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A list of acronyms used in this article is provided on page 18 for easy reference.

Prospects for unconventional monetary policy in New Zealand

Summary

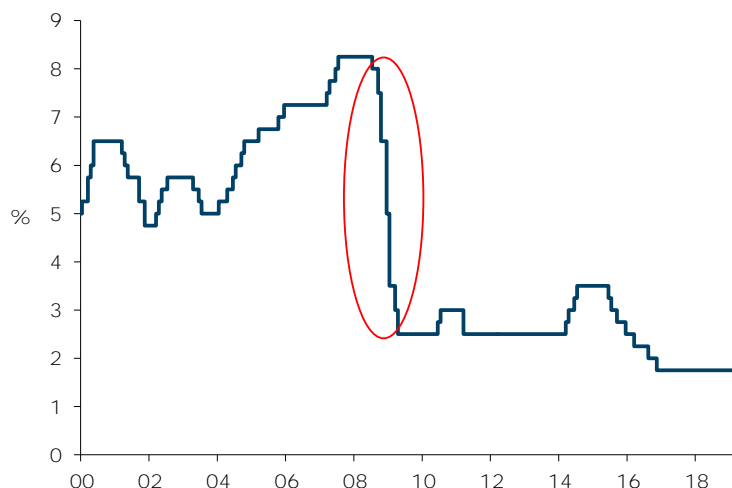
- With the Official Cash Rate at just 1.5%, there is now a very real chance that monetary policy will run out of conventional ammunition in the next marked downturn (caused by, for example, a negative global shock, an extreme drought or an earthquake). Odds are rising that some kind of significant economic hit will occur before the OCR is back to anything approaching historical norms.
- In such a situation, New Zealand's floating (sinking) exchange rate and fiscal policy will do their part in the adjustment, reducing the onus on monetary policy to get creative.
- In this light, and given the risks, it is certainly not a given that taking New Zealand down the path of unconventional policy would be necessary or wise. This paper does not address that complex question. But for the record, of the unconventional options available, we think that the best policy approach for the RBNZ would be to:
 - reduce the OCR to -0.25% and provide strong forward guidance that rate hikes are a very distant prospect;
 - reduce ESAS (settlement system) penalty rates from 100bps to 50bps;
 - inject balances into the banking system (via a term auction facility); and
 - transact swaps to reduce interest rate risk premia, and purchase NZ government bonds and collateralised mortgages.
- While we believe this would be the most effective policy approach, there would be numerous challenges, costs and risks associated with each part of it. **Risks to the RBNZ's balance sheet**, market functioning, and bank profitability would be of particular concern.
- There are several steps the RBNZ would need to take, and communicate to the market, to prepare for unconventional policy and retain market confidence:
 - Standing facilities would need to be repriced, and ESAS account penalty rates would need to be reduced or credit tiers removed in order for the OCR to be able to go negative.
 - A plan for fiscal and monetary policy coordination would need to be established and communicated, and the RBNZ would need an indemnity from the Treasury to expand its balance sheet.
- The time to prepare is now – just in case. A small open economy like New Zealand often gets very little warning of downturns and conventional monetary policy has a lot less room to respond this time around, as things currently stand. Unconventional monetary policy is no panacea and is distortionary, as international experience shows. But unconventional monetary policy done on the fly would be riskier still.

We expect the OCR to be cut to 1% by early next year...

Running low on ammo

There is an increasing risk that an unexpected economic shock pushes monetary policy beyond its natural limits in New Zealand. The OCR is currently at 1.5%, and we expect further OCR cuts in November and February to take the OCR to just 1%. And this is with the economy muddling through, with cuts delivered due simply to an unacceptably low inflation outlook, not a recession.

Figure 1. The Official Cash Rate



Source: RBNZ, ANZ Research

...but a sharper downturn could see the RBNZ need to cut further, and/or get creative.

But particularly in a small, open economy, shocks to the growth outlook can come unexpectedly and abruptly, and could see the OCR rapidly cut to previously unimaginable lows. In such an instance, if still more stimulus were required for the economy, two obvious allies for the OCR would be fiscal policy, which does have plenty of headroom, and the freely floating exchange rate, which would presumably tank. It is therefore not a given that unconventional policy would be required – or desirable.

It is important to understand the basis for implementing unconventional monetary policy. In the US and other jurisdictions, the need for unconventional monetary policy arose from the GFC, persistently low inflation, and a need to provide support and certainty to the financial system while encouraging growth via low interest rates. There is some evidence that unconventional policies are state-dependent, so may be more effective in crises than in normal times. That **said, unconventional policy is now firmly on every central bank's radar, if not already in their policy toolkit.**

Unconventional monetary policy is not a panacea.

Unconventional monetary policy options should be explored with caution. Though they have become commonplace in the past decade, they are not **"normal"**. They are highly distortionary tools associated with collateral damage that worsens the longer they are used.

And their effectiveness remains the subject of some debate. Despite the use of unconventional monetary policy across many jurisdictions, inflation remains elusive for many economies. Meanwhile the negative consequences are evident, though the full costs of the policies are not yet known. Many economies that **have implemented unconventional policy have struggled to "normalise" policy settings again.**

There are several options that the RBNZ could take once the OCR hits zero.

The question of whether New Zealand should implement unconventional monetary policy is beyond the scope of this paper, but it is clear that the debate is becoming more relevant. In this paper we look at the various options. Table 1 summarises their advantages and drawbacks.

Table 1: Options for unconventional monetary policy in New Zealand

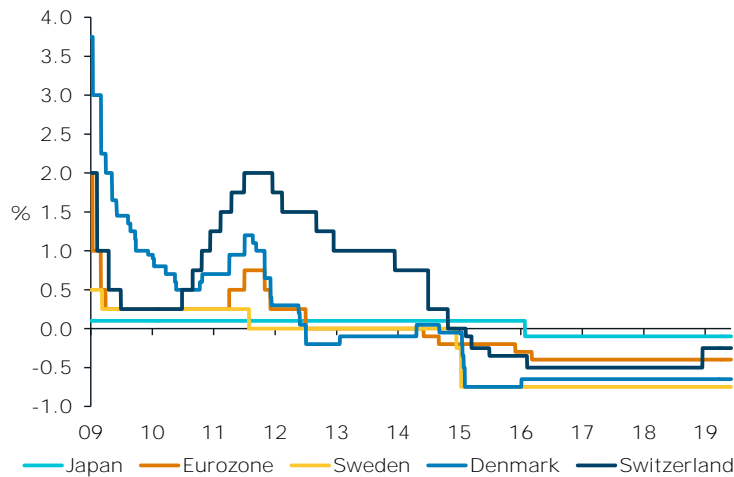
Option	Description	Benefits	Challenges
Negative interest rates	According to the RBNZ, the OCR could go as low as -0.75%.	Supports the economy via traditional interest rate channels, such as lower mortgage rates and NZD.	Deteriorating bank profitability could result in restricted lending. RBNZ will have to reprice or restructure domestic facilities.
Quantitative easing	The RBNZ could purchase government bonds or collateralised mortgages or transact interest rate swaps (IRS).	Lowers long-term lending rates and risk premia, and frees up liquidity for lending.	Available assets for purchase are limited. RBNZ will bear substantial financial risks and unwinding such a policy is a long, drawn out process.
Term lending facilities	New cash facilities can support banking system liquidity.	Helps to free up liquidity for lending in a crisis.	Less effective outside periods of crisis and market stress.
Purchasing foreign currency assets	The RBNZ could conduct outright purchases of foreign currency assets.	Helps push liquidity into the banking system and supports a lower exchange rate.	A zero sum game competing against other central banks. RBNZ would bear large financial risks.

We look more closely at each option in turn.

1. Negative interest rates

As figure 2 shows, negative policy rates have been implemented by several central banks, and rates have even traded at negative yields at long maturities.

Figure 2. Negative policy rates by central banks



Source: Bloomberg, ANZ Research

Imposing a negative interest rate, in theory, would be relatively simple for the RBNZ. The short end of the yield curve would move lower with wholesale rates, and forward guidance on interest rates (i.e. promising not to raise rates for forever and a day) could help keep long-end rates down.

However, in practice, there are some constraints that would need to be addressed before the OCR could go negative. To understand the plausibility of – and constraints on – negative interest rates in the New Zealand context, a primer on the banking system is in order.

A central bank such as the Reserve Bank of New Zealand (RBNZ) is the banks’ bank. It is here that banks settle debts with each other, park excess money overnight, and borrow if caught short.

Negative interest rates might be intuitively nonsensical, but they are a reality.

Negative interest rates could be delivered in New Zealand, but there are some practicalities that would need sorting first.

The RBNZ tweaks the Settlement Cash Level to manipulate overnight rates.

There are penalties for parking too much cash at the RBNZ.

Unlike many other jurisdictions, the RBNZ runs a cashed-up system. This means that the RBNZ leaves a balance of cash funds, typically around NZD7.5bn, in Exchange Settlement Accounts (ESAS)¹ to support the efficient functioning of the payments and settlements system, maintain a stable and efficient banking system, and to implement monetary policy. This balance is called the Settlement Cash Level (SCL). The sum of all ESAS balances make up the SCL.

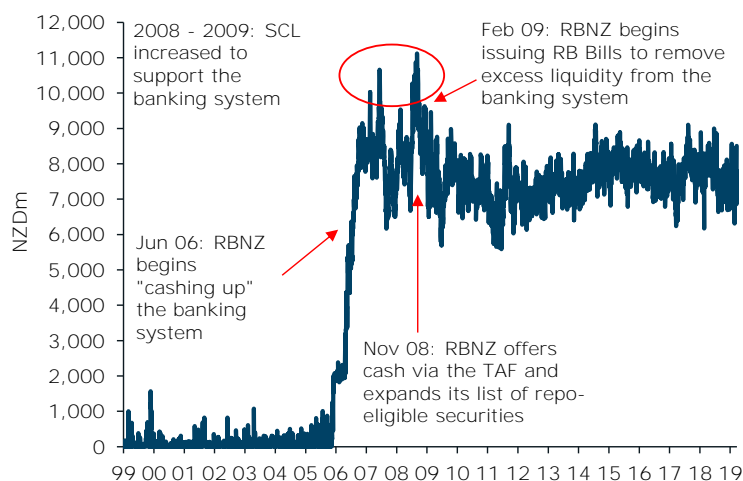
The SCL is the RBNZ's overarching monetary policy implementation tool, which is adjusted by the RBNZ (using open market operations, FX swaps and the sale of Reserve Bank Bills, amongst other tools) to suit market liquidity conditions, and to influence short-term market interest rates to ensure they do not undermine the Official Cash Rate (OCR). By managing the amount of liquidity present in the banking system (i.e. SCL) the RBNZ can push or pull market rates to ensure they trade at the current monetary policy setting.

The SCL is never static and moves on a daily basis as money ebbs and flows (figure 3). The RBNZ maintains a "target" balance (based on current market conditions) and allows for small variances in system cash flows.

In broad terms, the system is designed such that banks have an incentive to manage their cash efficiently and transact amongst themselves so far as possible. An eligible ESAS participant is allocated a credit tier by the RBNZ, with these tiers varying from participant to participant based on their historical and expected utilisation of the settlement system.

The system penalises banks for hoarding cash, by imposing penalty rates (OCR minus 100bp) on ESAS participants should their balances exceed their RBNZ-defined credit tiers.²

Figure 3. A cashed up banking system³



Source: RBNZ, ANZ Research

It is important to note that only the RBNZ and the NZ Treasury, via its Crown Settlement Account (CSA), are able to influence the SCL. ESAS account holders cannot adjust the SCL themselves, but can indicate a preference by their level of participation in the RBNZ's operations or by utilising the RBNZ's standing facilities.

Typically, the RBNZ will maintain dialogue with market participants and uses this information to assess the efficacy of the current SCL, and will adjust it if needed. The Treasury does not actively manage the SCL and only influences it

¹ ESAS accounts are transaction accounts that eligible banking counterparties hold with the RBNZ.

² For more information, see: <https://www.rbnz.govt.nz/research-and-publications/reserve-bank-bulletin/2016/rbb2016-79-09>

³ The RBNZ was required to introduce alternative facilities during the GFC to ensure the stability of our banking system. As such, the RBNZ introduced the Term Auction Facility (TAF) which allowed market participants to borrow 3-, 6- and 12-month cash balances from the RBNZ.

Margins on standing facilities incentivise participants to transact in the market.

But these margins mean that the NZ banking system will face negative interest rates long before the OCR hits zero.

Facilities margins could be repriced.

when it makes transfer payments or receives tax payments to/from its CSA.

As part of its “Lender of Last Resort” function the RBNZ maintains various standing facilities that allow eligible participants to borrow cash or bonds from the RBNZ at penalty rates. These facilities are priced at margins relative to the OCR. Margins on standing facilities are designed to incentivise participants to transact in the market where possible, leaving the RBNZ as a backstop should market channels fail.

Table 2 below summarises the range of RBNZ facilities available to banks, and their pricing.

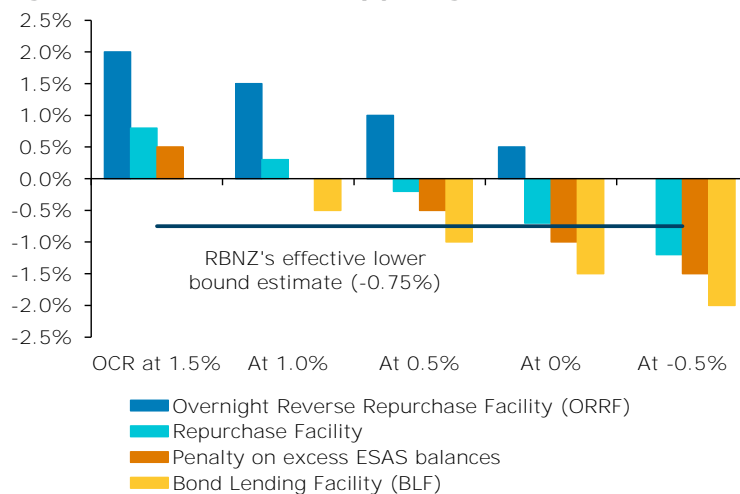
Table 2: Current RBNZ facilities and ESAS penalty pricing

	Margin to OCR	Rate at current OCR of 1.5%
Penalty on excess ESAS balances	-1.0%	0.5%
Overnight Reverse Repurchase Facility (ORRF)	+0.5%	2.0%
Bond Lending Facility (BLF)	-1.5%	0.0%
Repurchase Facility	-0.7%	0.8%

Source: RBNZ

As table 2 above shows, the New Zealand banking system will face negative interest rates in some facilities long before the OCR hits zero. In fact, unless the Bond Lending Facility (BLF) is repriced, just one more OCR cut will see negative rates transacted in that facility (figure 4).

Figure 4. Current RBNZ facility pricing at different levels of the OCR



Source: RBNZ, ANZ Research

In practice, given that the BLF is seldom used, it is likely to be repriced with little hassle. That said, it raises a question that the RBNZ needs to consider; namely whether it is desirable for its facilities to yield a negative rate when they were set up to promote market functioning. In the case of the BLF, one would need to assess whether applying a negative rate is appropriate, especially as this facility is used primarily to facilitate the settlement of NZ government bonds (NZGBs). Should the negative rate disincentivise participants from utilising this facility, then the market may potentially see increasing instances of settlement failures.

That’s a question of what is an acceptable risk. But a more immediately binding constraint for monetary policy implementation will be when the penalty rate applied to balances in excess of ESAS credit tiers hit negative interest rates.

The RBNZ has indicated that the OCR could fall as low as -0.75%. If interest rates move more deeply negative than this, participants could do better to withdraw cash, store it, and insure it. International experience over the last decade suggests that central banks are indeed reluctant to move policy rates

The OCR could theoretically fall as low as -0.75%, but this is in practice the limit that the penalty rate on the ESAS account can go to (not the OCR).

To enable a negative OCR, the margin on excess ESAS balances will need to be repriced, or tiers removed.

Reducing the penalty rate is likely preferable to removing tiers.

below this level.

While the RBNZ has noted⁴ that the OCR can theoretically go that low, in practice -0.75% is the limit for not the OCR, but rather the penalty rate on the ESAS account. The ESAS excess reserve penalty rate is currently set at 100bp below the OCR (ie +0.5% currently).

To understand why this is the relevant constraint, recall that the RBNZ adjusts the SCL to tweak the interest rate at which participants are willing to trade cash with each other to ensure it is consistent with the OCR. For example, if the observed cash rate (ie the rate at which cash is traded between banks overnight) is trading above the OCR, the RBNZ raises the SCL. This can be achieved by transacting FX swaps, injecting cash via their operations, or by letting Crown flow remain in the banking system.

This is a logical “demand and supply” approach to monetary policy implementation, and is not unique to New Zealand. For example, the US Federal Reserve, prior to the Global Financial Crisis (GFC), ran a ‘drained’ system. This means that there was very little in the way of excess reserves present in the banking system. When the GFC struck, and the Federal Open Market Committee (FOMC) pursued zero interest rates, the FOMC was required to pump liquidity into the banking system to the point where it enabled the market to trade at a rate close to zero. The interest paid on excess reserves (IOER) was set to 25bp, and that is the rate at which the market began to trade.

While the New Zealand system has liquidity already present, there have nonetheless been times where the SCL has needed to increase substantially to keep market rates stable at the OCR. Hence, it is reasonable to expect that the RBNZ will need to increase the SCL to give effect to its OCR setting at lower rates. Empirically, we have seen evidence of this in the RBNZ’s last cutting cycle in 2015, where the average SCL increased from its long-term average of NZD7.2bn to NZD7.5bn.

In the case of a negative OCR, the methodology is exactly the same. The difference is that it means raising the SCL sufficiently such that participants are willing to actually pay each other to take the spare cash overnight.

By injecting this additional liquidity, the RBNZ is likely to push current ESAS account holders to the top of – if not above – their credit tiers. If ESAS participants’ credit tiers aren’t adjusted, it is highly likely that most, if not all, will be breaching their credit tiers and receiving the penalty rate for their excess balances. This is therefore the rate that banks will compare to the cost of holding physical cash. Hence if the margin on excess ESAS balances remains at 100bp, the effective lower bound for the OCR is about +0.25%. To enable a lower OCR, the margin on excess ESAS balances will need to be repriced, or tiers removed.

If the RBNZ is confident that it can raise the SCL without systematically sending ESAS balances above credit tiers, then the OCR can be reduced to the RBNZ’s theoretical limit. But given that pushing participants to the brink of their credit tiers is associated with not only extra costs for participants but also risks to market functioning, it may be prudent for the RBNZ to consider reducing the margin applied to penalties.

Retaining some form of tier structure in Settlement accounts is likely necessary, to avoid imposing the full cost of negative interest rates on financial system participants. A tier structure is common among other central banks globally who have implemented negative interest rates.⁵

However, as discussed above, the OCR will not be able to go negative in New

⁴ See *Aspects of implementing unconventional monetary policy in New Zealand*, RBNZ Bulletin, May 2018.

⁵ See *Negative interest rate policies – initial experiences and assessments*, IMF (2017)

But there are challenges with adjusting penalty rates or tiers.

Prolonged negative interest rates have implications for bank profitability and hence potentially credit availability.

Zealand without a reduction in ESAS penalty rates, or complete removal of ESAS credit tiers (effectively removing the ESAS penalty rate).

Both of these options have challenges:

- A reduction in ESAS penalty rates would increase the incentive for cash hoarding, and limit interbank market functioning. In addition, any new penalty rate chosen would still be the first to hit the effective lower bound.
- The removal of ESAS tiers would mean that the full cost of the negative OCR (which could now go as low as -0.75%) would be borne by ESAS account holders, which is costly for financial market participants.

Internationally, there is evidence that extended periods of negative interest rate policy can negatively affect bank profitability, which can limit monetary policy transmission and risk constraining credit availability in the economy.

Internationally, **retail deposit rates don't tend to fall below zero** when wholesale rates are negative. Generally, mortgage rates do tend to decline as the policy rate falls. However, this means that extended periods of negative interest rates squeeze net interest margins, and bank profitability can suffer.⁶

Costs to financial system participants of negative interest rate policy can therefore result in a weakening in the transmission of monetary policy. In some cases internationally, mortgage rates have perversely increased in response to negative interest rates, as banks try to retain margins.⁷

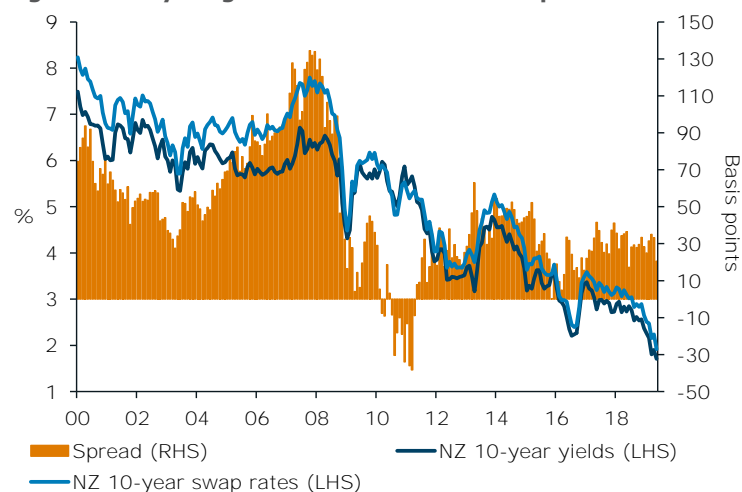
To avoid implications for credit availability due to the costs imposed on financial system participants, it is therefore highly likely that the remuneration of ESAS accounts will need to be revisited if a negative OCR is to be implemented.

These costs of negative interest rate policy would have to be weighed against the potential benefits of a lower policy rate on the NZD and lending rates, but negative effects will intensify as interest rates move more deeply negative and may limit the influence of the policy rate on retail lending rates and the effectiveness of monetary policy.

Utilising interest rate swaps

In practice, of course, a negative OCR is only the start. The swaps curve embodies the wholesale rates underpinning the retail rates that affect economic decision making. The RBNZ will want to lower swap rates along the curve.

Figure 5. 10-year government bond and swap rates



Source: Bloomberg, ANZ Research

⁶ See *The influence of monetary policy on bank profitability*, Borio, Gambacorta, and Hofmann (2017).

⁷ See *How have central banks implemented negative policy rates?*, BIS (2016).

The RBNZ can transact swaps to push down these wholesale rates.

However, the swaps market may seize up in times of stress.

Buying financial assets in a meaningful scale in the New Zealand context would be challenging.

The RBNZ could, in 'normal' times, utilise interest rate swaps to influence interest rates in New Zealand. At present, the RBNZ refrains from transacting as it may provide a signal to markets about future monetary policy decisions. But in a case where the RBNZ is trying to push markets towards negative rates, the RBNZ would be able to utilise interest rate swaps to help achieve this.

The RBNZ would effectively transact numerous interest rate swaps, receiving the fixed rate, until such point that the swaps curve is flatter and consistent with the RBNZ's monetary policy setting.

The swap itself, however, would be insufficient in terms of adding liquidity to the financial system and would likely need to be supplemented by cash injections via RBNZ operations. This is because the interest rate swap is a derivative product and therefore only the *difference* in rates is settled. Another consideration is the risk attached to transacting the swap.

In times of stress, the interest rate swap option may lose efficacy as the market has the potential to seize up. If the market continues to function then the RBNZ may successfully influence rates, as spreads would be wider. In such a case, a reduction in the OCR and a sufficient injection of balances into the banking system (via the term auction facility or similar offering) would be ideal. Swaps could then be used to maintain interest rate expectations and reduce risk premia as the market begins functioning again.

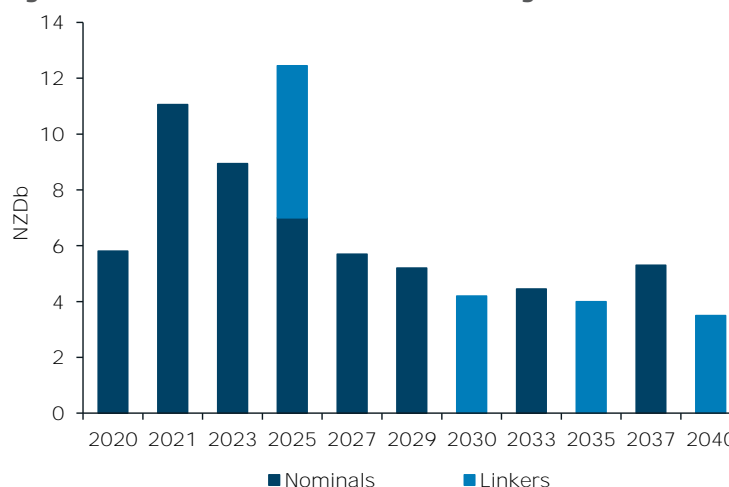
2. Quantitative easing (QE)

Overseas central banks have conducted large-scale asset purchases (LSAP) as a key unconventional policy tool (quantitative easing).

However, one issue that the RBNZ will encounter with an LSAP is the lack of depth in the New Zealand securities market. This issue **doesn't invalidate the** concept, but it highlights the difficulties with undertaking such a task in New Zealand as the system currently operates.

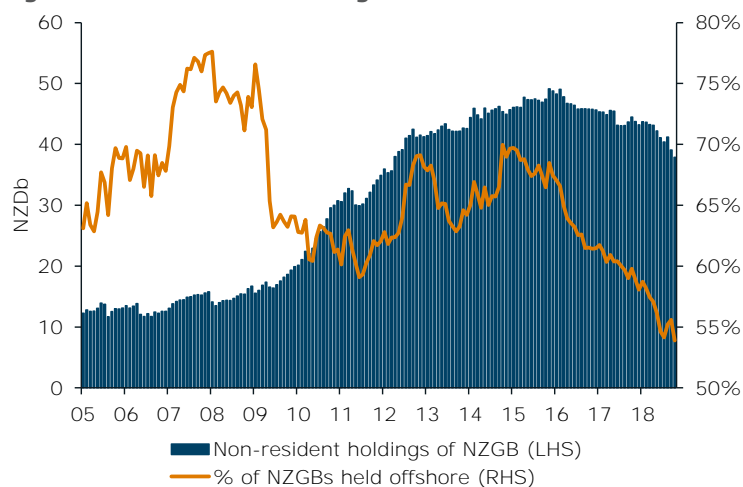
As at 30 April 2019, there were roughly NZD70bn of NZGBs on issue in the market (figure 6), with roughly 54% of this amount held offshore. This proportion has come down over time (figure 7, over) but is still sizeable. The balance held on local balance sheets is held for liquidity purposes (meeting the RBNZ's BS13 liquidity requirements), use in the domestic repo markets, and/or is held by funds as long-term investments.

Figure 6. NZ Government bonds outstanding in the market as at end of May 19



Source: NZ Treasury, ANZ Research

Figure 7. Non-resident holdings of NZ Government bonds



Source: RBNZ, ANZ Research

The RBNZ has stated that it estimates it could conduct LSAPs (using other central banks' experiences as a guide) up to 10% of GDP. With the Government determined to maintain debt issuance at least 20% of GDP during its term, but volumes near the 20% of GDP level already, the RBNZ would be setting out to purchase roughly half of the NZGBs on issue.

Therein lies an obvious impediment for the RBNZ. Over half of NZGBs bonds are held offshore, and should the system require liquidity due to offshore crisis dynamics (a crisis not pertinent to NZ explicitly), NZGBs will become even harder to come by, as those investors who hold them will likely prefer to continue to do so, given their long-term investment view.

Of the bonds held domestically, it is unlikely the RBNZ would be able to source large volumes. The bonds held on local bank balance sheets would be the easiest to source, as some are held to meet BS13 liquidity requirements and for repurchase transactions in the domestic market. In the event of QE via LSAP, the RBNZ could replace the volumes of bonds on domestic balance sheets with cash (via outright purchases). However, this does not take into account the minimum NZGB holding requirements imposed by participants internally for liquidity purposes. In practice this means a proportion will not be given up easily.

The volumes held by investment funds would be harder to come by. Those holding the bonds due to mandate requirements and the like would be unlikely to offload their balances, as they would lack other assets into which to put their cash proceeds.

The additional difficulty with purchasing NZGBs would be that the RBNZ's intention to purchase these bonds would be factored into the price of the asset. The more the RBNZ purchases, the fewer NZGBs available in the market, and the greater the cost attached to the next round of purchases.

Thus effecting quantitative easing by purchasing NZGBs would operationally be a tough ask for the RBNZ. Ideally, fiscal policy would step up and bond issuance would increase in a crisis, which would offer some more assets for purchase. But fiscal policy is not best placed for rapid short-term stabilisation so this help may be lacking, at least initially. Even in normal times governments often struggle to spend money as rapidly as intended.

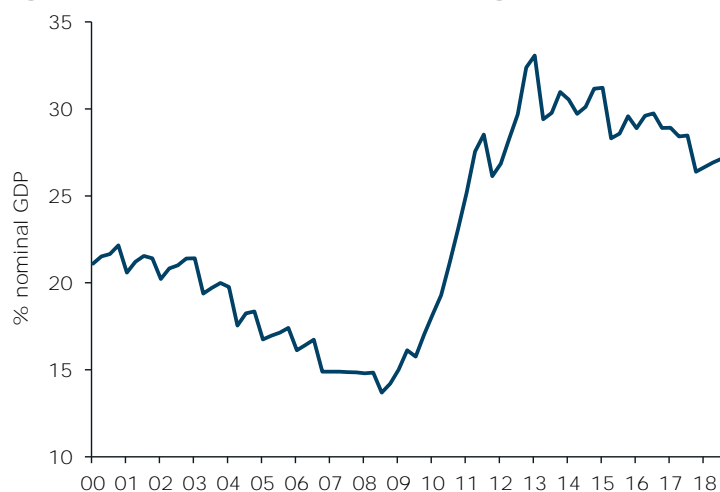
Can the RBNZ really buy half the NZGBs on issue?

Holders may be reluctant to sell.

And it could get expensive fast.

Expansionary fiscal policy would help bond supply at the margin.

Figure 8. Total market NZGBs outstanding as % of GDP



Source: NZDMO, Statistics NZ, ANZ Research

On the other hand low liquidity means the RBNZ may well get bang for its buck.

Alternative assets to buy are in short supply, but mortgage-backed securities are an option.

That said, it is entirely feasible that the long end of the NZGB curve would move lower without the need for LSAPs of significant size. Given the general lack of liquidity in the NZ bond market, should the RBNZ conduct a round of purchases of reasonable size, it may be enough to force yields lower across the curve without the need for large volumes of QE. Effectively, the RBNZ may be able to have a large price impact on NZGBs even with little quantity transacted, given the characteristics of the market.

Other good-quality assets (such as Kauris) are also limited and hard to find in the NZ market. These bonds are typically issued to interested investors and so do not trade as frequently in the secondary market.

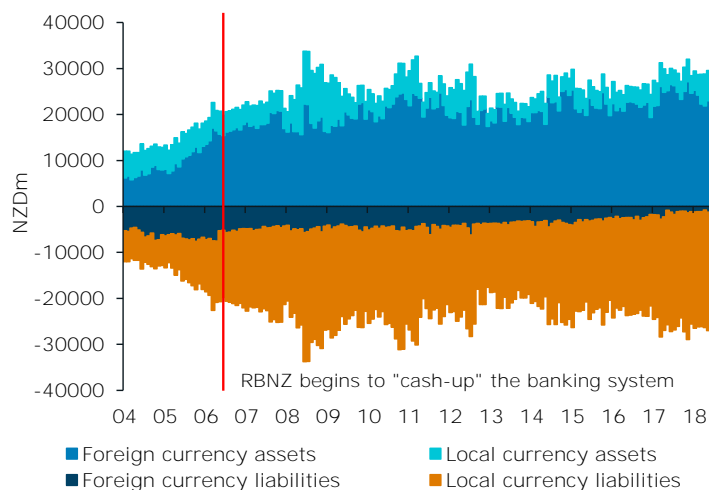
Another option is that the RBNZ could look to the stock of Internal Residential Mortgage Backed Securities (I-RMBS) warehoused on local bank balance sheets. These are typically high-quality mortgages that are collateralised for the purposes of RBNZ operations for borrowing cash. The assets were created for liquidity purposes during the GFC, and while the mortgages are securities, they **remain on the bank's balance sheet while the bank continues to warehouse I-RMBS.**

In their current form I-RMBS **garner a 19% haircut in the RBNZ's operations** (RMOs, proposed standardised RMBS products, may, when finalised, incur a smaller haircut, but a decision on this asset still appears to be a way away). The **stiff haircut reflects the RBNZ's assessment of the relative risk and transparency** of this asset.

Accordingly, the RBNZ would be reluctant to purchase these assets outright, as this would transfer the risk of mortgage defaults from the private sector to the public sector, and warehouse the risk of default on the central bank balance sheet. This may be an option for a NZ-centric crisis, where the financial system requires mass RBNZ support (due to a housing crisis or similar), but certainly **isn't consistent with the traditional view of the risks the central bank should be taking with taxpayers' money.**

The RBNZ's balance sheet is current a mix of foreign and local currency assets (figure 9) and is relatively low risk, with a mix of cash and government bonds, while the liabilities are linked to the sale of RB bills and currency in circulation.

Figure 9. RBNZ balance sheet composition



Source: RBNZ, ANZ Research

This option is not without risks to both the financial sector and the taxpayer.

The outright purchase of I-RMBS (or the proposed RMOs) would also reduce the **stock of liquid assets available to local banks' balance sheets in the long run.** This would make it difficult for domestic participants to meet the RBNZ's liquidity requirements unless new liquid assets are introduced into the market over time. It is worth noting that in the short run, having more cash on local **balance sheets wouldn't be a major issue.** But as the dust settles, local balance sheets would need to find other liquid assets to invest in or risk being eventually penalised by the RBNZ for hoarding cash.

Another possible alternative is that the RBNZ could buy NZGBs directly from the NZ Treasury. However, unless the funds provided by the RBNZ to the Treasury are used in the wider system (via transfer payments, tax cuts or by other **means**) then these balances would simply rest in the Treasury's ESAS account within the RBNZ and thus remain outside of the banking system. There would be no additional liquidity provided to the system and it would provide the RBNZ no support in implementing negative interest rates.

Rather, this highlights that there is a need for clear, structured, and pre-emptive fiscal and monetary policy coordination for responding to a crisis. RBNZ purchases of NZGBs could be a useful way to reduce government financing costs at a time when substantial fiscal stimulus is needed.

3. Term lending facilities

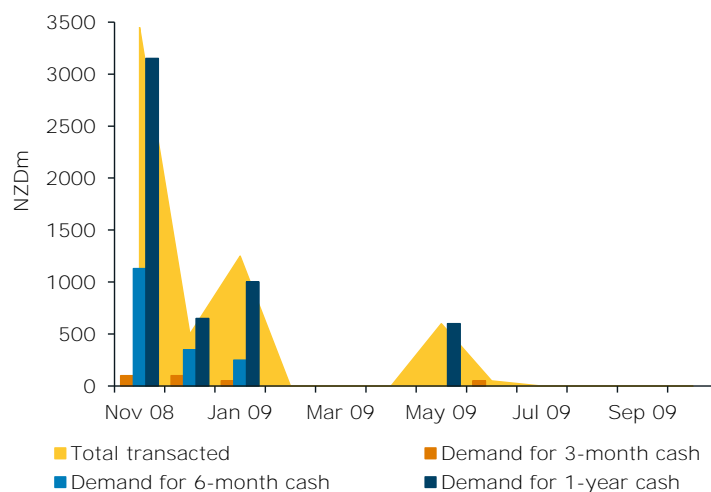
The RBNZ is a key provider of liquidity, particularly in a crisis.

An important role of the RBNZ, particularly in a crisis, is to provide liquidity to the domestic market. The move towards a cashed-up banking system that occurred just prior to the GFC allowed the system to withstand the liquidity shocks that ensued during the crisis. That said, the RBNZ deemed it necessary to introduce alternative facilities, such as the Term Auction Facility (TAF), to allow local banks to address liquidity shortages and to provide certainty to the domestic market during this time.

Term lending facilities helped supply liquidity to those who needed it during the GFC.

During the GFC, the RBNZ introduced the TAF as a means of offering 3-, 6- and 12-month cash (via Reverse Repo) to the market and opened up their balance sheet to a wider list of eligible securities, including corporate debt and bank paper. Over the year this facility was offered, a total of NZD8.4bn in Reverse Repo was transacted with the RBNZ, where the counterparties borrowing cash had to pledge an asset from the list of eligible securities at a haircut. The bulk of this lending occurred during the height of GFC uncertainty in late 2008, with volumes waning from February 2009 (figure 10).

Figure 10. Term Auction Facility usage during the GFC



Source: RBNZ, ANZ Research

Most of the borrowing via the TAF occurred in the 12-month bucket, whereby the RBNZ would have been required to hold approximately NZD5.9bn of assets on its balance sheet. **That's a lot, but the transactions were successfully unwound without the need for the RBNZ to hold onto any assets on its balance sheet outright.**

During this period, the RBNZ introduced I-RMBS as a means for local banks to **access liquidity via the RBNZ's operations while being able to keep other good quality collateral, such as NZGBs, on its balance sheet.**

The option of extending an auction facility at a favourable rate would be particularly useful during a crisis to free up liquidity for lending, and could assist with mitigating some of the effect of negative interest rates on bank profitability. That said, credit tiers would again be an issue as participants are **unlikely to borrow cash if they're likely to breach.**

While liquidity facilities are not strictly unconventional monetary policy, they are an essential part of any emergency toolkit and can aid the implementation of monetary policy, including at the extremes.

4. Purchasing foreign assets

Another option discussed by the RBNZ is the ability to purchase foreign assets. In such circumstances, the RBNZ would transact to obtain a foreign asset (such as US Treasury notes). The effect of this would be an injection of NZD balances into the banking system, as the RBNZ would need to buy the asset in the currency in which it is denominated.

If the RBNZ are concerned with the costs associated with converting NZD to the required currency, a workaround to transacting would be to use its existing reserves. However, this would then limit the liquidity impact and reduce the amount of liquid reserves available to the RBNZ.

As an aside, it is important to note here that the RBNZ does not hold a direct USD swap line with the Federal Reserve (unlike the RBA, for example) and as such, is required to transact cross-currency basis swaps in the open market to accumulate USD balances to fund reserves.

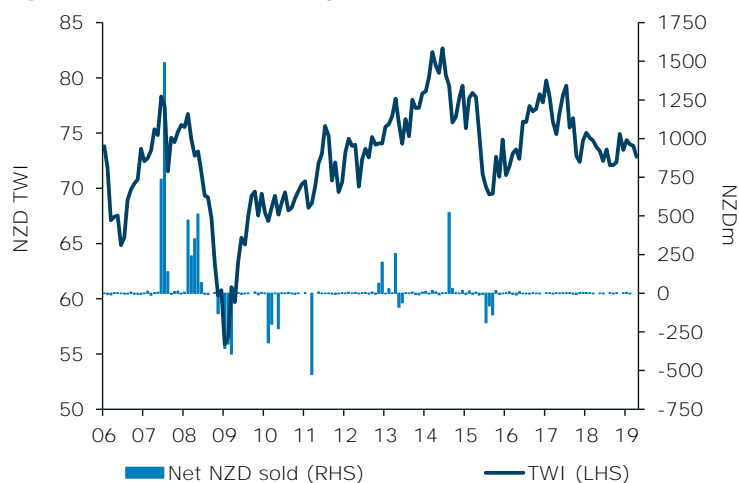
Market liquidity tends to dry up in times of crisis, meaning the cost of purchasing foreign assets might be unacceptable. However, by making such purchases, the RBNZ would theoretically be able to supply NZD to the market and put downward pressure on the currency, easing monetary conditions.

A number of considerations and risks need to be taken into account.

If a crisis were to erupt again, such liquidity measures would be first cab off the rank.

Purchasing foreign assets would inject NZD balances into the banking system and put downward pressure on the NZD

Figure 11. RBNZ sales and purchases of NZD



Source: RBNZ, ANZ Research

But there are risks to consider.

a) Settlement risk.

When purchasing an asset abroad, one must settle the asset in the currency in which it was issued. As such, settlement occurs in the time zone of the denominated country. With NZ markets typically shut during key market sessions (such as the London or New York sessions), the RBNZ would run the risk that the settlement of the purchased asset fails. This risk, known as Herstatt risk, is negligible in normal times, but become highly relevant in times of significant financial market stress.

For example, if the RBNZ was to buy a Treasury note, it would outlay the proceeds on settlement date in the NZ time zone. The asset, however, would not be transferred until the New York session later that evening. Should there be a significant market disruption in the meantime, then the RBNZ runs the risk that the asset is never transferred by the counterparty it transacts with, or the counterparty itself fails over this period. The RBNZ transacts with authorised banking counterparties in offshore markets and not the central bank.

This is a risk the RBNZ currently manages on a daily basis when conducting FX transactions. To mitigate this risk, they are a member of the Continuous Linked Settlement (CLS) system. The CLS system mitigates Herstatt risk when buying/selling foreign currency and foreign currency swaps but cannot mitigate the settlement risk for assets.

b) Custody risk

When purchasing foreign assets, the RBNZ will require a custodian to hold these **assets on the RBNZ's behalf. The RBNZ already has a custody arrangement, as** it holds sovereign assets and conducts asset swaps as part of its reserves management regime. But it is unlikely to want to increase the amount of assets in custody, especially in times of global stress, as the credit risk associated with a commercial institution during this period would be of concern.

c) Market risk

Any form of foreign rate intervention will need to be carefully timed, to mitigate the substantial market risk that the RBNZ balance sheet would bear. For example, at the peak of the GFC, the NZD depreciated sharply as risk appetite crashed. At that point in time, purchasing foreign assets with the purpose of dampening the NZD would not have been a priority, as the NZD had already done its job as a safety valve for the economy.

But you don't want to step on anyone's toes.

It would also be extremely costly, and risky, to purchase foreign assets in the depth of a crisis at a time when the NZD has plummeted, because the NZD is likely to rebound once risk appetite returns, as it did following the GFC.

Purchasing foreign assets at the NZD's trough would expose the RBNZ to substantial mark-to-market losses.

d) Other central banks

The RBNZ is unlikely to be only central bank looking at unconventional monetary policy in the event of a sharp global downturn. As such, global yields would move lower and the exercise of purchasing foreign assets would become all the more expensive for the RBNZ.

The RBNZ also needs to consider peer central banks. If the RBNZ were to purchase foreign assets, they would need to ensure they are not encroaching on **a peer central bank's operations. That said, it is unlikely that the scale of the RBNZ's LSAPs would materially** reduce the availability of assets in other markets.

Another issue is that exchange rate depreciation will likely be a strategy of other central banks, as the exchange rate is generally an important channel for monetary policy transmission. So the ability to lower the NZD will be somewhat dependent on the state of the global economy, stances of foreign central banks, **and investors' attitudes towards New Zealand's relative risk.**

Unintended consequences

While we have touched on many of the risks of unconventional policy already, it is worth providing a summary.

Risks to the central bank balance sheet

The RBNZ would see its balance sheet increase materially.

Conducting unconventional monetary policy will always create risks for a central bank balance sheet. For the Federal Reserve, it was the first time they opened up their balance sheet to such a diverse asset class and therefore subjected themselves to that risk. The RBNZ's list of repo-eligible securities already creates a contingent liability for their balance sheet, and in the event of a liquidity crisis they would be subjected to holding the asset and the associated settlement risk with the transaction.

Conducting LSAPs or extending large amounts of liquidity would require an indemnity from the NZ Treasury, in order to maintain operational independence **and retain market confidence. Even then, the RBNZ's bloated balance sheet** could expose it to substantial political criticism and risk.

The RBNZ would also want to consider the notion of market footprint. Once they go down the path to becoming the largest holder of a particular asset class, it will be very difficult to unwind this position in the short term. It could take years and/or decades to unwind, particularly in markets as small and illiquid as New Zealand's.

Deterioration in bank profitability

Costs imposed on financial system participants need to be mitigated.

When policy rates turn negative, **retail deposit rates don't tend to decline to the same extent.** International evidence suggests that this tends to put pressure on bank margins. If this persists, banks may be disincentivised to lend, which constrains credit and economic activity. In addition, some mortgage rates have perversely increased in some economies when policy rate have moved negative, as banks attempt to retain margins. This represents a weakening in the monetary policy transmission mechanism and limits the effectiveness of policy rate cuts into deeply negative territory.

There are a few ways to mitigate these unintended consequences. Many

overseas central banks operate with tiers, so that only a small proportion of **banks' deposits with the central bank are subject to negative interest rates**. But as discussed above, tiering would limit how far the OCR could fall. Targeted lending facilities could promote lending at favourable rates, such as the Bank of England's Term Funding Scheme and European Central Bank's Targeted Longer-Term Refinancing Operations (TLTROs).

A decline in market functioning

Market functioning may suffer as certain policies are implemented.

As the central bank swamps the market and transactions, the interbank market would likely cease to function. This is because with large amounts of cash balances in the system, the abundance of cash would remove the incentive to borrow funds in the interbank market. Moreover, as all participants would likely be above their credit tier, other markets, such as the Bank Bills market, may also cease to function.

Pricing in these two markets is an important reference point for retail interest rates, and market dysfunction would increase uncertainty in setting retail lending and deposit rates, and may also hamper the efficient functioning of **debt capital markets and New Zealand banks' participation in global funding markets**, with potential implications for credit availability.

The removal of credit tiers would alleviate some of the pressure in the interbank market but would give rise to cash hoarding.

Conclusion

Unconventional monetary policy is a risky business...

Unconventional monetary policy is a risky business, as the experiences of the Fed (and others) have shown, with ramifications that can last for years and be difficult to completely unwind.

...but nonetheless may be needed, so the time to prepare is now.

Nonetheless, the possibility that New Zealand needs to explore these options is becoming very real. Accordingly, the RBNZ needs to start to map out the mechanics of what needs to happen and communicate what unconventional monetary policy could mean for domestic participants. The RBNZ is well placed to learn from the successes (and failures) of other jurisdictions, and can adequately prepare the NZ banking system before venturing down the path of unconventional monetary policy.

Similarly, participants need to assess their ability to operate in unfamiliar circumstances. An immediate consideration for the RBNZ and participants alike would be whether or not current IT/payment systems can in fact settle **transactions at negative interest rates**. If not, then it's imperative that they begin to develop and test their systems to accommodate such an eventuality.

While we are as yet unconvinced that unconventional monetary policy would be the best path for New Zealand, it is worth examining what the best options would be out of those available.

And the consequences of action or inaction will need to be considered thoroughly.

We think that the best unconventional policy option for the RBNZ would involve several aspects.

The policy option we highlight would allow the OCR to be cut to about -0.25%, assuming that the ESAS penalty is reduced to 50bp prior to this (for an effective penalty rate on excess reserves of -0.75%).

This, combined with asset purchases and swap transactions, would help keep downward pressure on interest rates and the NZD. In addition, term lending facilities would assist with banking system liquidity and lending.

Table 3 summarises what we believe would be the optimal unconventional policy approach, should the RBNZ opt to go down this path.

Table 3: Unconventional policy options for the RBNZ

Policy	Description	Rationale
Negative interest rates	<ul style="list-style-type: none"> Cut the OCR as low as -0.25%. Reduce the ESAS penalty rates from 100bps to 50bps. 	<p>A slightly negative OCR rate, and retention of a tiering system, will mitigate costs to financial participants in the banking system.</p> <p>If the ESAS penalty rate is not reduced, the OCR cannot go negative.</p>
Asset purchases and swap transactions	<ul style="list-style-type: none"> Transact (receive) swaps. Purchase NZ government bonds. Purchase collateralised mortgages. 	<p>Asset purchases and swap transactions will lower long-term lending rates and risk premia, and free up liquidity for lending.</p> <p>Available assets for purchase are limited, so a range of securities need to be considered. The RBNZ will bear substantial financial risks.</p>
Term lending facilities	<ul style="list-style-type: none"> Introduce long-term cash facilities to inject balances into the banking system. 	<p>This helps to ensure liquidity in the banking system during a crisis, but may be less effective outside periods of crisis and market stress.</p>

Reducing the penalty on credit tiers is likely a necessary step.

Costs and unintended consequences need to be weighed up.

The RBNZ needs to outline their plan for unconventional policy...

...as implementing it on the fly would add unnecessary risk.

The change in remuneration of ESAS balances to a negative interest rate would itself provide the interbank cash market a reason to transact at negative rates, which would also extend along the curve to other market interest rates. By simply raising the SCL, and pushing ESAS participants further along their credit tiers, the RBNZ would be successful in imposing negative interest rates in key domestic markets. Moreover, the RBNZ could increase credit tiers to accommodate the first round of injections, and to protect the domestic markets from seizing up and incurring penalty rate costs.

While we believe the options outline in table 3 would be the best policy approach, there would be numerous costs associated with it. There will be **substantial risks to the RBNZ's balance sheet and an indemnity from the NZ Treasury** will be required. Market functioning is likely to suffer, especially if the SCL is raised. Should the SCL be raised too far, such that all participants are **incurring a penalty, then (as the system is 'closed') the market (interbank cash, repo and FX swaps)** would cease to function as no one would be willing to borrow any excess cash balances.

If pushed too far and for too long, unconventional monetary policy can lose effectiveness, given the negative implications for bank profitability and credit availability.

Regardless of the policy options chosen, there are several issues that the RBNZ need to urgently consider and communicate to the market to ensure confidence in their ability to respond to a weaker economy. A plan for adjustments to the operations of the settlement system (penalty rates, tiers) and for fiscal and monetary policy coordination needs to be planned and communicated.

At the end of the day, consideration must be given to whether unconventional monetary policy is a path we want to go down – the examples of those who have traversed this track before us certainly inspire a mix of hope and fear. But if unconventional monetary policy is a risky strategy, implementing it without prior preparation is undoubtedly a riskier one.

Appendix 1: List of acronyms used

Acronym	Explanation	For further information
BLF	Bond Lending Facility	https://www.rbnz.govt.nz/research-and-publications/reserve-bank-bulletin/2016/rbb2016-79-09
bp	Basis point	
BS13	The Liquidity Policy chapter of the RBNZ's Banking Supervision Handbook	https://www.rbnz.govt.nz/regulation-and-supervision/banks/banking-supervision-handbook
CLS	Continuous Linked Settlement	https://www.cls-group.com/
ESAS	Exchange Settlement Account System	https://www.rbnz.govt.nz/research-and-publications/reserve-bank-bulletin/2016/rbb2016-79-09
GFC	Global Financial Crisis	
I-RMBS	Internal Residential Mortgage Backed Securities	
IRS	Interest rate swap	
LSAP	Large-scale asset purchases	
NZGB	New Zealand government bonds	debtmanagement.treasury.govt.nz/
OCR	Official Cash Rate	https://www.rbnz.govt.nz/monetary-policy/about-monetary-policy/explaining-new-zealand-s-monetary-policy/what-is-the-official-cash-rate
ORRF	Overnight Reverse Repurchase Facility	https://www.rbnz.govt.nz/research-and-publications/reserve-bank-bulletin/2016/rbb2016-79-09
QE	Quantitative Easing	
RBNZ	Reserve Bank of New Zealand	www.rbnz.govt.nz
RMO	Residential Mortgage Obligations	https://www.rbnz.govt.nz/markets-and-payments/domestic-markets/review-of-mortgage-bond-collateral-standards
SCL	Settlement Cash Level	https://www.rbnz.govt.nz/research-and-publications/reserve-bank-bulletin/2016/rbb2016-79-09
TAF	Term Auction Facility	https://www.rbnz.govt.nz/research-and-publications/reserve-bank-bulletin/2016/rbb2016-79-09
TLTRO	Targeted Longer-Term Refinancing Operations	https://www.ecb.europa.eu/mopo/implement/omo/tltro/html/index.en.html



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