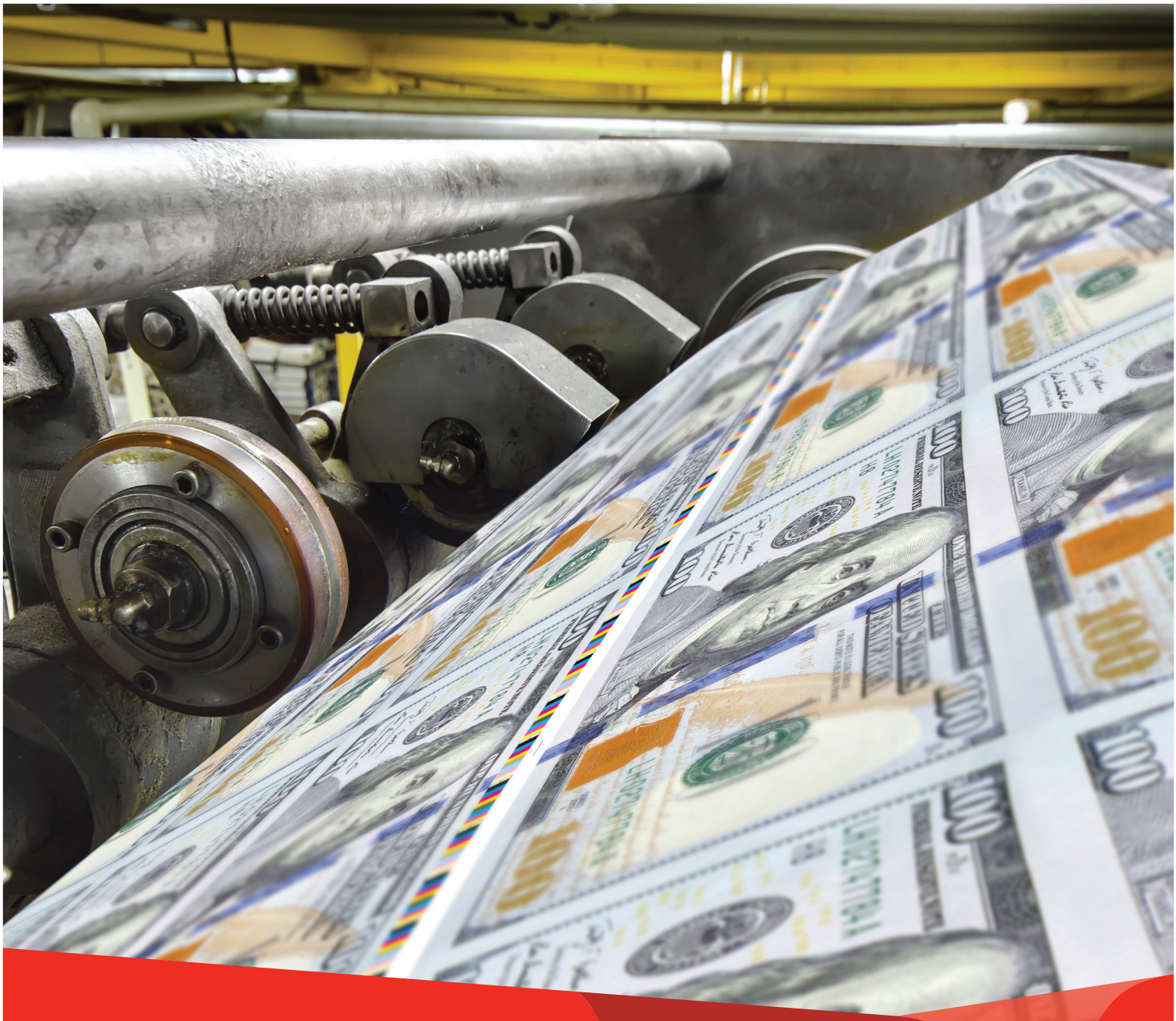
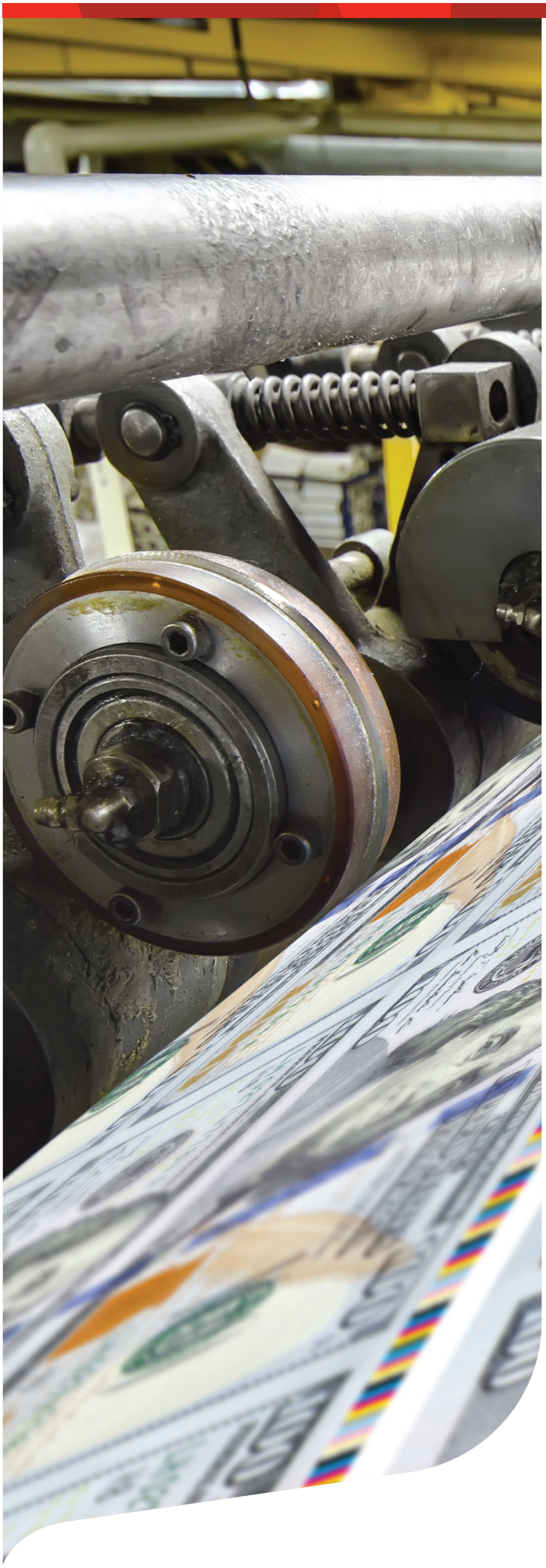


# Economic Insight.

## From zero to hero – Exploring the RBNZ's options if the OCR reaches zero.

18 September 2019



# Contents.



# Contributing authors.


**Dominick Stephens,** Chief Economist
+64 9 336 5671

**Michael Gordon,** Senior Economist
+64 9 336 5670

**Imre Speizer,** Market Strategist
+64 9 336 9929

# The RBNZ's options – A quick guide.

## Negative OCR.

**Page 6.**

- The OCR could fall to around -1%, but its effect on retail interest rates would wane as it approached that mark.
- OCR cuts below zero would continue to impact the exchange rate and wholesale interest rates.
- Negative interest rates can be counterproductive if they threaten the stability of banks, but this difficulty can be overcome by a carefully designed tiering system for interest on reserves.
- Negative interest rates are not necessarily a threat to banks' ability to fund themselves as some have suggested.

## Quantitative easing.

**Page 9.**

- Quantitative easing (QE) involves 'printing money' and buying government bonds with the proceeds, causing long-term interest rates to fall.
- QE is effective if used with sufficient vigour.
- In New Zealand, QE would work mainly by reducing the exchange rate.
- RBNZ buying could hamper market liquidity in New Zealand's small bond market. This could be overcome by the RBNZ taking a stand in the market at a low interest rate.

## Credit easing.

**Page 10.**

- Credit easing (CE) involves 'printing money' and buying private sector bonds, causing long-term interest rates to fall.
- CE is effective, but can cause distortions by favouring some entities over others.
- CE is probably best reserved for use in a credit crunch scenario.

## Unsterilised exchange rate intervention.

**Page 10.**

- The RBNZ could 'print money' and use the proceeds to buy foreign bonds.
- This would reduce the exchange rate directly, thus boosting inflation.
- Exchange rate intervention of this type could have international political ramifications.
- The RBNZ would be exposed to the possibility of losses.

## Interest rate swap market intervention.

**Page 11.**

- The RBNZ can enter swaps with other parties to pay a floating interest rate and receive a fixed-term rate.
- This would put downward pressure on long-term interest rates and send a signal about the RBNZ's willingness to keep the OCR low.
- Swap market intervention is particularly suited to New Zealand, where the swap market is deeper than the bond market.

## Funding for loans.

**Page 11.**

- The RBNZ can directly provide cheap funding to banks.
- In return, banks would commit to lending more to businesses and households.
- This could be controversial and would likely be used only in an emergency.

# Executive summary.

**With the OCR at 1% and falling, now is the time to start thinking about the unthinkable – what would happen if the OCR reached zero and further monetary stimulus was required?**

As this Bulletin explains, the RBNZ would not be out of ammo if the OCR hit zero and further stimulus was required. It would have a range of options available, collectively known as unconventional monetary policy. Although we don't expect that unconventional policy will be required, now is the time to prepare ourselves for the possibility.

Our overall conclusion is that unconventional monetary policy is likely to work if used with sufficient vigour. But we are using "work" in the narrow sense of the RBNZ meeting its inflation target. Monetary policy, whether conventional or unconventional, is no panacea.

There are, of course, problems and unintended consequences hidden within the detail of each brand of unconventional monetary policy. We argue that the key challenges with negative interest rates and quantitative easing are surmountable with careful policy design. However, the unintended distortions associated with credit easing or directly lending to banks probably make these policies unpalatable in the New Zealand context.

The more general criticisms of unconventional monetary easing – that it is distortionary, it favours borrowers, it pushes up asset prices – actually apply equally to conventional monetary easing. These are unpleasant side effects, but the economy is still better off taking its monetary medicine than not.

Our second key conclusion is that in New Zealand, unconventional monetary policy would do much of its work via the exchange rate. This contrasts with some of the big safe haven countries that have used unconventional monetary policy. In those countries, the exchange rate tends to play a less helpful role in targeting inflation than in New Zealand.

The first cab off the unconventional policy rank would probably be a negative OCR. We think the OCR could viably be reduced to around -1%, although its effectiveness would diminish as it approached that mark. Retail interest rates would not go negative – overseas experience suggests deposit rates would end up fractionally above zero, while retail mortgage rates would land in the range of two to three percent. We don't expect there would be any difficulty with banks funding themselves despite a negative OCR.

The next weapon in the RBNZ's arsenal would be quantitative easing (QE), which roughly translates as printing money to buy government bonds. A key impact would be to push the exchange rate down as investors are deterred from New Zealand and instead invest overseas. One intriguing possibility is for the RBNZ to just 'print money' and buy foreign bonds directly, which would amount to Unsterilised exchange rate intervention.

The final option we see as viable is the RBNZ intervening directly in interest rate swap markets to push fixed rates down. This would particularly suit the New Zealand context where swap markets are well developed, although it does expose the RBNZ to some risk of losses.

Policies that have been used overseas but are less likely to find favour in New Zealand are credit easing ('printing money' to buy private sector bonds) and funding for loans (lending directly to banks in return for banks undertaking to on-lend to the private sector). Both have the potential to 'pick winners' and create distortions in the economy, which we think the RBNZ will shy away from. These policies would more likely be used in a crisis situation than in pursuit of the inflation target.

# A quick refresher on how monetary policy works.

To understand how unconventional monetary policy might work, it helps to first briefly recap how conventional monetary policy works.

Banks hold settlement accounts with the RBNZ (also known as reserves), which they use to settle transactions between each other or with the government. Each bank must keep its settlement balance in positive territory. If they find themselves short, they can borrow overnight from another bank or from the RBNZ at the Official Cash Rate. The RBNZ pays banks a (usually positive) interest rate on their settlement account balance, at a margin below the OCR.

All of this gives the RBNZ a tremendous amount of influence over interest rates in the private sector. Since banks can always either borrow from or lend to the RBNZ at roughly the OCR, short-term interest rates can't deviate far from the OCR. Long term interest rates partly reflect where markets expect short term interest rates to go in the future, so the RBNZ has some influence there too.

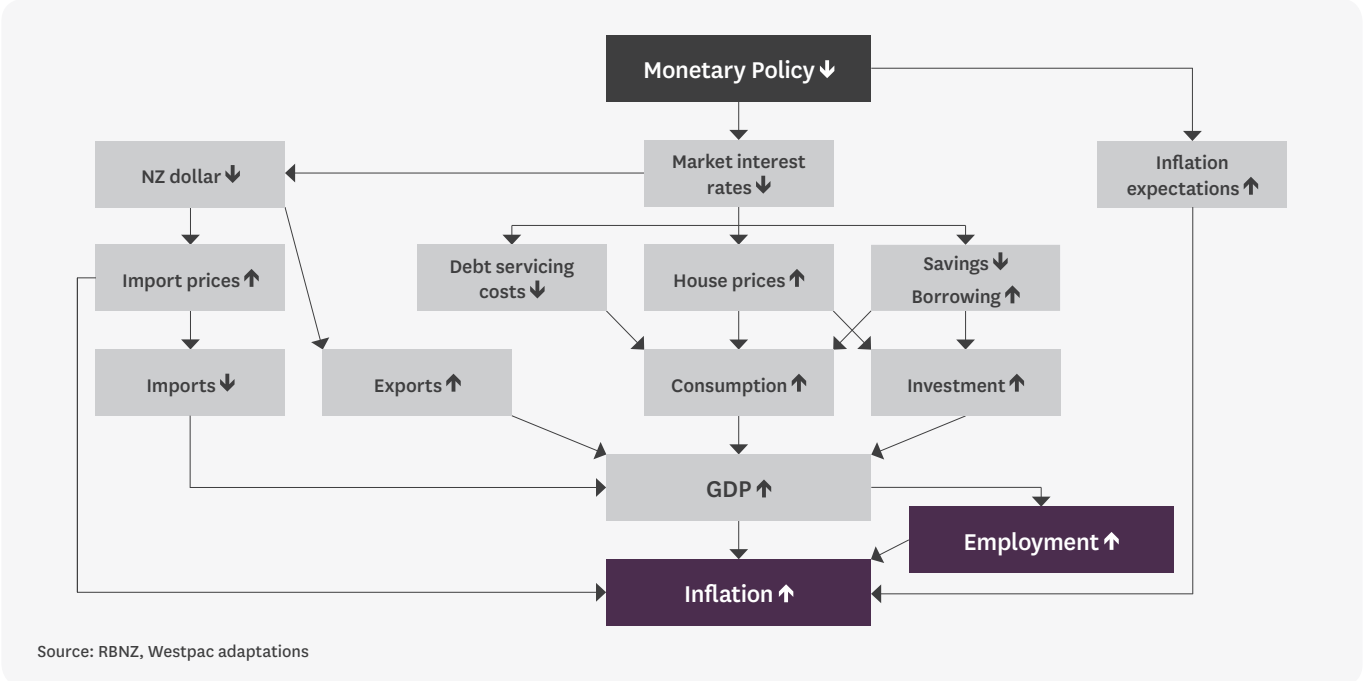
## The worst stabilisation policy… except all the others.

There are myriad flow-on effects that are called the 'transmission channels' of monetary policy. Some are actually counterproductive – for exampe, lower interest rates can depress spending by pensioners who rely on interest income.

But on balance, monetary policy works in the intended direction (see figure 1). In New Zealand, the most important transmission channels are asset prices and the exchange rate. Falling interest rates tend to push asset prices up, which stimulates consumer spending. Falling interest rates also tend to reduce the exchange rate, which generates inflation via the tradables sector.

The transmission of unconventional monetary easing would be much the same as for the OCR – after all, both boil down to an attempt to reduce private sector interest rates. Many of the criticisms of unconventional monetary easing actually apply equally to conventional monetary easing. The side-effects of both include higher asset prices, which unfairly redistributes wealth in the economy; that savers are disadvantaged relative to borrowers; and that lower interest rates tend to result in a build-up of debt. Despite these side-effects, using monetary policy to target inflation – be it conventional or unconventional – is generally accepted as being better than the counterfactual.

**Figure 1: The transmission of monetary policy**




Source: RBNZ, Westpac adaptations

# Negative OCR.

- **The OCR could fall to around -1%, but its effect on retail interest rates would wane as it approached that mark.**
- **OCR cuts below zero would continue to impact the exchange rate and wholesale interest rates.**
- **Negative interest rates can be counterproductive if they threaten the stability of banks, but this difficulty can be overcome by a carefully designed tiering system for interest on reserves.**
- **Negative interest rates are not necessarily a threat to banks' ability to fund themselves as some have suggested.**

The first unconventional option for the RBNZ would simply be to push the OCR below zero. Holding settlement account balances would become a cost for banks, creating an incentive for them to lend money out rather than getting caught holding costly settlement cash. And in order to encourage more borrowing, banks would need to reduce their lending rates.

Overseas experience suggests that a negative OCR would lead to low, but not negative retail interest rates. Banks can't easily offer negative deposit rates, because people might just hoard physical cash instead. Negative official interest rates exist in Europe, Denmark, Switzerland and Sweden, yet ordinary depositors are offered slightly positive interest rates in all of these jurisdictions. If deposit rates can't drop below zero, then the lower limit for lending rates would be a margin above zero – probably in the range of 2% to 3% in New Zealand.

If retail deposit rates can't fall into negative territory, then beyond a certain point reducing the OCR further would be pushing on a string, with no further impact on retail interest rates. There is debate internationally as to where this 'lower bound' for official interest rates is. Achieving near-zero retail deposit rates required official rates in the range of -0.5% to -0.75% in Europe. In New Zealand, term deposit rates are generally 100 basis points or more above the OCR, a wider spread than in other countries. Consequently, the OCR would have to fall to -1% or even lower before term deposit rates hit zero and no further impact on deposit rates was possible.

The OCR's effectiveness would gradually wane as it approached its lower limit, rather than there being a hard boundary. This has to do with the way banks fund themselves. Some bank deposits, such as transactional accounts, earn interest well below the OCR – indeed, most transactional accounts dropped to zero interest long ago. As the OCR falls, a greater proportion of the money in New Zealand bank accounts hit zero interest rates and cannot fall any further.

As the proportion of bank deposits earning zero interest has increased, each additional OCR cut has had less impact on the *average* cost of funds for banks.

Banks make their money by lending at a margin above the average interest rate on deposits. The lower the OCR goes, the more the pace of decline in average deposit rates slows, and consequently the pace of decline in lending rates would also slow.

**Figure 2: Diminishing impact of OCR on mortgage rates – stylised representation**

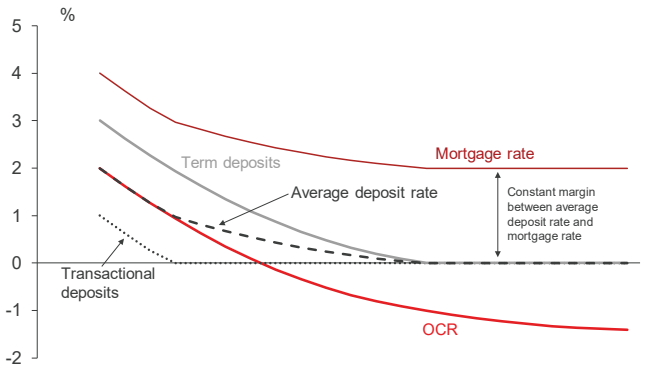



**Figure 3: Swedish interest rates**

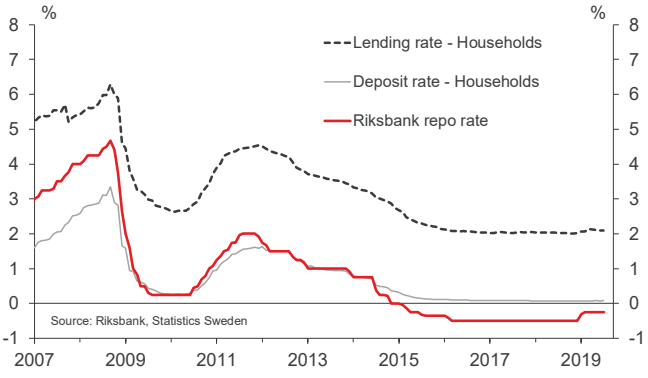
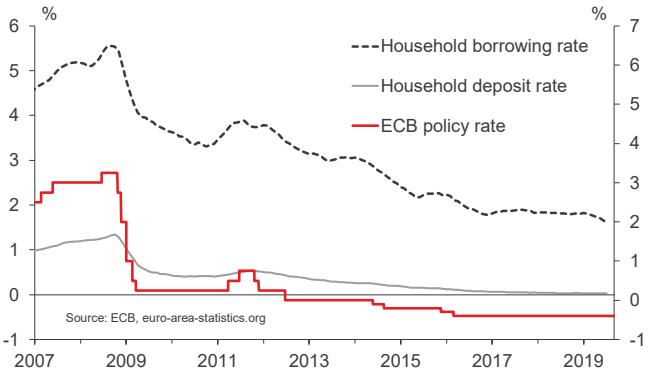
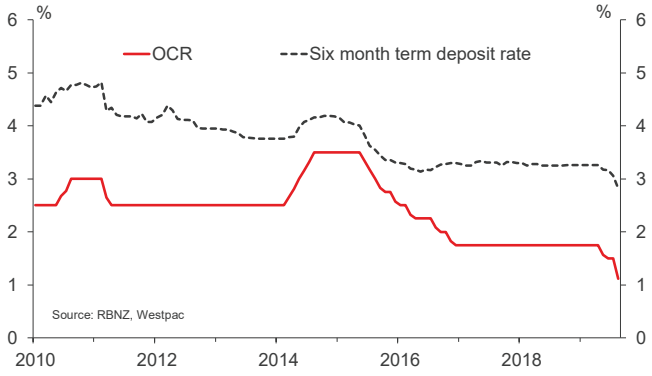



**Figure 4: Euro area interest rates**



Furthermore, term deposit rates themselves tend to move by less than one for one with the OCR. Banks prefer term deposits to other forms of funding, and are willing to continue paying up to attract retail term deposits even when other interest rates fall. Again, this means that the lower the OCR goes, the less further cuts will impact retail interest rates.

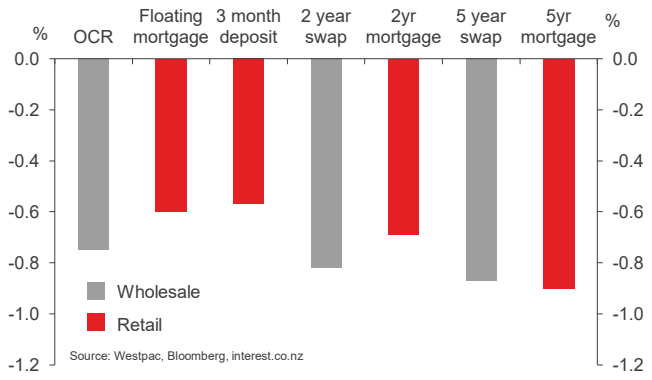
**Figure 5: Deposit rates and the OCR**




The issues associated with retail deposit rates reaching their lower bound will be exacerbated if the RBNZ goes ahead with its plan to require banks to hold more capital, which will widen the margin between deposit and lending rates. If all deposit rates are already zero when the RBNZ implements its capital policy, the only option would be for lending rates to rise, which would amount to an unintended monetary tightening.

The diminishing effectiveness of OCR cuts should not be overstated. We first started hearing people say that further cuts would be ineffective when the OCR was 3%, and this mantra has been incorrectly repeated ever since. Figure 6 below shows that the OCR cuts this year from 1.75% to 1.0% have actually been very effective. There has been a large decline in mortgage rates and term deposit rates, although short-term rates have not dropped one-for-one with the OCR.

**Figure 6: Change in interest rates, mid March to mid September**




A practical constraint on how negative the OCR can go relates the stability and profitability of the banking system. Paying negative interest on settlement balances is a cost to banks – when there is a lot of settlement cash in the system, such as when quantitative easing is also under way, this can become quite a large cost. To recoup this cost, some banks in Europe have actually *increased* mortgage rates.

Fortunately, there is a well established way of getting around this wrinkle. Most overseas central banks that use negative interest rates have introduced tiering systems, where the first portion of each bank's reserves are exempt from negative interest rates, but over a certain limit the negative interest rate applies. This reduces the overall impact on banks' earnings, while maintaining incentives at the margin for banks to lend. Presumably the RBNZ would adopt a similar tiering scheme. In any case, this whole issue may be less of a problem in New Zealand, considering that our banks are generally stronger than European banks.

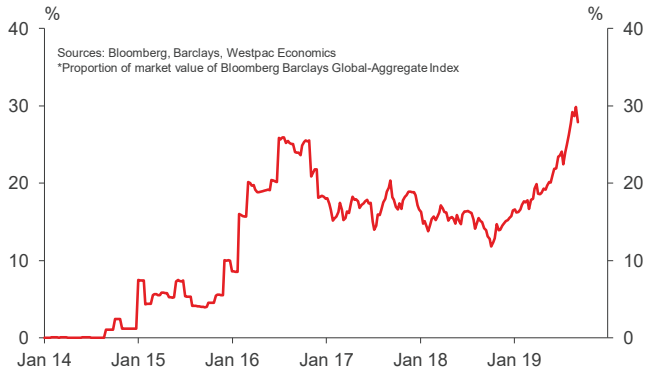
Some economists have mused that deep OCR cuts might become counterproductive because banks would have trouble attracting deposits. The thinking is that banks would become unable to expand lending, creating a credit crunch.

We do not agree. Lack of bank funding has not been a problem in zero interest rate countries overseas, for good reason. Negative interest rates tend to be required only in situations where people are too cautious to invest or take other risks with their money, and instead tend to park it at banks. The reason that countries drop into negative interest rate situations is because the public has an excessive zeal for bank deposits. Mobilising people to do more productive things with their money is the aim of a negative interest rate policy, not a sign that it has failed.

Perhaps a more pertinent risk facing the New Zealand banking system is that wholesale investors, particularly those based overseas, might reduce their willingness to fund the banking system at very low interest rates. But in this situation the exchange rate would drop due to the lack of incoming funds seeking to purchase New Zealand bank paper. Again, a lower exchange rate would be viewed as a success of negative interest rates, not a failure.

While the impact of the OCR on retail interest rates would wane as it approached its lower bound, other channels of monetary policy would remain very effective. A negative OCR could easily lead to negative wholesale interest rates, because large investors would find it much more difficult to hoard cash than households (one contact in Switzerland said that the cost of storing, securing and insuring huge amounts of cash would equate to around 0.75% per annum, making this the lower bound for wholesale interest rates). As the OCR fell below zero, 90-day interbank rates, swap rates and government bond rates could all fall into negative territory. Almost a third of government bonds around the world now trade at negative interest rates, and the German government can borrow for 30 years at a negative fixed rate. With 'safe' investments offering so little return, investors would turn to riskier investments, meaning that corporate borrowing rates would come down. This would make it easier to invest in the real economy, and would help to offset whatever shock had caused the RBNZ to lower the OCR below zero in the first place.

**Figure 7: Proportion of global bonds with negative yields**




The transmission from a falling OCR to the exchange rate would also remain effective even as the OCR fell below zero. As explained above, a negative OCR would drag down the return on a wide range of investments in New Zealand. Consequently, both overseas investors and New Zealanders would increasingly look overseas for better returns. As they sought to sell their New Zealand dollars, the exchange rate would fall. In turn, that would stimulate the tradables sector, as well as generating imported inflation.

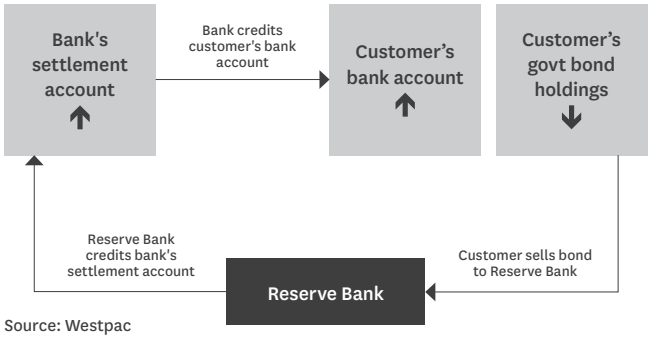
In conclusion, it is perfectly possible for the RBNZ to continue cutting the OCR below zero. Each OCR reduction would have less impact on retail mortgage rates than the last, although there would still be some effect down to an OCR of about -1%. Furthermore, lowering the OCR below zero would stimulate the economy and inflation by reducing wholesale interest rates and the exchange rate.

# Quantitative easing.

- Quantitative easing (QE) involves 'printing money' and buying government bonds with the proceeds, causing long-term interest rates to fall.
- QE is effective if used with sufficient vigour.
- In New Zealand, QE would work mainly by reducing the exchange rate.
- RBNZ buying could hamper market liquidity in New Zealand's small bond market. This could be overcome by the RBNZ taking a stand in the market at a low interest rate.

If the OCR reached its lower bound, the next option would probably be quantitative easing (QE). This would involve the RBNZ crediting banks' settlement accounts – metaphorically 'printing money' – and using the proceeds to buy assets from the private sector.

**Figure 8: Quantitative easing in practice**



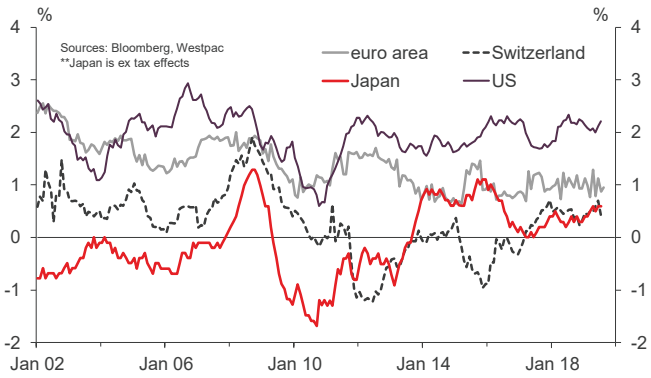

Source: Westpac

Typically, the assets that the central bank purchases are long-term government-issued bonds. The additional demand for these bonds would push their prices up, which would lower their expected yield. Since government bond yields represent a risk-free benchmark for other market interest rates, QE can have an influence on long term borrowing rates across the economy. However, short-term interest rates are unaffected, since these are tied to the OCR.

Crucially, QE is not all that different from conventional monetary policy in that it affects the economy through interest rates. This point is not well understood: the name itself suggests an emphasis on the quantity of money that is pumped into the banking system. But those funds typically just sit in banks' settlement accounts – the real impact of QE is that it lowers long term interest rates.

QE has been adopted at various times in recent years by the US, the euro zone, the UK, Switzerland, Sweden and Japan (in the latter case dating back to before the GFC). The results have been mixed. There is a general agreement that QE has helped to lower long-term interest rates to some degree, but none of these regions have managed to return to their inflation targets on a sustained basis. However, the experiences of these countries do give us some guidance on how QE could be used effectively in New Zealand.

**Figure 9: Core inflation in countries with QE**




One of the reasons QE has failed to result in higher inflation overseas may be that it has not been used vigorously enough. In the US and Europe there has been political opposition to expanding the size of the central bank's balance sheet, which has led to an overly cautious approach to bond buying.

In New Zealand's case the challenge for QE is that government debt is low, meaning that if the RBNZ were to resort to QE it could quickly run out of things to buy. Worse, if the RBNZ snapped up most of the available government bonds, the remaining bonds might suffer from an illiquidity premium, preventing much of an interest rate decline.

We think this problem is surmountable. The RBNZ could simply stand in the market and offer to buy or sell bonds, in very large or unlimited amounts, at a specified low interest rate. Market interest rates would quickly converge on the specified interest rate, which means that the RBNZ may not even need to buy that many bonds. The RBNZ's market stand would address any liquidity concerns.

In a small open economy like New Zealand, it's likely that the main effect of QE would be to lower the exchange rate. The pool of domestic bonds is limited, and a high share of New Zealand government bonds are held overseas. As the RBNZ buys up the available bonds, the sellers will be left with cash to invest somewhere else. That cash may be used to buy foreign assets, and the resulting outflow of funds would put downward pressure on the New Zealand dollar, which in turn would boost inflation.

The exchange rate channel would be particularly important if other countries are resorting to QE, or expanding their current QE programmes, at the same time as New Zealand. In this case the RBNZ would be using QE to prevent the exchange rate from rising.

## Credit easing.

- Credit easing (CE) involves 'printing money' and buying private sector bonds, causing long-term interest rates to fall.
- CE is effective, but can cause distortions by favouring some entities over others.
- CE is probably best reserved for use in a credit crunch scenario.

Sometimes a distinction is made between quantitative easing (QE) and credit easing (CE). In the latter case, the RBNZ would instead buy private sector assets such as mortgage-backed securities or corporate bonds. This would have a more direct impact on private sector borrowing rates, but unlike the previous example, it would expose the Crown to the risk of losses if the borrower defaults. The difference in terms of their effectiveness is likely to be more apparent during times of stress, when businesses may be struggling to raise funds from the market at reasonable interest rates.

One drawback with credit easing is that it can 'pick winners' within the economy. The RBNZ will inevitably buy the bonds of some qualifying institutions and not others. These favoured institutions would find it easier and cheaper to raise money than unfavoured institutions, particularly if a credit crunch was under way. This could lead to politicking about which institutions should qualify, as well as real distortions in the economy.

Again, credit easing would tend to depress the exchange rate, because it would lower the return available on New Zealand assets compared to the returns available overseas.

## Unsterilised exchange rate intervention.

- The RBNZ could 'print money' and use the proceeds to buy foreign bonds.
- This would reduce the exchange rate directly, thus boosting inflation.
- Exchange rate intervention of this type could have international political ramifications.
- The RBNZ would be exposed to the possibility of losses.

In the last two sections we explained that quantitative easing and credit easing would mainly work via the exchange rate. If the RBNZ buys domestic bonds, investors may substitute to foreign bonds, pushing down the exchange rate in the process. One option for the RBNZ would be to simply cut out the middleman, by issuing reserves and using the proceeds to buy *foreign* bonds.

This would be equivalent to massive unsterilised exchange rate intervention, similar to China's accumulation of US Treasury bonds in the 2000s and early 2010s. It could be an effective strategy, but there would be risks. First, the RBNZ would face the possibility of losses if the exchange rate rose before the foreign bonds were sold or matured. Second, the action would have to be carefully managed to avoid international political fallout. One country's exchange rate depreciation is by definition another's appreciation, so overt action to devalue the New Zealand dollar could anger our trading partners.

## Interest rate swap market intervention.

- The RBNZ can enter swaps with other parties to pay a floating interest rate and receive a fixed-term rate.
- This would put downward pressure on long-term interest rates and send a signal about the RBNZ's willingness to keep the OCR low.
- Swap market intervention is particularly suited to New Zealand, where the swap market is deeper than the bond market.

The RBNZ has raised the possibility of intervening in the interest rate swap market. This differs from the other options detailed here in that it wouldn't involve purchasing any assets up-front. Rather, a swap is a derivative product that involves two parties exchanging interest rate payments over the life of the swap – one pays party the floating rate, the other pays the fixed rate[1].

The RBNZ could enter agreements to receive fixed-rate interest payments from other parties, and in turn pay them floating-rate interest payments. This is analagous to the RBNZ lending at a fixed rate and simultaneously borrowing at a floating rate, similar in effect to QE. If done in large amounts, this would have three effects. First, it would put downward pressure on long-term interest rates. When there is greater demand to receive the fixed rate, that rate must fall in order to attract counterparties who are willing to pay it.

Second, the RBNZ would send a signal about its willingness to keep the OCR low for an extended period. Since the RBNZ would be paying the floating rate (which is closely linked to the OCR), it would lose out if it raised the OCR sooner or by more than the market anticipated. Finally, like other measures, it would put downward pressure on the exchange rate by reducing New Zealand interest rates relative to the rest of the world.

The interest rate swap market is larger and more active than the bond market in New Zealand, and the fixed rates are often used as the benchmark for other borrowing rates – a role that tends to be served by the government bond market in other countries. Moreover, the scope for intervention is potentially open-ended, as the RBNZ would be limited only by the number of willing counterparties that it can find.

## Funding for loans.

- The RBNZ can directly provide cheap funding to banks.
- In return, banks would commit to lending more to businesses and households.
- This could be controversial and would likely be used only in an emergency.

Another option is for the RBNZ to lend directly to banks at low interest rates. This would likely come with conditions, such as that banks lend a certain amount to certain sectors, to ensure that the banks don't simply use it to replace their existing funding. Several countries adopted similar measures in the wake of the Global Financial Crisis, and the Bank of England reintroduced it as a pre-emptive measure after the Brexit vote in 2016.

This option would have the most direct impact in terms of lowering banks' funding costs, which could then be passed through to lending rates in the wider economy. However, it would likely be even more politically sensitive than the other options, as it could be seen as a handout to banks, and it would create a significant credit risk exposure for the RBNZ. For these reasons, we think this option will continue to be reserved for crisis management situations, rather than in service of meeting the inflation target.

1 For the details of how an interest rate swap works, see https://investinganswers.com/dictionary/i/interest-rate-swap

# Expected market impact of unconventional monetary policies in NZ.

| Policy type | Swap yield | Curve slope | NZGB-swap spread | Corporate bond-swap spread | NZD/USD exchange rate | Comments |
|---|---|---|---|---|---|---|
| Negative OCR | ↓ | ↑ | ↑ | ↓→ | ↓ | The market impact of a reduction in the OCR to negative levels should be similar to a reduction at positive levels.<br><br>The main impact would be lower swap and NZGB yields across all maturities.<br><br>Shorter maturities would fall more than longer maturities, thereby steepening the yield curve. |
| Quantitative easing (NZGB purchases) | ↓ | ↓ | ↓ | ↓→ | ↓ | Main impact: lower NZGB yields and lower NZGB-swap spreads. Other yields, such as swaps, would also fall but to a lesser extent.<br><br>If the RBNZ targeted longer maturities (likely), the yield curve would flatten.<br><br>Corporate bond-swap spreads should decrease slightly (based on past correlations).<br><br>The NZD would fall due to lower interest rate differentials, as well as bond investors substituting with foreign bonds. |
| Credit easing (Corporate bond purchases) | ↓→ | ↓→ | ↑→ | ↓ | ↓→ | Main impact: lower corporate bond yields and lower corporate bond-swap spreads for eligible names (spreads between eligible and ineligible names could increase).<br><br>Other yields could also fall (but to a lesser extent) due to the easing signal, unwinding of asset swap hedges, and substitution by investors.<br><br>The NZD would fall due to lower interest rate differentials, as well as bond investors substituting with foreign bonds, but given the small size of the corporate bond market the effects would be minor. |
| FX intervention via foreign bond purchases | → | → | → | → | ↓ | Main impact: a sharply lower NZD. While the transactions themselves would be NZD-negative, it is the signalling effect which would dominate - news that the RBNZ is selling the NZD would cause other market participants to follow suit. |
| Interest rate swap intervention | ↓ | ↓ | ↑ | → | ↓ | Main impact (the RBNZ would receive fixed): lower swap yields.<br><br>If the RBNZ targeted longer maturities (likely), the yield curve would flatten.<br><br>Given the historical correlations with underlying yields, NZGB-swap spreads would increase, while corporate bond-swap spreads could increase in the near term (via swap yields falling more than corporate bond yields) but decrease in the long term.<br><br>The NZD/USD would fall sharply due to lower interest rate differentials. |
| Funding for loans | ↓→ | ↑→ | → | ↓→ | ↓→ | Main impact: lending to some business sectors via banks should stimulate activity in those sectors, but the impact on financial markets should be minor based on the experiences in the Eurozone and UK.<br><br>Yields and the NZD could fall slightly due to the signal the RBNZ is easing.<br><br>Corporate bond spreads could decrease, particularly for names and sectors directly targeted by the loans. |

# Contact the Westpac research team.


**Dominick Stephens,** Chief Economist
+64 9 336 5671

**Michael Gordon,** Senior Economist
+64 9 336 5670

**Satish Ranchhod,** Senior Economist
+64 9 336 5668

**Paul Clark,** Industry Economist
+64 9 336 5656

**Imre Speizer,** Market Strategist
+64 9 336 9929

**Any questions email:**
economics@westpac.co.nz


Past performance is not a reliable indicator of future performance. The forecasts given in this document are predictive in character. Whilst every effort has been taken to ensure that the assumptions on which the forecasts are based are reasonable, the forecasts may be affected by incorrect assumptions or by known or unknown risks and uncertainties. The ultimate outcomes may differ substantially from these forecasts.

# Disclaimer.

**Things you should know**

Westpac Institutional Bank is a division of Westpac Banking Corporation ABN 33 007 457 141 ('Westpac').

**Disclaimer**

This material contains general commentary, and market colour. The material does not constitute investment advice. Certain types of transactions, including those involving futures, options and high yield securities give rise to substantial risk and are not suitable for all investors. We recommend that you seek your own independent legal or financial advice before proceeding with any investment decision. This information has been prepared without taking account of your objectives, financial situation or needs. This material may contain material provided by third parties. While such material is published with the necessary permission none of Westpac or its related entities accepts any responsibility for the accuracy or completeness of any such material. Although we have made every effort to ensure the information is free from error, none of Westpac or its related entities warrants the accuracy, adequacy or completeness of the information, or otherwise endorses it in any way. Except where contrary to law, Westpac and its related entities intend by this notice to exclude liability for the information. The information is subject to change without notice and none of Westpac or its related entities is under any obligation to update the information or correct any inaccuracy which may become apparent at a later date. The information contained in this material does not constitute an offer, a solicitation of an offer, or an inducement to subscribe for, purchase or sell any financial instrument or to enter a legally binding contract. Past performance is not a reliable indicator of future performance. Whilst every effort has been taken to ensure that the assumptions on which the forecasts are based are reasonable, the forecasts may be affected by incorrect assumptions or by known or unknown risks and uncertainties. The ultimate outcomes may differ substantially from these forecasts.

**Country disclosures**

**Australia:** Westpac holds an Australian Financial Services Licence (No. 233714). This material is provided to you solely for your own use and in your capacity as a wholesale client of Westpac.

**New Zealand:** In New Zealand, Westpac Institutional Bank refers to the brand under which products and services are provided by either Westpac or Westpac New Zealand Limited ("WNZL"). Any product or service made available by WNZL does not represent an offer from Westpac or any of its subsidiaries (other than WNZL). Neither Westpac nor its other subsidiaries guarantee or otherwise support the performance of WNZL in respect of any such product. The current disclosure statements for the New Zealand branch of Westpac and WNZL can be obtained at the internet address www.westpac.co.nz. For further information please refer to the Product Disclosure Statement (available from your Relationship Manager) for any product for which a Product Disclosure Statement is required, or applicable customer agreement. Download the Westpac NZ QFE Group Financial Advisers Act 2008 Disclosure Statement at www.westpac.co.nz.

**China, Hong Kong, Singapore and India:** This material has been prepared and issued for distribution in Singapore to institutional investors, accredited investors and expert investors (as defined in the applicable Singapore laws and regulations) only. Recipients in Singapore of this material should contact Westpac Singapore Branch in respect of any matters arising from, or in connection with, this material. Westpac Singapore Branch holds a wholesale banking licence and is subject to supervision by the Monetary Authority of Singapore. Westpac Hong Kong Branch holds a banking license and is subject to supervision by the Hong Kong Monetary Authority. Westpac Hong Kong branch also holds a license issued by the Hong Kong Securities and Futures Commission (SFC) for Type 1 and Type 4 regulated activities. This material is intended only to "professional investors" as defined in the Securities and Futures Ordinance and any rules made under that Ordinance. Westpac Shanghai and Beijing Branches hold banking licenses and are subject to supervision by the China Banking Regulatory Commission (CBRC). Westpac Mumbai Branch holds a banking license from Reserve Bank of India (RBI) and subject to regulation and supervision by the RBI.

**UK:** The contents of this communication, which have been prepared by and are the sole responsibility of Westpac Banking Corporation London and Westpac Europe Limited. Westpac (a) has its principal place of business in the United Kingdom at Camomile Court, 23 Camomile Street, London EC3A 7LL, and is registered at Cardiff in the UK (as Branch No. BR00106), and (b) authorised and regulated by the Australian Prudential Regulation Authority in Australia. Westpac is authorised in the United Kingdom by the Prudential Regulation Authority. Westpac is subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. Details about the extent of our regulation by the Prudential Regulation Authority are available from us on request. Westpac Europe Limited is a company registered in England (number 05660023) and is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority.

This communication is being made only to and is directed at (a) persons who have professional experience in matters relating to investments who fall within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order") or (b) high net worth entities, and other persons to whom it may otherwise lawfully be communicated, falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as "relevant persons"). Any person who is not a relevant person should not act or rely on this communication or any of its contents. The investments to which this communication relates are only available to and any invitation, offer or agreement to subscribe, purchase or otherwise acquire such investments will be engaged in only with, relevant persons. Any person who is not a relevant person should not act or rely upon this communication or any of its contents. In the same way, the information contained in this communication is intended for "eligible counterparties" and "professional clients" as defined by the rules of the Financial Conduct Authority and is not intended for "retail clients". With this in mind, Westpac expressly prohibits you from passing on the information in this communication to any third party. In particular this communication and, in each case, any copies thereof may not be taken, transmitted or distributed, directly or indirectly into any restricted jurisdiction. This communication is made in compliance with the Market Abuse Regulation (Regulation(EU) 596/2014).

**Investment Recommendations Disclosure**

The material may contain investment recommendations, including information recommending an investment strategy. Reasonable steps have been taken to ensure that the material is presented in a clear, accurate and objective manner. Investment Recommendations for Financial Instruments covered by MAR are made in compliance with Article 20 MAR. Westpac does not apply MAR Investment Recommendation requirements to Spot Foreign Exchange which is out of scope for MAR.

Unless otherwise indicated, there are no planned updates to this Investment Recommendation at the time of publication. Westpac has no obligation to update, modify or amend this Investment Recommendation or to notify the recipients of this Investment Recommendation should any information, including opinion, forecast or estimate set out in this Investment Recommendation change or subsequently become inaccurate.

Westpac will from time to time dispose of and acquire financial instruments of companies covered in this Investment Recommendation as principal and act as a market maker or liquidity provider in such financial instruments.

Westpac does not have any proprietary positions in equity shares of issuers that are the subject of an investment recommendation.

Westpac may have provided investment banking services to the issuer in the course of the past 12 months.

Westpac does not permit any issuer to see or comment on any investment recommendation prior to its completion and distribution.

Individuals who produce investment recommendations are not permitted to undertake any transactions in any financial instruments or derivatives in relation to the issuers covered by the investment recommendations they produce.

Westpac has implemented policies and procedures, which are designed to ensure conflicts of interests are managed consistently and appropriately, and to treat clients fairly.

The following arrangements have been adopted for the avoidance and prevention of conflicts in interests associated with the provision of investment recommendations.

(i) Chinese Wall/Cell arrangements;

(ii) physical separation of various Business/Support Units;

(iii) and well defined wall/cell crossing procedures;

(iv) a "need to know" policy;

(v) documented and well defined procedures for dealing with conflicts of interest;

(vi) steps by Compliance to ensure that the Chinese Wall/Cell arrangements remain effective and that such arrangements are adequately monitored.

**U.S:** Westpac operates in the United States of America as a federally licensed branch, regulated by the Office of the Comptroller of the Currency. Westpac is also registered with the US Commodity Futures Trading Commission ("CFTC") as a Swap Dealer, but is neither registered as, or affiliated with, a Futures Commission Merchant registered with the US CFTC. Westpac Capital Markets, LLC ('WCM'), a wholly-owned subsidiary of Westpac, is a broker-dealer registered under the U.S. Securities Exchange Act of 1934 ('the Exchange Act') and member of the Financial Industry Regulatory Authority ('FINRA'). This communication is provided for distribution to U.S. institutional investors in reliance on the exemption from registration provided by Rule 15a-6 under the Exchange Act and is not subject to all of the independence and disclosure standards applicable to debt research reports prepared for retail investors in the United States. WCM is the U.S. distributor of this communication and accepts responsibility for the contents of this communication. All disclaimers set out with respect to Westpac apply equally to WCM. If you would like to speak to someone regarding any security mentioned herein, please contact WCM on +1 212 389 1269. All disclaimers set out with respect to Westpac apply equally to WCM.

Investing in any non-U.S. securities or related financial instruments mentioned in this communication may present certain risks. The securities of non-U.S. issuers may not be registered with, or be subject to the regulations of, the SEC in the United States. Information on such non-U.S. securities or related financial instruments may be limited. Non-U.S. companies may not subject to audit and reporting standards and regulatory requirements comparable to those in effect in the United States. The value of any investment or income from any securities or related derivative instruments denominated in a currency other than U.S. dollars is subject to exchange rate fluctuations that may have a positive or adverse effect on the value of or income from such securities or related derivative instruments.

The author of this communication is employed by Westpac and is not registered or qualified as a research analyst, representative, or associated person under the rules of FINRA, any other U.S. self-regulatory organisation, or the laws, rules or regulations of any State. Unless otherwise specifically stated, the views expressed herein are solely those of the author and may differ from the information, views or analysis expressed by Westpac and/or its affiliates.