
The appropriate time horizon for monetary policy

Christopher Plantier, Economics Department

Introduction

Among the many monetary policy decisions that a central bank must make, a particularly important one is the choice regarding what time horizon to adopt in responding to persistent inflationary pressure. In this context, the time horizon refers to the period over which a central bank seeks to influence inflation outcomes.

The Reserve Bank has chosen to set its monetary policy response horizon at 6 to 8 quarters ahead, such that the Bank sets monetary policy in order to bring forecast inflation towards the target level in this horizon, although forecast inflation will not always be exactly on target.

The Bank's chosen policy horizon is merely one of a number of horizons that could be adopted. Plausible arguments can be advanced for shorter or longer policy horizons; there is no single "right" answer.

This paper assesses some of the factors that need to be taken into account when assessing the choice of response horizon for monetary policy.

What factors influence the choice of policy horizon and inflation outcomes?

There are several factors to consider in the choice of policy horizon, including the behaviour of inflation expectations, the time lags between a change in monetary policy and its effects on the real economy, and the economy's response to changes in the exchange rate. Considerable uncertainty surrounds each of these factors, and each is relevant in determining how quickly inflation returns to the specified target. Moreover, the time that inflation takes to return to target will depend on the nature and persistence of any shocks hitting the economy. A price shock, such as an increase in oil prices or a sharp change in world commodity prices, will have a significant influence on the inflation path and the time required for inflation to return to target. In

addition to these uncertainties, it also needs to be recognised that the factors that influence the choice of policy horizon are not stable through time. Many of them will change as the structure of the economy changes.

In addition, the time that it takes for inflation to return to target is also significantly influenced by the weight that the central bank places on other policy objectives besides containing inflation. These other factors may include a desire to avoid excessive variability in interest rates, the exchange rate and output that can result from being 'strict' in the operation of inflation targeting. If a central bank were solely focused on bringing inflation back to target in a specified horizon, and attached zero weight to other economic considerations, then forecast inflation would always return to target in the specified horizon and the variability of other economic variables would be higher. In contrast, the Bank uses 'flexible' inflation targeting that also attempts to minimise the adverse effects of monetary policy on the real economy, and therefore incorporates both inflation and the real economy outcomes in its decisions. The consequence of this 'flexible' approach is a gentler process for monetary policy that still brings inflation towards target, but takes somewhat longer than a 'strict' interpretation would.

Why might the response horizon be extended?

The argument for a response horizon longer than 6 to 8 quarters ahead is that this extension might allow the Bank to respond more effectively to persistent elements of inflation, with a more gradualist policy process.

Conventional wisdom has it that a longer response horizon is almost always better than responding to inflation at shorter horizons. In fact, most of the Bank's research suggests that it would be better to extend the current response horizon out to 10 to 12 quarters. Ha (2000) provides an overview of the Bank's thinking on the issue of the correct inflation response horizon, and emphasises the benefits of extending

the response horizon when the central bank is uncertain about the length of the transmission lag.¹ An important conclusion of the Ha paper is that a central bank should set its response horizon to be at least as long as the monetary policy transmission lag.

Unfortunately, significant uncertainty exists about the actual length of the transmission lag, particularly given that the lag will vary depending on the structural features of an economy and how they evolve through time. Given these uncertainties, Ha emphasises that it is better to assume a longer rather than shorter transmission lag. The assumption of a longer transmission lag implies a longer monetary policy response horizon for the central bank, given the desire to avoid unnecessary volatility in output, interest rates and the exchange rate.

On the basis of the above argument, the chief reason to extend the response horizon is that a somewhat longer horizon may still achieve the desired inflation outcomes (but with a longer lag), yet at a lower cost in terms of variability of output, interest rates and the exchange rate. This argument may suggest that the Bank's current policy response horizon should be extended. However, the Bank's previous research primarily addresses the uncertainty about the monetary policy transmission lag, and does not incorporate costs that might argue for a shorter horizon.

Why might the response horizon be shortened?

Notwithstanding the above arguments, central banks generally do not choose policy response horizons longer than two years for a number of reasons. A key reason is that a longer response horizon may result in a greater variability in inflation and in significant periods where inflation outcomes are above the desired level. To that extent, a long policy response horizon may lead to a loss of central bank credibility, and consequently to expectations of higher future inflation. The increase in inflation expectations arises because the public

may doubt the central bank's desire to maintain price stability. The concern over the effect of a long policy horizon on inflation variability, inflation expectations and the credibility of the price stability goal is consistent with the Bank's somewhat shorter horizon in the early stages of inflation targeting.

The importance of inflation expectations should not be underestimated. For example, Batini and Nelson (2001) find that the optimal response horizon varies between 2 quarters ahead and 15 quarters ahead for the United Kingdom, and that the optimal horizon depends crucially on how forward-looking price-setters and the general public are.² Generally, a shorter response horizon is more appropriate when inflation expectations are more forward-looking, while a longer horizon is more appropriate when they are backward-looking.

Although the nature of inflation expectations can have significant effects on the optimal response horizon, we still do not know exactly how inflation expectations are formed. This remains an area for further study. Razzak (2002, 1997) has compiled some econometric evidence suggesting that inflation expectations may, in fact, be more forward-looking than we currently allow for in our thinking, and if this is so, a case can be made for shortening our response horizon.³

Given the uncertainty about how inflation expectations are formed, Levin, Wieland, and Williams (2001) claim that some combination of a shorter response horizon, along with the use of interest rate smoothing, provide a more robust policy alternative.⁴ The authors recommend more interest rate smoothing because they believe that it serves as an effective substitute for a longer horizon, so much so that they actually recommend a shorter response horizon than most central banks currently use. While different from that of Ha (2000), we prefer to think of this recommendation as being robust

¹ Ha, Y (2000), "Uncertainty about the length of the monetary policy transmission lag: implications for monetary policy", *Reserve Bank of New Zealand Discussion Paper DP2000/01*.

² Batini, N and E Nelson (2001), "Optimal horizons for inflation targeting", *Journal of Economic Dynamics and Control* 25, 891-910.

³ Razzak, W (2002), "Monetary policy and forecasting inflation with and without the output gap", *Reserve Bank of New Zealand Discussion Paper DP2002/03*. Razzak, W (1997), "Testing the rationality of the National Bank of New Zealand's survey data", *Reserve Bank of New Zealand Discussion Paper G97/8*.

⁴ Levin, A, V Wieland and J Williams (2001), "Performance of forecast-based monetary policy rules under model uncertainty", *European Central Bank Working Paper 68*, July.

to a particular type of uncertainty – relating to how inflation expectations are formed – rather than Ha's more general uncertainty about the length of the transmission lag.

Another issue to consider is that shorter response horizons give monetary policy-makers quicker feedback with respect to any policy errors that they might make. However, an alternative, and perhaps better, means of obtaining that feedback is for the policy-maker to look at nearer-term forecast errors to assess policy performance, without shortening the response horizon. Still another approach is to respond directly to perceived excess demand as the source of inflationary pressure, rather than only its inflationary consequences. By responding directly to perceived excess demand, the Bank may effectively reduce inflation and output variability, assuming that the Bank can measure excess demand accurately. While a longer horizon may lower output variability somewhat, the longer horizon may not work as well as an explicit response to the source of inflationary pressure.

Conclusion

It is arguable that the Bank should focus on a slightly shorter response horizon, say four quarters ahead, and use explicit interest rate smoothing so that policy can be unwound more gradually. With significant interest rate smoothing, Levin,

Wieland, and Williams (2001) claim that monetary policy is more robust with respect to uncertainty about how inflation expectations are formed. Also, the Bank's own research has shown that interest rate smoothing is not very costly, even with our current view of how inflation expectations are formed (see Drew and Plantier (2000)).⁵

Others may dismiss the shorter horizon/interest rate smoothing view because they believe that the same outcomes can be achieved by extending the response horizon. For example, the Bank's research suggests that extending the response horizon to 10-12 quarters ahead would be an effective way of dealing with uncertainty regarding the length of the monetary policy transmission lag.

The Bank currently states that it responds to inflation 6 to 8 quarters out, and this response horizon essentially splits the difference of opinion down the middle. This middle of the road approach (as well as the Bank's flexible approach to inflation targeting) remains appropriate until further evidence and research strongly supports one view over the other. Until then, the Bank should and does look at different suggested policy settings derived from alternative policy response horizons – as with the use of Taylor rules of various specifications. These alternatives provide useful cross-checks on our current thinking that a central bank should focus on inflationary pressure 6 to 8 quarters ahead.

⁵ Drew, A and C Plantier (2000), "Interest rate smoothing in New Zealand and other dollar bloc countries", *Reserve Bank of New Zealand Discussion Paper DP2000/10*.