RBNZ lifts off from deepest and steepest COVID monetary policy cycle

Leo Krippner, 5 November 2021

A. The Reserve Bank of New Zealand (RBNZ) raised its Official Cash Rate (OCR) to 0.5% on 6 October 2021, the first COVID monetary policy cycle "lift-off" among the G4 and dollar-bloc economies that I analyze.
B. Underlying the 0.25% OCR setting that prevailed from 15 March 2020, the RBNZ also had the "deepest" and "steepest" Unconventional Monetary Policy (UMP) cycle. This is based on three metrics I estimate from yield curve data to gauge the overall stimulus from the near-zero OCR plus UMP, i.e. the Shadow Short Rate, Expected Time to Lift-off, and the Effective Monetary Stimulus.
C. The depth of the UMP cycle was consistent with the "least regrets" approach adopted by the RBNZ, i.e. "... minimizing the risk that the stimulus delivered turns out not to be enough". Hence, the RBNZ committed to maintain the OCR at 0.25% until at least March 2021 (and potentially lower it after that), introduced a bond-buying programme of up to $100 billion (nearly 30% of GDP), and provided direct lending at the OCR to banks.
D. The steepness of the UMP cycle, from the turn in all three metrics around November 2020, was consistent with reduced prospects for a lower OCR given UMP stimulus already announced and improving economic data. The RBNZ progressively brought forward the projected OCR "lift-off" and discontinued bond purchases in July 2021 before the OCR "lift-off" event itself.

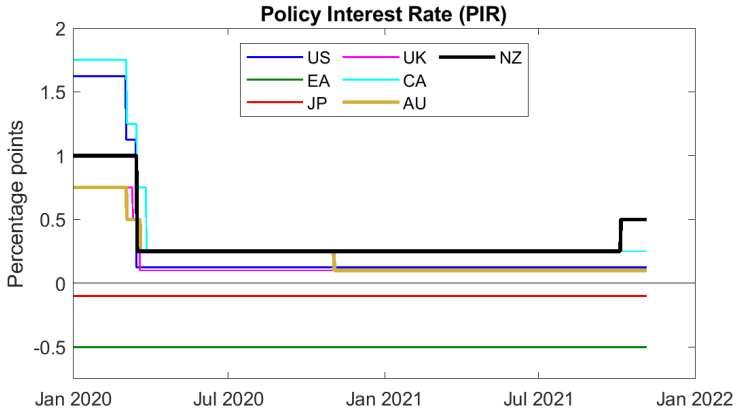

Figure 1: Policy Interest Rates for the G4 and dollar-bloc economies.

The Reserve Bank of New Zealand (RBNZ) raised its Official Cash Rate (OCR) from 0.25% to 0.5% on 6 October 2021, a partial reversal of lowering the OCR from 1% to 0.25% on 16 March 2020 in the wake of COVID-induced economic disruptions. This made the RBNZ the first central bank among the economies I analyze, i.e. the G4 (the United States [US], the Euro Area [EA], Japan [JP], and the United Kingdom [UK]) and two other two dollar bloc economies (Canada [CA], and Australia [AU]), to "lift-off" from its COVID monetary policy cycle.[1] As illustrated in figure 1, the

[1]Outside the economies I analyze, Norway's central bank raised its policy rate to 0.5% on 22 September 2021, partly reversing its lowering from 1% to 0.25% on 19 March 2020. That said, only the New Zealand Delta COVID outbreak on 17 August 2021 prevented the RBNZ from raising the OCR to 0.5% the following day.

Policy Interest Rates (PIRs) of those economies remain at their near-zero lower-bound (LB) levels either set or maintained (for the EA and JP) in early 2020.[2]

The PIR settings in figure 1 do not reflect the full extent of stimulus from the central banks in those economies. In addition to the Conventional Monetary Policy (CMP) stimulus from the near-zero PIR settings, the stimulus from Unconventional Monetary Policy (UMP) in its various forms also needs to be accounted for. The forms of UMP may be broadly classified as Quantitative Easing (QE), Credit Easing (CE), Forward Guidance (FG) on both of those categories, and FG on the PIR beyond typical indications in CMP environments. A measure of total stimulus from the central bank actions should therefore ideally account for CMP and all forms of UMP.

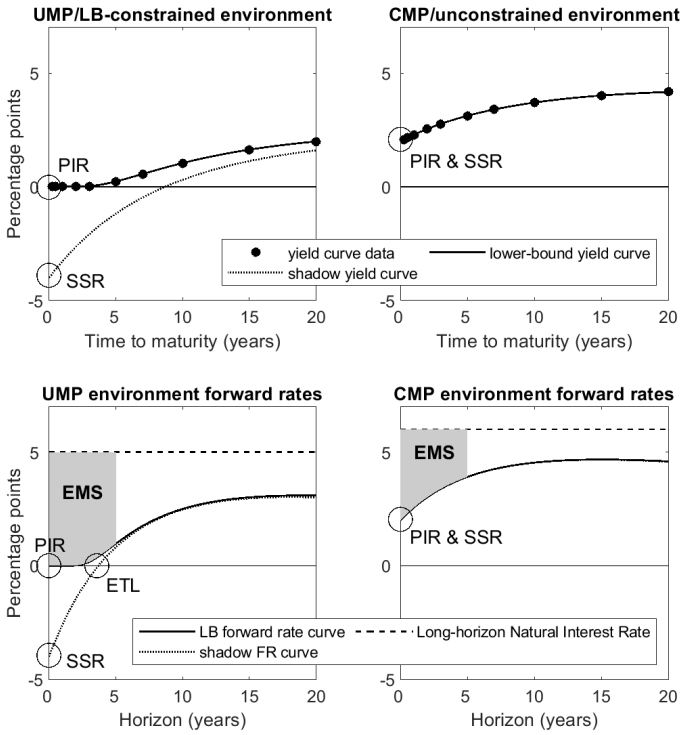

Figure 2: The left-top panel is an example of yield curve data from an Unconventional Monetary Policy (UMP) environment where the Policy Interest Rate (PIR) is constrained at the lower-bound (LB). The right-top panel is an example of yield curve data in a Conventional Monetary Policy (CMP) environment with an unconstained PIR. The associated shadow/LB yield curve model results with the Shadow Short Rate (SSR), the Expected Time to Lift-off (ETL), and the Effective Monetary Stimulus (EMS) monetary policy metrics are shown below the respective yield curve examples.

One approach to gauging the total stimulus from CMP and UMP is to use the information contained in yield curve data, i.e. interest rates observed at a given point in time for different times to maturity. The principle is essentially that yield curve data should reflect the PIR setting and QE associated with Large Scale Asset Purchase (LSAP) programmes of wholesale interest rate securities (such as governments bonds), which central banks have used to influence longer-maturity interest

[2]Zero is the LB in theory, given that physical currency (with an effective interest rate of zero) is a substitute for electronic money balances should the latter offer negative interest rates. However, zero is not a hard limit, in principle because electronic money balances have a convenience value relative to physical currency, and in practice because several economies have already set mildly negative PIRs (down to -0.75% in Switzerland). But as noted in Bernanke (2017) p. 2, the option value of physical currency ultimately limits arbitrarily negative policy rate settings under prevailing fiat currency systems.

rates.[3] Yield curve data alsos reflect FG on both the PIR and QE, and it will reflect CE to the extent that it impacts materially upon wholesale interest rates. The latter is arguably the case for the RBNZ's Funding for Lending Programme, given that it may be used by banks as a substitute for funding from wholesale markets or deposits, although CE directed at specific sectors may in general not be reflected so much in yield curve data.

A model is used to distill the information in yield curve data into convenient metrics for the evolution of overall stimulus, and then the levels and changes in those metrics may be employed for monitoring, analysis, and forecasting.[4] For each of the economies previously noted, I use my shadow/LB framework, see Krippner (2013, 2015) and Halberstadt and Krippner (2016), to convert the yield curve data into three perspectives on the overall stimulus provided by central banks, i.e.: (1) the Shadow Short Rate (SSR); (2) the Expected Time to Lift-off (ETL); and the Effective Monetary Stimulus (EMS). In brief, as illustrated in the first panel of figure 2, my shadow/LB framework models the yield curve as an unconstrained shadow yield curve that can freely evolve to negative values plus a call option that imposes the LB by representing the choice of holding physical currency (at a zero interest rate) instead of accepting a negative shadow interest rate.

The SSR is the shortest maturity rate on the estimated shadow yield curve, analogous to the PIR being the shortest maturity rate on the actual yield curve. As shown in the second panel of figure 2 and the first panel of figure 3 further below, the SSR is close to the PIR when the yield curve data is unconstrained. But in the first panel of figure 2 the SSR has a negative value well below the PIR, like during the COVID period in figure 3. When the SSR is below the LB, the ETL is the horizon where the expected path of the SSR (forward rates adjusted for a risk premium) reaches a given lift-off threshold above the lower-bound PIR setting (I use 0.375% for all economies to ensure a common point of comparison). The EMS is the area between the LB forward rate curve and the estimate of the (nominal) Long-horizon Natural Interest Rate,[5] which therefore represents the stimulus from the current PIR plus expectations of the path of the PIR and the risk premium over a specified horizon (I use five years, but standardized results are not sensitive to the choice of horizon). For example, a "lower for longer" expected PIR path is more stimulatory than a temporarily low PIR setting that is expected to rise quickly.

Table 1: Major New Zealand monetary policy events over COVID-related period

1	16-Mar-2020	OCR cut from 1% to 0.25% (CMP) with 12-month no change commitment (PIR FG)
2	23-Mar-2020	LSAP programme of up to $30 billion announced (QE & QE FG)
3	7-Apr-2020	LSAP limit raised to $33 billion (QE/FG)
4	13-May-2020	LSAP limit raised to $60 billion (QE/FG)
5	12-Aug-2020	LSAP limit raised to $100 billion (QE/FG). Funding for Lending Programme (FLP) and negative OCR preparations noted (CE&PIR FG)
6	11-Nov-2020	FLP announced, and introduced on 7 December 2020 (CE)
7	24-Feb-2021	Monetary Policy Statement
8	26-May-2021	Monetary Policy Statement
9	14-Jul-2021	LSAP discontinuation by 23 July 2021 announced (QE FG)
10	18-Aug-2021	OCR track indicates imminent OCR "lift-off" (PIR FG)
11	6-Oct-2021	OCR raised from 0.25% to 0.5% (CMP)

[3] For example, the RBNZ web page https://www.rbnz.govt.nz/monetary-policy/monetary-policy-tools/large-scale-asset-purchases notes "Studies found the government bond purchases worth 10 percent of GDP have, on average, lowered 10-year government bond yields by around 50 basis points."

[4] The highest profile central-banking references to my SSR work in this regard are Bullard (2012) and Draghi (2019). In research, my early works Krippner (2013, 2015) respectively have 321 and 184 citations on Google Scholar.

[5] The mean Long-horizon Natural Interest Rates over the COVID period from January 2020 to October 2021 are US 2.6%, EA 2.0%, Japan 1.5%, UK 2.8%, CA 2.8%, AU 3.0%, and NZ 3.0%.

Figure 3 plots for New Zealand the PIR, SSR, ETL, and EMS, first over the full sample period for the estimated shadow/LB model (i.e. from 1995 to 2021), and then for just the COVID-related period (i.e. January 2020 to October 2021). Note that ETL is plotted as a negative value for ready comparability to the other metrics, and the EMS is negative during this period, given the forward rate curve is below the Long-horizon Natural Interest Rate. For my later narrative, the second panel of figure 3 also provides the 11 major monetary policy events from table 1 over the period of the COVID monetary policy cycle.

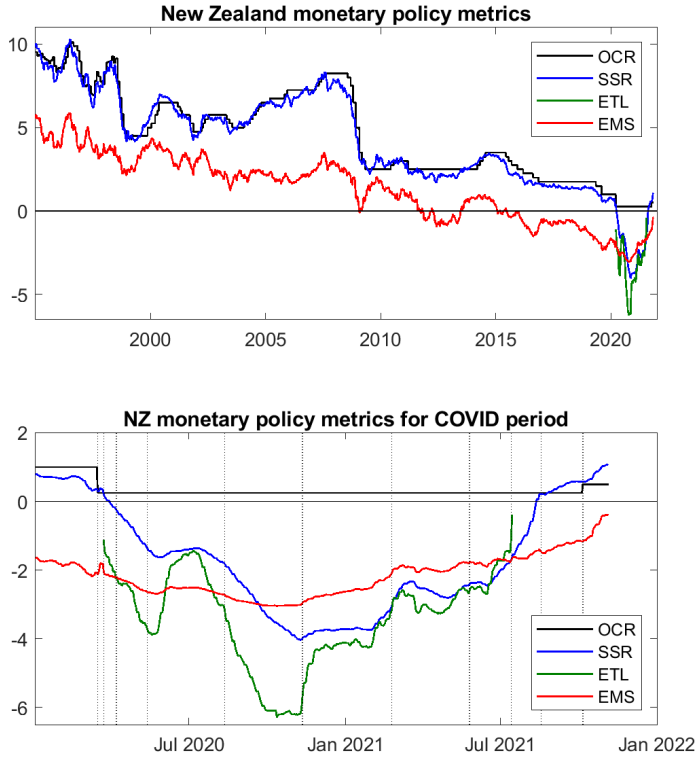

Figure 3: The OCR (the PIR for New Zealand) and the Shadow Short Rate (SSR), Expected Time to Lift-off (ETL), and Effective Monetary Stimulus (EMS) monetary policy metrics for New Zealand.

Figures 4 contains plots of the SSR, ETL, and EMS estimates for New Zealand and the comparison economies for the COVID-related period.[6] In each case, New Zealand reaches the lowest value, and rises most rapidly from the lowest value. Specifically: (1) the SSR reached a low of –4.0% on 9 November 2020, reversed eventually to a plateau of around 3%, and then rose quickly to zero and higher with the OCR "lift-off"; (2) the ETL reached 6.3 years on 12 October 2020,[7] then plateaus around 4 and 3 years before becoming unavailable in the model as the OCR "lift-off" approached; and (3) the EMS reached –3.0% on 7 October 2020, and has steadily risen since then to almost –0.5%.

[6]The Euro Area and Japan entered the COVID period still within their UMP environments that prevailed in the wake of the 2008 Global Financial Crisis. Their respective PIRs remained at the LB settings of –0.5% and –0.1%, and Japan still had QE programmes operating while the Euro Area QE programmes had ended in December 2018.

[7]The ETL of around six years between August and November 2020 may seem an unusually long horizon, but it is consistent with 5-year government bond rates falling to as low as -0.01% during that period (and 5-year interest rate swap rates also fell to well below 0.25%). The temporary reversal in the ETL from May to July 2020 reflects a temporary rise in some yield curve data at the time. I do not have a ready explanation for that rise, but it may be related to increased government bond issuance at around that time.

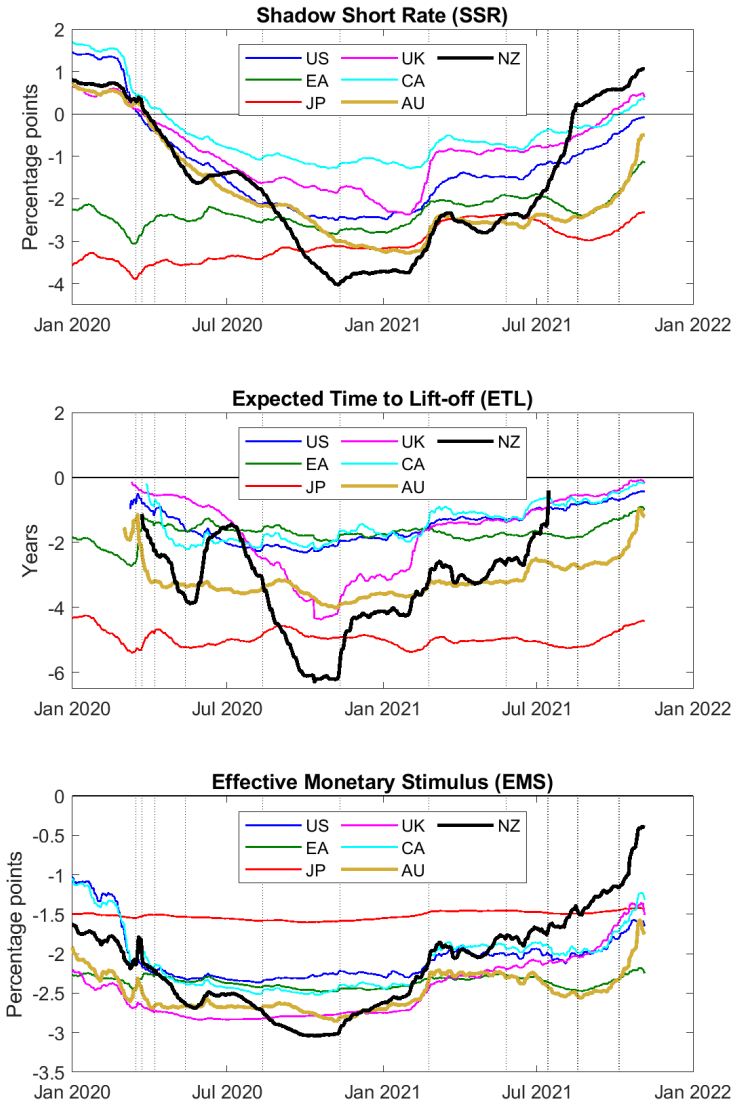

Figure 4: Monetary policy metrics for the G4 and dollar-bloc economies.

In summary, each figure shows that New Zealand had the "deepest" and "steepest" COVID monetary policy cycle. These conclusions are robust when considered from a variety of perspectives, even while any particular estimates are inevitably subject to inherent uncertainties from model specification and estimation. For example, the magnitude of SSR estimates can be sensitive to model and data choices, e.g. see Claus, Claus, and Krippner (2018) and Krippner (2020), and so the result for New Zealand should not necessarily be literally interpreted as equivalent to a –4% OCR. But the SSR results for each economy have been obtained from a single model applied to the yield curve data with the same sample period and maturity span for each economy, making the results comparable in that sense. In addition, the SSR results from alternative model specifications maintain the profiles and relative ordering of the results presented in this note. The ETL and EMS results have also been obtained from a single model, separate to that used for SSRs, and alternative estimations show similar results to those presented here.

Relating the New Zealand monetary policy metrics back to the evolution of monetary policy, a

first general observation is that the depth of the UMP cycle was consistent with the RBNZ's stated "least regrets" approach that it outlined in the May 2020 Monetary Policy Statement (MPS), i.e. from the *Summary record of meeting* (of the Monetary Policy Committee): "Members agreed that a 'least regrets' monetary policy approach is needed, delivering stimulus sooner rather than later, and thus minimizing the risk that the stimulus delivered turns out not to be enough." Hence, items (1) to (5) in the earlier list of major events spanned all categories of UMP, were large, and were implemented prior to the end of 2020. Unsuprisingly then, all of monetary policy metrics moved progressively lower following the UMP actions from (1) to (4). The RBNZ maintained its UMP programmes even as the downside risks of the disruption from COVID reduced and the economic outlook improved. For example, as recently as the May 2021 MPS the *Summary record of meeting* included comments such as: "In line with their least regrets framework, members reinforced their preference to maintain the current level of monetary stimulus until they were confident that the inflation and employment objectives would be met. They agreed this would require considerable time and patience."

Nevertheless, the beginning of the upswing in the New Zealand COVID monetary policy cycle was evident in all three monetary policy metrics from the time of the November 2020 MPS. This may seem puzzling with respect to the RBNZ commentary in the previous paragraph and the FLP announced in the November 2020 MPS to provide an additional channel of UMP stimulus. The explanation is that the FLP announcement led the market to reduce its expectations of further decreases to the OCR (potentially to negative levels, as the RBNZ had previously indicated and more tangibly reiterated in the August 2020 MPS).[8] Indeed, a likely contributing factor to the change in markets' OCR expectations was that the RBNZ revised up its unconstrained OCR track in the November 2020 MPS relative to the August 2020 MPS, indicating a projection of less stimulus being required than previously.

All three metrics continued to rise as stronger real economy and inflation data led the market to factor out the need and likelihood of additional UMP stimulus and/or decreases in the OCR, and anticipate that the next OCR change would be an increase. An early example was the third-quarter GDP bounce-back released on 17 December 2020, followed by CPI inflation and employment data respectively in January and February 2021, and then all three releases on their subsequent quarterly cycles. Guidance and actions from the RBNZ were consistent with the rising trends. That is, the unconstrained OCR track was revised up again in the February 2021 MPS and it indicated an OCR "lift-off" around early 2023, while the OCR track in the May 2021 MPS indicated an OCR "lift-off" around mid-2022. The July OCR review announced that the LSAP programme would be discontinued, having reached almost $60 billion, and the *Summary record of meeting* included the comment: "The Committee agreed that a 'least regrets' policy now implied that the significant level of monetary support in place since mid-2020 could be reduced sooner, so as to minimize the risk of not meeting its mandate."

While the OCR was raised to 0.5% on 6 October, the SSR and ETL metrics indicate that "lift-off" was already fully reflected in the yield curve data from July/August 2021. That timing coincides with the RBNZ being prepared to raise the OCR on 18 August 2021 MPS but for the Delta COVID lockdown announced the day prior, i.e. from the *Summary record of meeting*: "The Committee agreed that their least regrets policy stance is to further reduce the level of monetary stimulus so as to anchor inflation expectations and continue to contribute to maximum sustainable employment.

[8] Prior to the August 2020 MPS the average Consensus Forecasts 12-month ahead survey expectations of the 3-month interest rate were 0.3%, essentially an unchanged OCR rounded to one decimal place. The average 12-month OCR expectation surveys for the following three months, all prior to the November 2020 MPS, were respectively 0%, –0.1%, and –0.2%. The survey mean reversed to 0.2% and 0.3% in December 2020 and January 2021 respectively. Wholesale yields also rose materially on the day of the 11 November 2020 MPS, e.g. from 0.17% to 0.29% for the 5-year government bond rate.

They agreed, however, to keep the OCR unchanged at this meeting given the heightened uncertainty with the country in a lockdown."

The narrative provides a useful check that the evolutions of the SSR, ETL, and EMS monetary policy metrics distilled from the New Zealand yield curve data with a shadow/LB model provide useful, even if not perfect, summaries of the stimulus from CMP and UMP over the New Zealand COVID monetary policy cycle. The ETL is no longer available, given that the SSR estimate is now above the "lift-off" threshold of 0.375%, as is the OCR itself. But the SSR and EMS metrics are always available in both CMP and UMP periods, so they will continue to provide a consistent series for monitoring, analysis, and forecasting. That is, the SSR and EMS metrics may be applied over periods spanning CMP with just the OCR before COVID, the environment of the 0.25% OCR plus UMP actions, and the present period composed of an OCR above a near-zero LB level plus any ongoing effects from past UMP actions.

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