RESERVE BANK
OF NEW ZEALAND
TE PŪTEA MATUA

17 June 2015

Mr Michael Reddell
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Dear Mr Reddell

On 28 April, you made a request to the Reserve Bank under the provisions of section 12 of the Official Information Act (the Act) seeking:

> *copies of all papers, including emails, prepared in the lead-up to the signing of the 2012 Policy Targets Agreement between Graeme Wheeler and the Minister of Finance. This request includes any background analysis provided to either party or to the Treasury, and any internal material for discussion among Bank staff, or between Bank staff and Mr Wheeler.*

On 20 May, you refined this request to:

> *Copies of the records filed in the "2012 Policy Targets Agreement" folder in the Reserve Bank's documentum file management system.*

The Bank has found five records in scope which are being released to you in full.

Yours sincerely

Carole van Grondelle
External Communications Advisor

Ref #6129483 v1.4

RESERVE BANK COVER SHEET

REPORT NUMBER	4761
DATE	2/5/2012
SUBJECT	Issues relating to inflation targeting and the PTA
AUTHORISED BY	Alan Bollard
PREPARED BY	Tim Ng Phone: 471 3809
ACTION SOUGHT	Minister's information
TIMEFRAME	Routine
SECURITY CLEARANCE	Routine

2 May 2012

MEMORANDUM TO THE MINISTER OF FINANCE

Issues relating to the inflation targeting and the PTA

The Act requires policy targets to be agreed between the Minister of Finance and a Governor-designate prior to the latter's appointment. To provide some analytical background for that process, this memo briefly discusses some issues about policy target specification. The range of issues is fairly familiar, although focus on how monetary policy should deal with financial developments in particular has increased worldwide since the crisis. The PTA could continue to evolve in line with the preferences of its signatories. However, it is now representative of mainstream flexible inflation targeting practice. Stability of policy targets over time improves the anchoring of inflation expectations and the credibility of the overall macroeconomic policy framework.

1. Introduction

Reserve Bank staff are ready to advise on PTA issues and potential amendments as a result of the process of fixing of policy targets prior to the appointment of a new Governor (section 9(1) of the Act), should that be requested. This memo briefly discusses examples of such amendments, some of which have also been discussed by outside parties recently. Although none of the debate on monetary policy frameworks is very new, in many jurisdictions the crisis has re-focused attention on some aspects, in particular how financial system developments should be treated by monetary policy (see Kendall, 2012a and 2012b).

In this note, we take the current Act as given. Thus, we cover only PTA amendments that would appear consistent with the primary purpose of price stability, and that would be workable given available instruments and governance arrangements. The Reserve Bank previously reviewed the PTA in 2002 and 2007, covering similar territory. (The 2002 review was particularly thorough, partly so that the material would be available to inform PTA negotiations – see RBNZ, 2002.)

The PTA expresses its signatories' preferences about how price stability should be pursued. Its organising principle of flexible inflation targeting is now mainstream (Roger, 2009). Indeed, it is becoming more so, with the Federal Reserve (2012) in the US and the Bank of Japan (2012) recently announcing inflation targets. As a framework to govern an inflation targeting approach, the PTA should balance constraint with flexibility, promote stabilising expectations, and impart "legitimacy" to monetary policy conduct – that is, public understanding and endorsement of monetary policy's role in macroeconomic stabilisation. The PTA elements that currently are intended to do this are a numerical CPI inflation target (clause 2), "caveats" (clause 3), and a requirement to consider certain other macroeconomic variables (not just the policy target) when pursuing price stability (clause 4b).

The PTA has evolved somewhat since its inception in the first PTA, with successive amendments tending explicitly to allow for more flexibility (see RBNZ, 2000).

Signatories have been conscious of the benefits of keeping the policy targets broadly unchanged, which would tend to anchor inflation expectations better, but at the same time recognised that amendments to reflect their own preferences could demonstrate "buy in" to the framework, which should also enhance credibility and contribute to anchoring of expectations.

The rest of the note first looks at issues within the current approach of CPI inflation targeting, devoting most attention to how financial system considerations might feed in. We then discuss amendments that would depart from CPI inflation as the policy target.

2. Issues under a CPI-inflation policy target

2.1. Dealing with asset prices and the credit cycle

The Global Financial Crisis (GFC) has galvanised debate about the proper treatment of financial system developments by monetary policy. The debate about monetary policy, asset prices and credit is not particularly new (Bloor *et al.*, 2008). However, the evidence from the crisis of the enormous macroeconomic damage that financial crises can cause has shifted many policymakers' and analysts' views towards a more pre-emptive approach from monetary policy (see e.g. White, 2009).

In the New Zealand context, one way to relate monetary policy more explicitly to financial system developments would be for the PTA to require the Reserve Bank to have regard to such developments in the pursuit of price stability. One issue would be which specific financial variables, if any, to name in such a requirement. While naming, say, asset prices and credit would give some specificity to the requirement, it could also create confusion about the status of the named variables as indicators, intermediate targets or de facto target variables. This problem potentially already exists with the variables mentioned in clause 4(b). The addition of credit or asset prices to the PTA could make things worse, since the exchange rate, credit and asset prices can co-move strongly. Naming specific variables also could encourage undue focus on those variables in the debate about monetary policy, rather than on the totality of macroeconomic and financial system circumstances. For these reasons, it might be better to keep any reference to financial developments general to allow for flexible treatment.

Another route to incorporating financial considerations could be to add financial variables to clause 4(b)'s list of variables in which the Reserve Bank should avoid unnecessary instability. However, that would have the disadvantage of extending to more variables the known problems of interpretation of "unnecessary instability" and of achievability. The "have regard" formulation seems more attractive because it makes financial system considerations more clearly subsidiary to the policy target, and thus less likely to cause confusion with macroprudential policy and its financial stability objective.

The Reserve Bank does not appear to be strictly constrained by the current PTA or Act in its ability to conduct monetary policy optimally with regard to financial developments, even beyond their inflation consequences. Section 10(a) of the Act already requires the Reserve Bank, when formulating monetary policy, "to have regard to the efficiency and soundness of the financial system", and the policy target's use of "medium term", "average" and "future", as well as clause 4(b), allow

for flexible treatment. 10(a)'s terms seem sufficiently broad to encompass the kinds of financial developments a central bank would want to consider in monetary policy, including credit-fuelled demand booms that raise the risk of a financial crash in the future. It should be noted, though, that there is room for debate about this interpretation of 10(a).

The reason to add financial system considerations to the PTA explicitly would be to strengthen the legitimacy, and therefore the likelihood, of the Reserve Bank acting optimally in response to financial developments (beyond their medium-term inflation implications). Especially following the GFC, such an explicit signal that the Reserve Bank seriously considers financial system developments in monetary policy would in any case reflect the new reality. In concrete terms, the Bank might want to tighten against a strong credit upswing despite a benign inflation outlook, if it viewed the credit growth as inconsistent with the fundamentals. Explicit consideration of credit would justify pushing inflation down more than otherwise in the near-to-medium term.

We assume here that (1) that we would still principally use prudential instruments to address the financial stability consequences of credit cycles, and (2) that (consistent with the Act) we would use those instruments primarily to promote the soundness and efficiency of the financial system (section 68). This would keep to the "one instrument – one target" rule, with its accountability and communications attractions. Some have recently advocated that monetary and (macro-)prudential policy should instead be coordinated. Although that might make sense during stress situations, during the upswing, any aggregate demand effects of (macro-)prudential tightenings would probably be small. It might therefore be simpler just to treat them as exogenous to monetary policy (as fiscal policy is currently treated).

2.2. *CPI inflation policy target specification*

The target range width and whether there is a midpoint clearly influence flexibility. Whether they make a difference to macroeconomic performance is harder to tell, since that depends on patterns of shocks and the macroeconomic effects of using the flexibility that is afforded. From a quick review of the evidence (Williamson, 2011), the form of policy target and variations in the other accountability devices such as communication practices, sanctions and caveats do not seem to make much difference to inflation outcomes in practice. In a sample of inflation-targeting countries, average absolute deviations from midpoints tend to be less than a percentage point and less than the standard deviation of inflation itself. Notably, even non-inflation targeting central banks have been able to achieve inflation performance comparable to that of inflation targeters.

What is clearer is that further increases in the target level or range width would risk damaging the credibility of the framework, given that all revisions to the target range during price stability have been upwards and that the PTA considered as a whole is already very flexible. Suggestions such as Blanchard *et al.*'s (2010) to raise target midpoint levels to, say, 4% should be strongly resisted. The benefit they cite of maintaining greater headroom above the zero lower bound seems less relevant to New Zealand, with our high average real interest rates. There may even be reason to consider lowering the target midpoint (or stating the midpoint explicitly) on the grounds of anchoring expectations more firmly in the region close to true price stability.

2.3. Advising Government

A feature of past business cycle upswings in New Zealand has been the relaxation of fiscal policy at a time when output (and hence fiscal surpluses) is already strong, which has contributed to tighter monetary policy settings than otherwise. Section 10(b) of the Act requires the Reserve Bank in the formulation of monetary policy to "consult with, and give advice to, the Government" and appears to contemplate that such consultation and advice be about how the Government could assist the Reserve Bank to maintain price stability. This requirement could be given more specific effect in the PTA with an explicit reference to consultation on fiscal policy.

There could be important consequences for the independence and credibility of the Reserve Bank that would need to be considered before taking such a step. The interaction between the Reserve Bank and the Government could be unnecessarily complicated. We note also that the Government is considering draft legislation that would require governments to have regard to the impact of fiscal policy on the economic cycle, and to document that regard. Whether raising the profile of the Reserve Bank's role in such considerations via the PTA would improve overall macroeconomic performance would depend on whether and how the actual conduct of fiscal and monetary policy were affected – noting that identifying changes in the effective fiscal stance in real time is not entirely straightforward.

3. New policy targets

3.1. Nominal GDP (level or growth rate) targeting

Analysts have recently advocated the use of a nominal GDP (level or growth rate) policy target, either permanently or temporarily as an anti-recession remedy (see the discussion in e.g. Haltom, 2011). They emphasise the stabilising benefits via the expectations channel: when output is very weak, expected inflation under a (credible) nominal GDP target would be higher than under a pure inflation target (an inflation nutter would ignore output), thus automatically generating an additional and stimulatory reduction in real interest rates. A nominal GDP target also automatically builds-in a trade-off between output and price stabilisation, which prevents monetary policy from responding to supply shocks in a way that would exacerbate output volatility.

The current flexible policy target, the caveats (which already mention, without limitation, specific kinds of supply shocks) and clause 4(b) all allow room for cyclicality of forecast CPI inflation outcomes, including those that would arise under a nominal GDP policy target. Nominal GDP could therefore be informally targeted if we so wished. "Hard-wiring" nominal GDP in the target or in the caveats, though, could strengthen the expectations channel. It could also strengthen legitimacy in leaning against positive demand shocks by adding output to inflation as reasons for the response.

However, it would probably be more difficult to explain the target to the public. For example, under a nominal GDP target, monetary policy would be indifferent between high-growth/low inflation and a low-growth/high-inflation outcomes that deliver the same nominal GDP growth outcome – even though the welfare implications are clearly different. There is also the issue of how GDP revisions would be handled.

3.2. Price-level targeting

A price-level target (path) also seeks to enhance stabilisation through expectations. Under a credible price-level target, inflation expectations would fall whenever the price level is high relative to its target, which would not happen under an inflation target. Simulation analyses by the Bank of Canada suggest that the benefits are sensitive to assumptions about expectation formation (Carney, 2012).

The main difficulty with a price level target is that it would be harder to commit credibly to the announced target path than to an inflation target. This is because, under price-level targeting, past departures from the target cumulate, increasing the likelihood that monetary policy may have to generate deep recessions to bring prices back into line with the target.

3.3. Inflation targeting with exchange rate targeting

Especially (but not exclusively) in emerging market economies (Switzerland being a developed-country example), the combination of exchange rate management with inflation targeting is becoming more common. Achieving both an inflation target and an exchange rate band target requires de-linking domestic interest rates from the exchange rate (i.e. controlling both the level and the mix of monetary conditions), which might be achievable with a combination of large foreign exchange reserves, sterilisation of domestic liquidity swings arising from intervention activities and control of cross-border capital flows.

It is difficult to imagine how such machinery might work in New Zealand, with its currently very open capital account, liberalised and reasonably well-developed domestic financial system, structural current account deficit and small foreign exchange reserve stocks in comparison to market flows (though this last is a limitation only for leaning against exchange rate depreciations). Given these achievability problems, it would seem best to limit any references to the exchange rate in the PTA to very general considerations.

Moreover, even putting aside the availability of instruments, the economy imposes poorly understood constraints on how variance in the exchange rate and in inflation can be traded off. There is also a transparency issue about how the signatories' preferences over those variances can or should be communicated. Arguably, the 4(b) formulation with the exchange rate already risks encouraging unrealistic expectations or creating confusion about how the exchange rate is treated by monetary policy, and it could be worth considering dropping it altogether.

4. Conclusion and preliminary assessment

Assuming that the signatories to the new PTA wish to retain flexible inflation targeting as a broad principle governing monetary policy, there seems little to point out as seriously wrong with the status quo. In combination with the current Act, the current PTA is quite permissive about the considerations that the Reserve Bank may adduce to pursue price stability in a macroeconomically sensible fashion. Adding a "have regard to financial system developments" requirement should not be expected to lead to large gains, but would clearly signal the new monetary policy operating environment following the crisis.

Some other adjustments (e.g. to introduce a midpoint to the policy target specification) could be rationalised by a view that the current PTA is too flexible or permissive. The mention of several variables other than inflation in the current PTA also raises a transparency issue in that it is not clear how they should be traded off, and any addition of credit as a further variable to be considered would add to the problem. There is possibly an argument for a simplification of the PTA to avoid these interpretational issues.

It is not obvious that there are potential gains in macroeconomic performance to be had from departing from the flexible inflation targeting approach. Despite some differences in inflation targeting frameworks, which appear mostly to be matters of form rather than substance, a common pattern of low and stable inflation has been established in New Zealand and other developed countries since the mid-1990s. Moreover, the Taylor-Rule exercises conducted in 2002 and 2007 suggested that the RBNZ, the Fed, the RBA and the Bank of Canada have all responded similarly to inflation and output developments. (The Reserve Bank's Economics Department is currently updating this exercise.) Some particular suggestions as a replacement for inflation targeting, such as price level targeting or nominal GDP targeting, have a number of disadvantages that would need to be addressed.

Notwithstanding that you or the new Governor might wish to signal clearly your preferences with a new PTA, there would be costs and risks associated with changing the PTA in a major way. These would include risks of undermining confidence in the commitment to price stability as a durable part of the macroeconomic policy framework in New Zealand, particularly if the level of the target midpoint were again increased.

The New Zealand monetary policy accountability model is built around the PTA. As a quasi-contractual document with a public accountability and transparency function, the PTA should keep to the essentials. However, that need not constrain too much the clarification of the complex issues discussed here. Memoranda of Understanding or unilateral Reserve Bank statements of policy position in speeches or other publications allow more discursive discussion of the many issues one should expect the Reserve Bank to consider, and why, in conducting monetary policy. Of course, use of these other vehicles may have different implications for credibility and perceived independence than use of the PTA.

At this stage, the Reserve Bank's general view is that the current PTA's balance of constraint and discretion within an inflation targeting approach is about right in terms of promoting good macroeconomic performance. The benefits of PTA changes of the sort noted here would probably be marginal and associated with better public understanding of monetary policy.

This note has obviously not exhausted all the possible adjustments that might be contemplated from a line-by-line examination of the current PTA, or explored how a "clean slate" PTA might look. Reserve Bank staff will continue to study potential variations to the price stability framework that might improve macroeconomic performance, so that the Bank remains well-positioned to advise as necessary.

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Alan Bollard
Governor
Reserve Bank of New Zealand

Date signed:

Please sign the enclosed copy and return to Ms Alison McKessar, Reserve Bank of New Zealand, PO Box 2498, Wellington, in the envelope attached.

Noted:

Hon Bill English
Minister of Finance

Date signed:

MEMORANDUM FOR	Bernard Hodgetts, David Hargreaves, Anella Munro
COPIED TO	Christie Smith
FROM	Tim Ng Manager, Issues and International
DATE	10/02/2012
SUBJECT	PTA issues memo
FOR YOUR	Action

Can we please get together to talk briefly about the work programmes in FMD and Econ regarding macroprudential policy and its ramifications?

From my point of view there are two reasons:

(1) I need to catch up on what's going on;
(2) I want to brief you on a meeting that John, Ross and I had with Mark Blackmore, Tracy Mears and Renée Philip from The Treasury last week that touched on macropru.

On 1, I have been given the task of doing an MPC paper (planned for the meeting of 21 March) that would note possible amendments to the PTA that have been discussed recently and on which we should have our lines ready in case a debate on the PTA develops. One such amendment could be a reference to credit cycles or to macroprudential policy. Treasury are working on a draft paper for the Minister on the monetary policy framework which will cover this territory (among other things); that was the reason for our meeting with them last week. One of the issues our two Departments will need to work through is the implications for the conduct of monetary policy of having a working macroprudential regime alongside.

On 2, Treasury are also thinking about what they should say to the Minister about governance of macropru. Although this is in a sense more narrowly about macropru itself (i.e. macropru for the purposes of financial stability), it has some bearing on the monetary policy framework because of the interactions between the two (whether or not there is explicit recognition of the interactions in the PTA or elsewhere). So I think we need to be positioned with a coherent view on those issues. Treasury have been talking of the desirability of an MOU between the Governor and the MOF on macropru akin to the MOU on FX intervention, which would need to cover objectives, expectations regarding consultation, etc.

Hopefully the relevant material is already documented in various places and my task is just to draw it together. A third reason for the meeting is to discuss whether this is actually the case.

MEMORANDUM FOR	ECONANALYSTS
FROM	Ross Kendall
DATE	28/03/2012
SUBJECT	**What should monetary policy target?**
FOR YOUR	Information

Executive Summary:

- This paper reviews the literature by academics and policymakers on the main options for monetary policy targets that have been given serious attention.
- A credible point target for inflation may help to better anchor inflation expectations through a perceived reduction in the flexibility of monetary policy, but a reduction in flexibility may not be desirable. Other aspects of target specification, including arrangements for accountability, are also important for anchoring expectations. One example might be placing greater emphasis on the midpoint of the current target range.
- Nominal GDP targeting has desirable output stabilisation properties under the assumption of forward-looking expectations. Nominal GDP targeting would have some problems being implemented, including issues with data, communications, credibility, correct target specification, and whether expectations are in fact formed in a fully forward-looking way.
- Price-level targeting has desirable price and output stabilisation properties under the assumption of forward-looking expectations. However, these benefits have not proven to be robust to extensions of the basic models or variations of the assumptions (including that of forward-looking expectations formations) that favour price-level targeting.
- A 'managed float' exchange rate and monetary policy regime is unlikely to be optimal for New Zealand. Sterilised intervention as a complement to current monetary policy is unlikely to be very effective in situations when the ability to influence the exchange rate is most desirable.

Introduction

This review examines the literature on the specification of monetary policy targets. Although targeting consumer price inflation is now the mainstream monetary policy regime globally (and is in fact still spreading, with the US and Japan recently announcing more explicit inflation targets than in the past), there is a spectrum of ways in which the targets for inflation are specified. [1] Here we choose to focus on one of the main differences between inflation-targeting central banks: whether the inflation target should be specified as a range or point. There are other differences that have been discussed, but are of somewhat less recent interest, such as how high the inflation target should be set.

[1] See http://www.federalreserve.gov/newsevents/press/monetary/20120125c.htm and http://www.boj.or.jp/en/announcements/release_2012/k120214a.pdf

Beyond the specification of inflation targets, there has also been considerable recent discussion on whether there should be a different target for monetary policy. This review considers three recent topics of debate: nominal GDP growth/level targets, price level path targets and exchange rate management. Each of these alternatives can generally be considered as consistent with the goal of price stability, which is widely accepted as a necessary feature of monetary policy. Proponents of each of these changes assert that they will result in more desirable outcomes in other macroeconomic variables such as output, employment and exchange rates while maintaining price stability, but there are still open issues in assessing the benefits and drawbacks of each.

Inflation target specification

The RBNZ has looked in the past at the impacts of specifying inflation targets in different ways. Around the world there is variation in how inflation targets are defined, with the options being:

- Point target
- "At or below" a target (e.g. ECB)
- Point target with "acceptable" band above and below
- Range target but with explicit emphasis placed on midpoint
- Range target

Drawing heavily on two past MPC memos that reflect our previous thinking on the issue, there are some potential benefits for New Zealand in moving to a different target definition, but also some risks.[2] The most desirable benefit of moving from a range target to a point target would be the possibility of anchoring inflation expectations to a lower level. Inflation expectations in New Zealand have consistently been above the midpoint of the target range, in line with the average inflation rate. The predicted benefits of moving to a point target depend on the inflation-targeting credibility of the central bank. A credible point target of 2% could help anchor inflation expectations and aid the RBNZ in keeping inflation lower if, the public believes policymakers view inflation at the top of the band as just as acceptable as if it were in the middle, resulting in higher inflation expectations[3]. However, whether the numerical target is specified as a point or a range is clearly not the only – or necessarily the principal – influence on how inflation expectations are anchored. Other factors such as the number and type of caveats and the target horizon also matter.

A switch to a point target may invoke criticism, as the RBNZ may be viewed as being too focused on one goal. The change may therefore been seen as signalling a reduction in the flexibility with which monetary policy is applied (and hence concerns about increased volatility in output, the exchange rate and interest rates may be raised). This point may be even more relevant given recent public discussion about whether the primary goal of monetary policy should be expanded beyond price stability. If the possible reduction in flexibility associated with a change to a point target is of concern, the current target range could re-expressed in terms of a range around a midpoint (e.g. 2±1%) which may capture some, but likely not all, of any expectation benefits associated with a point target.

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[2] See Mortlock (2002) and Williamson (2011).

[3] Also see Hargreaves (2002), a previous RBNZ publication that shows with simple simulations that if the central bank does not attempt to actively return inflation to the middle of the band, inflation will fall outside the target range more often – especially if the 'zone of inaction' is not centred.

A point target may have the advantage of increasing the clarity of the goal of monetary policy to markets. Markets may be uncertain as to the degree to which the RBNZ is comfortable with inflation near the top or bottom of the range, and a more explicit goal could increase certainty around the direction of policy. However, assuming a medium-term focus is retained, switching to a point target, or point target with range, would not be likely to significantly alter the way the RBNZ conducts monetary policy. This is because it is usually easiest to keep inflation within the target range over time if it is in the middle of the band, giving more room before shocks move inflation out of the target band. A point target could encourage a more sharp adjustment path towards the middle of the band, which may or may not be desirable.

If with a point target the RBNZ is required to explain deviations from a point target more often than with a range target. There is a risk of raising false concerns about the 'ineffectiveness' of monetary policy (which may reduce support for inflation targeting in general) if the target is missed by wide margins on a regular basis.

Debelle (1999) (RBA) makes similar points to those mentioned above, suggesting that a wider acceptable range for inflation will increase the flexibility of the central bank to stabilise output in the short run, but may reduce the credibility of the inflation target.

In general, literature on this topic is sparse, with nearly all discussion taking place around the end of the last century. Taking into account the benefits of stability in the specification of monetary policy, retaining the current inflation target range while putting more emphasis on the midpoint, either explicitly in the Policy Targets Agreement or in Monetary Policy Statements, speeches and other publications by the RBNZ could be a desirable option.

Nominal GDP targeting

In the wake of the financial crisis, there have been some calls to change the focus of monetary policy from price stability alone. Nominal GDP targeting involves targeting the sum of real GDP growth and the inflation rate, rather than the inflation rate alone, which some claim would have resulted in better stabilisation of the economy. An important point to note is that inflation targeting frameworks in practice focus on consumer price inflation, which can differ substantially from inflation measured by the GDP deflator that is the inflation component under nominal GDP targeting. The difference can be substantial, especially in a small open economy, and which would be preferred can be debated.

There has also been some debate as to whether a nominal GDP target should be expressed in level or growth terms. The difference would be that while a level target would still aim for a constant rate of growth in nominal GDP over the medium and longer terms, it would attempt to 'correct' for past misses, bringing the economy back to a predetermined path. Growth targeting, like inflation targeting, would not take into account past misses of the target, and try simply to restore future growth to the target rate.

Level targeting may therefore have some expectations benefits, which help to restore the economy to its potential level sooner, but may also have the disadvantage of requiring excessively aggressive policy changes. A nominal GDP level target essentially means that nominal GDP will be trend stationary – any deviations from trend will be reverted. This effectively means that the price level and real GDP will be cointegrated, with any permanent deviations from trend of one of these resulting in an offsetting permanent deviation in the opposite direction in the other. This is the source of the greater expectations benefits from a level target, because when a shock to real output moves it below trend, this causes inflation expectations to increase, because agents expect the central bank to move to offset the

reduction in nominal output. This means that expectations act automatically to stabilise the economy through changing real interest rates.

Bennett McCallum is a supporter of nominal GDP growth targeting, having written many academic papers over the years on the topic. McCallum (2011) provides some background for why nominal GDP targeting may be beneficial. He summarises the main theoretical benefit as being reduced volatility in output associated with keeping inflation at the preferred rate. This is because the target is equal to the long-run average growth rate of output plus the desired target inflation rate, and in the long run money is neutral. He also argues that a nominal GDP target will be more explicit about the goals of monetary policy, as flexible inflation targeting incorporates an implicit weighting of the inflation rate and the level output, which is not likely to be understood by the general public. A nominal GDP target would also be likely to have similar issues however, as there is always a degree of flexibility required to reach the target after shocks, and a desire to smooth interest rate changes.

Sumner (2011) provides an overview of the case for nominal GDP level targeting, focusing on the recent financial crisis and the response of inflation-targeting central banks. He asserts that inflation targeting was ineffective in combating the recession, and that a nominal GDP target would have required more aggressive monetary policy easing, resulting in a less severe downturn. Inflation targeting does not take into account real growth and unemployment, and so does not respond correctly in situations where he believes it would be optimal to have a higher inflation rate than is currently targeted, e.g. during the recent recession. He argues that being able to take into account the two important variables of macroeconomic stability in a single target is a significant advantage of nominal GDP targeting.

Sumner also argues that inflation-targeting central banks will respond incorrectly to some causes of changes in the inflation rate. Oil price rises, indirect taxes, currency movements and supply shocks in general could cause the inflation rate to rise, but do not necessarily require a monetary policy response, which would be reflected by nominal GDP targeting. In response to this, one can argue that most countries have flexible inflation targeting regimes. These allow the central bank to look through such temporary shocks and have some discretion about how quickly to move the inflation rate back to its target. Sumner prefers targeting the level of nominal GDP, as he believes the expectations-channel benefits of additional stabilisation are large, especially when monetary policy is near the zero lower bound.

Carney (2012) discusses the possibility of a nominal GDP level target and choice of the Bank of Canada to stick with its flexible inflation targeting framework. He argues that for nominal GDP targeting to have its full theoretical benefits, then all economic agents would have to be fully forward looking, consistent with theory supporting nominal GDP targeting. The Bank of Canada's own findings show that there seems to be a significant amount of backward-looking formation of expectations, which undermines the potential effectiveness of nominal GDP targeting. This highlights a major issue with switching to a regime that has not been thoroughly tested in the real world – that what holds in theory does not always predict what will happen in practice.

Another issue brought up by Carney is that difficulties identifying the true level of potential GDP growth make it hard to correctly identify the target. Even then there is no guarantee that potential GDP growth should stay constant over time. Identification of trend output growth would have resulted in a high target before the crisis, which may now prove to be above the long-run potential growth rate – maintaining such a target would mean persistently higher inflation. He is also concerned that the GDP deflator is not as relevant for measuring welfare as CPI measures. His conclusion is that nominal GDP targeting could be considered as a

temporary unconventional tool when zero-lower-bound problems loom, but is not suited to be a complete framework for monetary policy. Even temporary measures can cause problems however, as this can implicitly signal the possibility of future 'temporary' measures, and hence risks undermining the credibility of a low inflation target.

Two other concerns with nominal GDP targeting are brought up by the RBNZ in its response to a media request concerning the Sumner (2011) report.[4] Firstly, nominal GDP targeting is more complex to communicate conceptually than inflation targeting. Although it could be communicated to the public what the new target is, it is likely to be more difficult for the public to understand, as the reasoning for such a target is less straightforward. Secondly, GDP is subject to large revisions, and a high degree of measurement uncertainty. This complicates the monetary policy procedure, as it would not be clear how a central bank should respond if there was a large revision to previous data, especially if the target were the nominal GDP level (as insisted upon by Sumner), which requires correcting for past deviations. Even disregarding past revisions, the possibility of future revisions, statistical quirks, and measurement limitations in the outturns for forecasted GDP numbers further complicates the situation for the central bank, as it is unclear whether they should try to target 'measured GDP' or what they believe is 'actual GDP'. In the New Zealand context, timeliness of data would also be an issue, as GDP data are published much later than the CPI for each period. These issues also make accountability for the outcomes resulting from monetary policy more difficult.

There has been limited research on nominal GDP targeting in academic journals (especially in the past decade), and most of it entails the use of simple models. These may provide some insight on how nominal GDP targeting may alter outcomes, but are not conclusive (for example Ball (1999) who finds that nominal income targets are highly inefficient, creating great volatility in both inflation and output; while Rudebusch (2002) finds that model and real-time data uncertainty reduces the appeal of nominal income rules compared with theory).

Overall, it seems at this stage that there is insufficient evidence of the benefits of formally targeting nominal GDP to justify a switch from the current inflation-targeting framework. Future developments, such as the successful adoption of nominal GDP targeting by other central banks, could provide evidence that as a regime nominal GDP targeting is practically implementable and effective. Until such time, it is not clear that there is enough certainty to justify the large costs associated with a regime change.

Price-level targeting

Another alternative to inflation targeting is price-level targeting, which aims to maintain price-level stability, rather than inflation stability. The essential difference between the two regimes is that while price-level targeting still allows for a moderate increase in the price level over time, any deviations from the desired path of increase are corrected for – so the central bank must follow a period of high inflation with a period of low inflation until the price level returns to its original path.

Since 2006, the Bank of Canada has been researching the merits of price-level targeting. In Bank of Canada (2011) they summarise their findings about price-level targeting and discuss why they ultimately chose to remain with their flexible inflation-targeting framework. They find that, theoretically and under certain assumptions, price-level targeting has multiple

[4] 'Reserve Bank rejects report on system flaws' NZPA
http://www.stuff.co.nz/business/money/4883125/Reserve-Bank-rejects-report-on-system-flaws

advantages over inflation targeting. Price-level targeting, if successful, increases the certainty of long-term nominal contracts, which has multiple benefits including promoting investment. Another large benefit is that it can improve the short-term trade-off between inflation and output, through the expectations channel. For example, when inflation is above the rate consistent with the price-level target, then expectations will be that the central bank will follow this with a period of inflation below the average rate consistent with the target over the longer term, rather than the average rate. This lowering of expectations adds a 'self-fulfilling' property to monetary policy, as expected real interest rates adjust in a way that aids monetary policy. Model simulations find that this effect is especially important when monetary policy is near the zero lower bound, as the difference in expectations compared to inflation targeting may be enough to avoid reaching the lower limit.

However, the Bank of Canada found several issues that prevented them from adopting a price-level targeting framework. The models in which price-level targeting is shown to be effective depend crucially on some key assumptions. The main concern is that these models all assume that economic agents form expectations in a forward-looking manner, and that the central bank is always credible in its goal of achieving its price-level goal. The major benefits of price-level targeting come from the fact that when inflation is *high*, inflation expectations are *low* and vice versa. This makes sense if the central bank is perfectly credible (in practice meaning that inflation expectations are based purely on the central bank's target), but research has shown that in reality, inflation expectations are highly dependent on past inflation outcomes. If this does not change under price-level targeting, then there could be a destabilising effect, rather than a stabilising one relative to inflation targeting. The Bank of Canada also says that its models predict that if there is even a small perceived chance that the central bank might use 'escape clauses' in the monetary policy framework to disregard past price level movements, than the benefits of price-level targeting over inflation targeting disappear or reverse.

Given the large uncertainty about, and the importance of, the way in which expectations would be formed under price-level targeting, and the large costs associated with switching to a nearly untested monetary policy regime (Sweden used a form of price-level targeting for a period in the 1930's – see Berg and Jonung (1999) for more details), the Bank of Canada concluded that retaining their existing inflation-targeting framework was the best choice. Deutsche Bundesbank (2010) also consider price-level targeting but because in various extensions of basic models, price-level targeting is found to be suboptimal, in addition to the lack of practical experience of the system in any modern economy, they do not currently see price-level targeting as a viable strategy for monetary policy. Based on the views of these central banks, a price-level targeting regime is not likely to be suitable for New Zealand at this time.

Exchange rate management

There has been some suggestion that monetary policy in New Zealand should take more account of the exchange rate. Some have pointed to Singapore's managed float regime as an example of a successful monetary policy regime that involves exchange rate management, and believe a similar model could help New Zealand by reducing exchange rate volatility, which could help our export sector to grow. However, there is some evidence to suggest that the extent to which New Zealand could simultaneously control both the level of the exchange rate and inflation is limited.

Monetary Authority of Singapore (MAS) (2001) provides some detail on Singapore's monetary policy regime. The MAS follows a 'managed float' system, in which the (MAS)

uses the exchange rate as the tool of monetary policy, with the goal of maintaining price stability, while also aiming to smooth movements in the exchange rate over time. The MAS considers a basket of currencies comprised of the trading partners and competitors of Singapore when setting exchange rates. The MAS does not attempt to combat long-term trends in the exchange rate, and as such the Singapore Dollar has followed an appreciating trend over time, consistent with its fundamentals as a growing economy with low inflation.

Government policy is a key feature that helps the MAS to manage the economy. The government of Singapore has run persistent surpluses, which helps to keep inflationary pressures low – volatility in government spending would require responses in the exchange rate to keep inflation at a low and stable level. The government is also not afraid to cut wages when necessary to maintain competitiveness and employment in the face of downturns (pension contribution cuts allow them to affect the wider economy). This allows the MAS to avoid needing to engineer a sharp nominal depreciation to restore output to its potential, which would run the risk of a sharp rise in inflation. Credit for any perceived success of Singapore's monetary policy should be made with caution, as much of the success may be due to other factors, such as fiscal policy working to aid monetary policy, rather than due to monetary policy itself.

Cavoli and Rajan (2007) investigate empirically the monetary policy regime of Singapore, to see whether it is consistent in practice with what is claimed by the MAS. Their findings are consistent with the way the MAS states it conducts policy, as Singapore's exchange rate responds in a strong and stable way to major global currencies, and in a way that keeps inflation low and stable.

Carran (2010) provides some brief arguments against the use of Singapore's monetary policy model in New Zealand. Firstly, he reinforces that the focus of Singapore's approach is on inflation, not on the long-term trend of the exchange rate. To that end, what is important is how effectively the monetary policy tool can control inflation. Singapore's external sector (imports plus exports as a proportion of GDP) is almost four times as large as New Zealand's, which means the exchange rate would be a far less effective tool for influencing the New Zealand economy (in contrast – interest rates will be more effective). Singapore also has foreign reserves of value far and away more than New Zealand, which allows it to credibly control the exchange rate in the short term, whereas the RBNZ would be much more easily overwhelmed by the market in any attempt to control the exchange rate for a period of time, unless foreign reserves were built up considerably (at a cost).

Singapore relies very heavily on its manufacturing sector, and having a stable exchange rate is very important to provide certainty to producers who are competing with other manufacturing economies. Although some may argue that a similar case can be made for New Zealand's primary sector exports, these are less important to us than manufacturing is to Singapore, and our exchange rate already tends to act as a 'shock absorber' in this regard, adjusting to reflect changes in commodity prices and hence mitigating swings in the New Zealand dollar price of our exports. A lot of the support for more control of the exchange rate (in both New Zealand and elsewhere) is due to the fact that one booming sector (e.g. primary products) can drive the exchange rate, hurting another sector (e.g. manufacturing) – in other words, the shock absorbing effect is not uniform across the economy.

Ostry, Ghosh, & Chamon (2012) advocate the use of sterilised exchange rate intervention in inflation-targeting emerging market economies (EMEs), asserting that with two effective instruments, two policy goals can be obtained. Their arguments for why EMEs should

undertake exchange rate intervention do not necessarily translate to a developed country like New Zealand, however.

A major reason why EMEs need to take special care with their exchange rate is that domestic balance sheets often have large currency mismatches, making them very vulnerable to exchange rate swings – but this is not a major problem for New Zealand. The second argument for EMEs to intervene is that sterilised intervention is likely to be effective – qualifying it for use as a second tool.

There are two ways in which sterilised intervention can affect the exchange rate: the portfolio balance channel (where the change in the relative quantity of domestic securities alters the equilibrium exchange rate – if they are not perfect substitutes for foreign securities), and the signalling channel (where markets interpret the intervention as a signal that monetary policy will move in a direction consistent with the intervention). Ostry et al (2012) argue that because EMEs have imperfect capital mobility, and their assets are relatively less substitutable for global assets, the portfolio balance channel should be effective. The portfolio balance channel has been shown to be extremely weak in developed countries (e.g. Ghosh (1992)), so this is not likely to be effective in New Zealand. The signalling channel is only effective if it credibly signals future fundamentals. The fundamentals that a central bank has control over are interest rates, so if sterilised intervention operates through this channel alone it is not an independent instrument. Further, for it to have any effect at all it must be consistent with the interest rate policy of the central bank. Thus the expectations channel is may not be useful for New Zealand, as the times when we would like to intervene are when high interest rates are causing our dollar to appreciate.

Even for EMEs, Ostry et al (2012) argue that intervention should only be used if the exchange rate moves away from the level that is consistent with its medium-term equilibrium against multiple important currencies. It seems widely accepted that the New Zealand dollar is above its long-run equilibrium value, but an assertion that it differs from its medium-term equilibrium value would be subject to a lot of disagreement.

Sarno & Taylor (2001) review the empirical evidence surrounding sterilised intervention, and find support for its effectiveness, but argue the signalling channel to be far more important for developed countries. They also raise the possibility of a 'coordination channel' of intervention, where the central bank intervention serves as a catalyst for traders to move the currency to its fundamental value, which may not occur otherwise if market participants all expect other participants to keep the currency on a path away from its fundamentals. Fatum (2006) studies sterilised intervention in Japan, and finds that in the short run (less than one month), sterilised intervention is effective, even if secret and not associated with interest rate changes (in other words, not through the signalling channel).

Taylor (2001) finds that when monetary policy is allowed to react to exchange rates (i.e. when an exchange rate term is added to a Taylor rule), there is almost no improvement in outcomes, even in models where the central bank responds to current rather than future inflation and output gaps. This is because people anticipate the future changes in monetary policy that will result from the change in the exchange rate affecting inflation and output in the future. Given that actual central banks do consider the effect of exchange rate changes as they occur, it adds more weight to the argument that explicit consideration of the exchange rate is not required. Garcia, Restrepo, & Roger (2011) use a DSGE model to examine whether including exchange rates in a monetary policy rule can improve economic performance. They find that while doing so helps the economy to handle risk premium shocks, the benefits are small in developed countries, and such a rule is more suited for EMEs.

Calls for New Zealand to intervene in the foreign exchange market seem to arise when interest rate differentials cause our dollar to appreciate. In these situations, intervention is less likely to be effective, as intervention to bring the dollar down in value would not be consistent with the signalling channel, unless interest rates were credibly set to fall in the future. Intervention may be effective in the short term, but can also be costly if the exchange rate does not move in the desired direction. Uncertainty about the effectiveness of intervention is therefore the biggest hurdle to a more hands-on approach to managing the exchange rate.

Conclusions

This report has examined the literature on a selection of alternative targets for monetary policy. Given the transition costs associated with changing the target, any uncertainty of the benefits of changing the target is a major concern.

A case can be made for either redefining the inflation-target objective of monetary policy as either a band around a point, or simply putting more emphasis on the midpoint of the current range. A simple point target may provide additional benefits, but there are several uncertainties that reduce its appeal.

It is unclear whether exchange rate management could be effective in New Zealand, and there are several reasons why the benefits of price-level targeting in theory may not hold in practice. Nominal GDP targeting has some appealing qualities, but also some potentially large drawbacks. Overall, there is probably too little evidence at this stage to justify a large change to the target of monetary policy, although it would be prudent to continue to monitor international and academic developments over time, as these may reveal more information about the soundness of other monetary policy regimes.

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