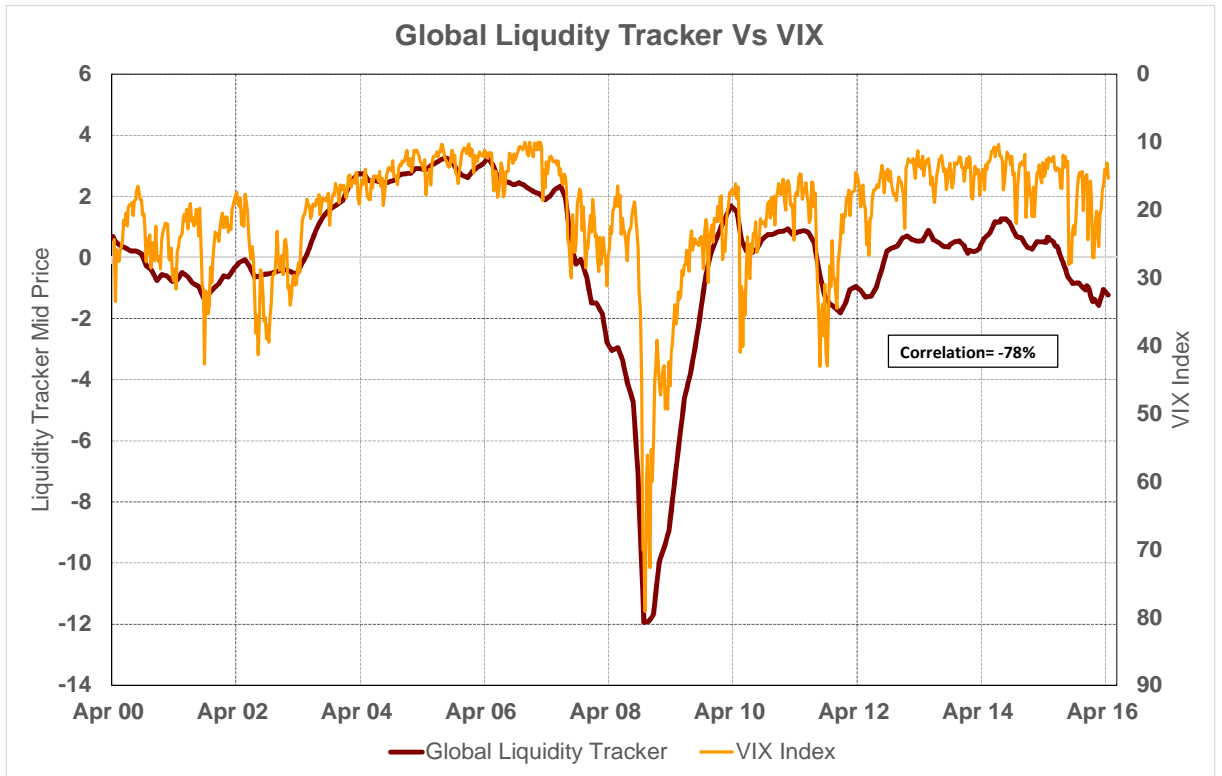
Event Risk impact on Credit Spreads

Unforeseen events that drive material financial market volatility also have a substantial impact on credit spreads. Occurrences such as an emerging market default or geo-political factors, cannot be foreseen but greatly reduce market liquidity. The following chart illustrates the strong relationship between New Zealand bank credit spreads (which are passed on to corporate borrowers) and global liquidity. The Global Liquidity Tracker developed by BofA Merrill Lynch is a composite indicator of liquidity conditions in emerging and developed economies. The measure encompasses market spreads, asset prices and monetary and credit data across the US, Europe, Japan and Emerging Markets. The tracker reflects a standard deviation of +/-3 in the chart below. A larger negative reading under the tracker is associated with tighter liquidity conditions (i.e. increased costs and difficulties in raising funds). Such an environment also typically entails rising market volatility resulting in higher bank and corporate borrowing costs, i.e. when liquidity is reduced (becomes more negative), credit spreads rise.



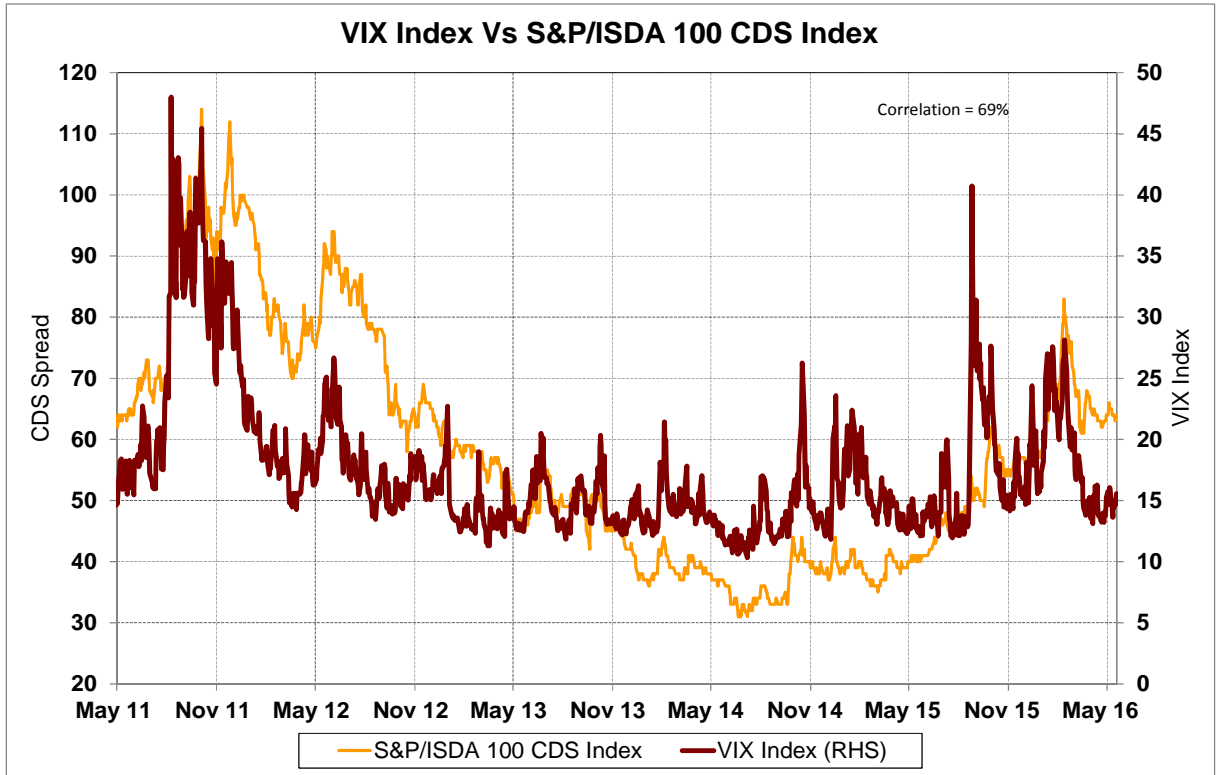


The relationship between global liquidity and volatility as measured by the VIX index (of implied volatility on S&P 500 equity options) is also illustrated. The correlation reading of -78% displays that when global liquidity is reduced, financial market volatility measured by VIX index increases. Risk premium/ credit spreads will typically widen with investors requiring additional compensation for bearing greater risk.





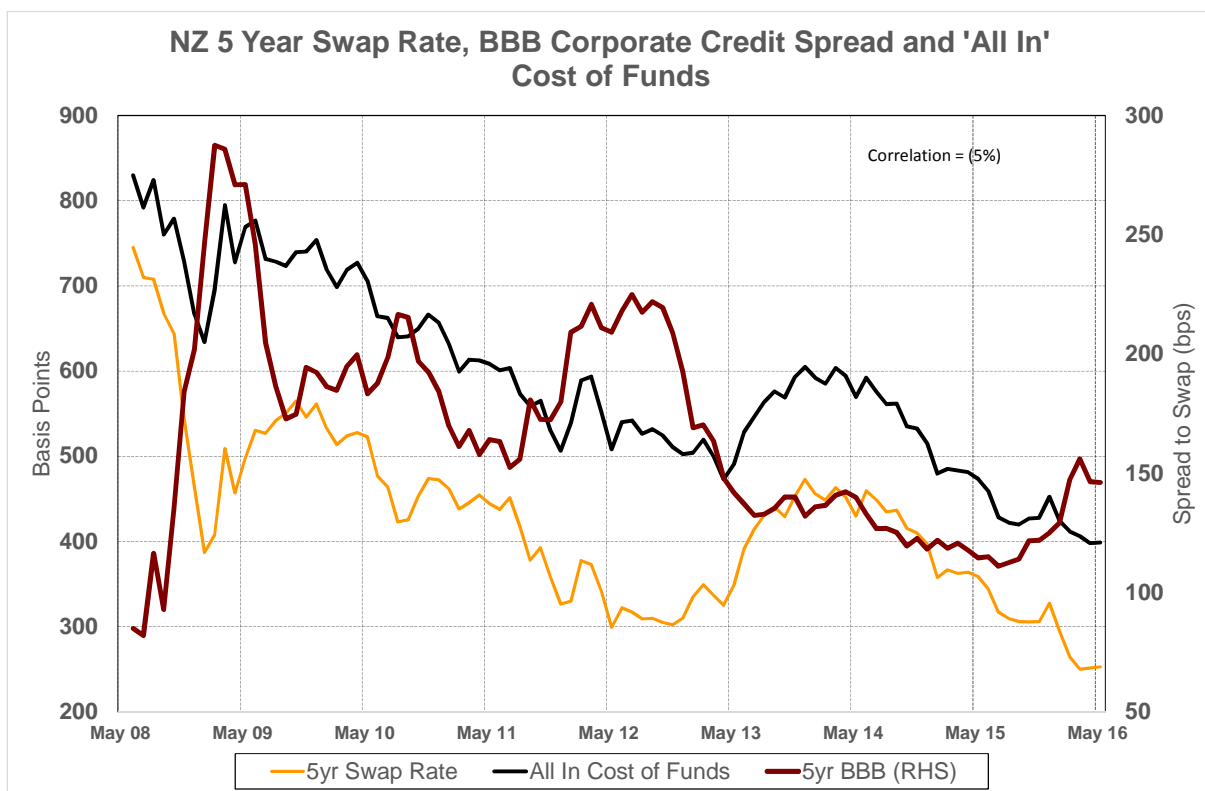
The association between measures of risk and volatility can also be observed from the chart presented below which displays the VIX index and the S&P ISDA 100 which tracks CDS (Credit Default Swap) spreads of entities on the S&P 100. In situations where volatility increases, spreads on the S&P/ISDA 100 CDS Index also rise, displaying a heightening in probabilities of default due to the increased risk.



Investor return requirements

As wholesale market interest rates fall, investor yield requirements will typically lead to an increase in credit spreads. The chart below displays the 5 year New Zealand swap rate and 5 year credit spreads for New Zealand BBB rated issuers. Through combining these two rates, an 'all up' cost of borrowing can be derived. From examining the chart, this rate for a BBB rated entity has historically been around 5% (i.e. 500 basis points) since the GFC with credit spreads rising when swap rates fall. In recent years, the all up cost of borrowing can be seen moving lower as it tracks the general movements made by the swap rate. Given the downward trend in swap rates, credit spreads appear likely to increase to make up for this movement.

The chart below displays a negative correlation of -5% between the 5 year swap rate and 5 year BBB swap spreads. Although this does not suggest that the relationship is significant in itself, it is important to remember that credit spreads can be affected by numerous other risk factors. As a result, the relationship between the two may break down over time periods. Given the reduction in commodity and equity market volatility of late this appears to have been the case.



SUMMARY – Credit Spreads and their Implications for base rates

The following summarises the main points around credit spreads:-

There is typically an inverse relationship between credit spreads and wholesale market swap rates in light of investors' all up-return expectations and requirements.

The prospect of increased regulation, and at least periods of deterioration in liquidity conditions and/or financial market risk sentiment, would typically be associated with rising credit spreads.

CONCLUSION: Specific credit market drivers would argue for further widening in credit spreads over coming years. Whilst this would normally be associated with lower wholesale market swap rates, such may not be as clear cut this time impacted by the already very low level of wholesale market swap rates and all-up yields / bond coupons. At the very least, widening credit spreads would contain the extent of rising wholesale market rates. An outlook for wider credit spreads and lower swap rates cannot be dismissed.

Summary of conclusions

- **Current New Zealand short-term interest rates are below the level deemed by the RBNZ to be ‘neutral’ of 4.50%.** A neutral short-term interest rate level is consistent with the economy running neither too hot nor too cold in terms of economic activity and related consumer price inflation pressures. Furthermore, the neutral level has already been markedly lower for the post Global Financial Crisis (“GFC”) period relative to the pre GFC period. A movement back up to (or above) the neutral level will require either stronger demand than supply (i.e. emergence of a ‘positive’ output gap) and/or stronger oil/domestic petrol prices pushing up headline inflation rates and inflation expectations. There is also the potential the RBNZ need to revise their judgment of the neutral short-term interest rate lower from the current 4.50% estimate.
- There is a long close correlation between US and New Zealand government bond yields because of the high level of foreign ownership of our government bonds (66.5%) and very integrated global financial/capital markets (i.e. the impact and activity of international investors).
- New Zealand 10-Year Government Bond Yields are approximately 100 basis points (1.00%) above those in the US (60% higher). The basis point premium is currently lower relative to history although interestingly the differential has been higher post GFC (1.85% average spread between New Zealand and US Government bond yields) rather than pre GFC (1.45% average). There may be scope for short-term (90-day) interest rate differentials to narrow based on the assessment of ‘neutral’ policy rates by the New Zealand and US central banks, however there may be considerably less propensity for the 10 year government bond yield differential to do so. **In percentage terms, there appears only limited scope for the premium of New Zealand 10-Year Government Bond Yields relative to those in the US to reduce.**
- Whilst the absolute level of 90 day bank bill rates and 10 year swap rates have reduced post GFC, the New Zealand 10-year swap spread (10 year swap rate less 10 year government bond yield) has not reduced by the same proportionate amount, recognising the relatively small size of the New Zealand swap market. The increased regulatory environment, higher capital requirement and less credit risk associated with central clearing houses are reasons why swap spreads could narrow. **A 10 year swap spread in the range of 0.25% and up to 0.75% still appears relevant, even in an environment of the wholesale market swap yield curve (90 day bank bill to 10 year swap rates) being between 3.00% and 5.00%.**
- **US long-term interest rates remain well below a level indicated by (higher) inflation pressures and other more upbeat US economic data; inflation pressures also appear set to increase.** US long-term interest rates are being held at current low levels impacted by the massive bond holdings of the US Federal Reserve, with these only to be very slowly allowed to unwind/reduce. Asian investor buying and holdings of US Treasury bonds is also currently holding yields down, however these investors may become sellers, sending yields higher.
- **Global economic growth and the stage of the commodity price cycle does not auger for rapid movements higher in US interest rates.** So too the US Federal Reserve is very mindful of disrupting US and emerging market equity markets and valuations, hence the cautious approach from Janet Yellen to increase short-term interest rates. Success of European monetary policy Quantitative Easing policies to eventually re-stimulate investment

markets and consumer spending would likely support higher interest rates globally relative to existing levels.

- **Global demographics of ageing populations and greater savings rates are a significant contributing factor to driving global long-term interest rates lower.** The limited universe of assets/securities in which to invest to earn a reasonable return and match long-term liabilities/commitments within pension funds and life insurers also continues to place downward pressure on US long-term interest rates. If the US economy is sufficiently strong (inflation/activity) and the US Federal Reserve tightens monetary policy by more than is currently expected by benign interest rate market pricing, US long-term bond yields would be expected to rise – and New Zealand follow. That action could create renewed divergence (not further convergence) with European/Japanese rates which are presently providing downward pressure on US / global interest rates. Global bond yields have been converging amidst negative central bank monetary policy rates in many countries and quantitative easing programs of purchasing government bonds driving longer-term bond yields very low and often negative. US inflation expectations/real rates and term premium over “neutral rates” are also at play; the ‘ratcheting lower’ of interest rates may already have occurred.
- **No amount of super-loose monetary policy may be sufficient to stimulate economic outcomes (even if measured correctly) should wider societal undercurrents (ageing population, underemployment, technological improvement, job obsolescence, income inequality) be at play with these arresting monetary policy as irrelevant.** The implication is no pressure for interest rates to increase but equally no point of lower interest rates. Big question; can the European Central Bank President Mario Draghi’s sleight of hand with non-traditional monetary policy measures match that of Ben Bernanke now that German opposition has been overcome???
- **Specific credit market drivers would argue for further widening in credit spreads over coming years.** Whilst this would normally be associated with lower wholesale market swap rates, such may not be as clear cut this time impacted by the already very low level of wholesale market swap rates and all-up yields / bond coupons. At the very least, widening credit spreads would contain the extent of rising wholesale market rates. An outlook for wider credit spreads and lower swap rates cannot be dismissed.

Are we in a new Paradigm, and if so, what does it look like?

The following section directly addresses the question of whether there has been a shift to a new paradigm for interest rates, and if so what does it look like? We also summarise and address what the likely future drivers of interest rates (US 10 year government bond yields and New Zealand 10 year swap rates) will be.

The table over page shows the average New Zealand 90 day bank bill rate, US 10 year government bond yield and New Zealand 10 year swap rate over the two distinct periods (pre and post GFC), as well as the current market rates.

	New Zealand 90 day bank bill rate	US 10 Year Government Bond Yield	NZ 10 Year Swap Rate
1999 – 2008	6.25%	4.70%	6.20%
2009 – 2016	2.95%	2.50%	4.40%
Current (May 2016)	2.40%	1.85%	2.95%

The background presented indicates clear evidence of a paradigm shift in interest rates either side of the GFC. The question is whether the shift is moving further away? Domestically the shift is reflected in the RBNZ estimate of the neutral 90 day bank bill rate of 4.50%, whereas prior to the GFC it was 6.50%. However, there remain questions over the shape and form of the new paradigm in relation to what level for US 10 year government bond yields this implies, and also whether the neutral short term interest rate in New Zealand is actually lower again. Furthermore, what do some of the New Zealand specific drivers of bond spreads relative to the US (i.e. risk premium) and also New Zealand swap rates relative to New Zealand Government bond yields (the ‘swap spread’) indicate for New Zealand 10 year swap rates. We highlight some of the alternatives below as to the shape and form of the new paradigm along with key drivers, probability weightings and our preferred outlook. Note that some of the components in practice would be overlapping. Note also for ease of presentation we have given a point estimate for each interest rate level rather than a narrow range.:-

US 10 Year Govt Bond Yield	Justification	Probability Weighting
1.50%	<ul style="list-style-type: none"> Quantitative Easing Programmes in Europe and Japan remain in place indefinitely (and are not successful). Therefore, further pressure lower on long-term bond yields in those sovereigns, with global convergence (lower) of bond yields continuing, dragging US, New Zealand and Australian long-term rates further lower. Ongoing negative monetary policy rates in those countries also and in the likes of Sweden, Switzerland... Strong business competition / strong supply means underlying services and good price inflation very low (or falling) Perennially low inflation driven by technological advancements, job obsolescence, underemployment... Ageing, income inequality, geopolitical unrest, rising protectionism, the environment – rising and ongoing fear factor within society and consumers means spending very contained Monetary policy irrelevance when it comes to impacting inflation and growth – interest rates are a central bank manipulation but are all but ineffective at moving the real economy Regulatory environment with higher capital requirements for banks, reduced dealer balance sheet capacity and bank credit risk reduction amidst central clearing houses lowers swap spreads. <p>Implication for New Zealand Interest Rates: US 10 year government bond yield of 1.50% + 75 basis point government bond spread / risk premium for New Zealand + 25 basis point swap spread = 2.50% New Zealand 10 year swap rate. Also 2.50% New Zealand 90 day rate = ‘flat’ difference between short-term interest and long-term interest rates.</p>	15%
= NZ 10 year swap rate 2.50%		

<p>2.00%</p> <p>= NZ 10 year swap rate 3.50%</p>	<ul style="list-style-type: none"> • Policy rates remain negative in many of the countries listed above for a good while longer • Spending continuing to be restrained as many continue to deleverage, and money is saved for retirement • Limited universe of investment alternatives continues to see demand for long-dated bonds with ongoing strong investor demand for long-dated assets to match long-dated liabilities • Increased Basel III banking regulations / capital requirements increasing banks demand for bonds (mainly short-dated) also widening credit spreads (inverse to swap rates / bond yields) • Not the doomsday scenario, but mediocre to modest growth and weak inflation continues... <p>Implication for New Zealand Interest Rates: US 10 year government bond yield of 2.00% + 100 basis point government bond spread / risk premium for New Zealand + 50 basis point swap spread = 3.50% New Zealand 10 year swap rate. Also 3.50% New Zealand 90 day rate = 'flat' difference between short-term interest rates and long-term interest rates.</p>	<p>20%</p>
<p>2.50%</p> <p>= NZ 10 year swap rate 4.00%</p>	<ul style="list-style-type: none"> • Cyclical US economic recovery (QE worked) • Gradual unwinding of QE over time (due to the US Federal Reserve eventually not re-investing maturing bonds) • CPI inflation is not completely dead, periods of higher commodity price movements (supply 'shocks', geo-political events) pushes headline CPI higher, services inflation remains above 3.0% due to ongoing rising health care costs, rents. Goods sector inflation remains muted around 0%, monetary policy still effective • Deflationary slide arrested in many other ageing demographics however underlying economic growth only modest • Other international bond and capital markets emerge as viable asset classes for investors, e.g. China, India... <p>Implication for New Zealand Interest Rates: US 10 year government bond yield of 2.50% + 100 basis point government bond spread / risk premium for New Zealand + 50 basis point swap spread = 4.00% New Zealand 10 year swap rate. Also 4.00% New Zealand 90 day rate = 'flat' difference between short-term interest rates and long-term interest rates.</p>	<p>40%</p>
<p>3.00%</p> <p>= NZ 10 year swap rate 4.75%</p>	<ul style="list-style-type: none"> • Strong and ongoing US economic recovery a locomotive for global economic growth and recovering global inflation pressures • QE eventually works in Europe consumers borrow / spend • Credit spreads reduce as global risks also reduce and costs associated with increased regulation not as bad as feared, demand for sovereign assets eases • Chinese/Japanese investors ultimately scale back holdings of US Treasury bonds <p>Implication for New Zealand Interest Rates: US 10 year government bond yield of 3.00% + 125 basis point government bond spread / risk premium for New Zealand + 50 basis point swap spread = 4.75% New Zealand 10 year</p>	<p>15%</p>

	<p>swap rate. Also 4.00% New Zealand 90 day rate = moderately 'steeper' difference between short-term interest rates and long-term interest rates.</p> <p><i>Risk premium spread to the US is widening due to market liquidity in New Zealand becoming tighter.</i></p>	
<p>3.50%+</p> <p>= NZ 10 year swap rate 5.50%</p>	<ul style="list-style-type: none"> • QE leads to strong inflation (was initially feared in the US, however little evidence in the seven years since). • Older citizens spend freely (but more difficult for governments to fund safety net, also individuals more fearful and working longer) • Plentiful jobs (would seem to run against automation trend unless these occur in lower value wages services sectors such as retail, tourism) • Widening universe of quality assets to invest in • Regulatory environment reverses (elements may occur as post GFC knee-jerk responses partially unwound) • [...No-one is talking about the prospects for the US 10 year government bond yield averaging 4.0% or above...] <p>Implication for New Zealand Interest Rates: US 10 year government bond yield of 3.50% + 150 basis point government bond spread / risk premium for New Zealand + 50 basis point swap spread = 5.50% New Zealand 10 year swap rate. Also 4.50% New Zealand 90 day rate = larger 'steeper' difference between short-term interest rates and long-term interest rates.</p> <p><i>Risk premium spread to the US is widening due to market liquidity in New Zealand becoming tighter and also higher New Zealand domestic inflation is leading to higher short-term interest rates.</i></p>	<p>10%</p>

With CPI inflation remaining at 2.00% on average, real interest rates are broadly between 1.00% and 3.00%.



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