

# Comments on: “The implications of uncertainty for monetary policy”

Geoffrey Shuetrim and Christopher Thompson

Comments by Arthur Grimes, Institute of Policy Studies, Victoria University of Wellington

As a former monetary policymaker, I can testify, with certainty, to the importance of the subject matter of Shuetrim and Thompson's paper. Policymakers are faced with all sorts of uncertainties. The paper comes to interesting, and somewhat surprising, conclusions. I am uncertain, however, the extent to which the conclusions are specific to the author's approach, as opposed to having more general validity.

In this commentary, I summarise briefly what I see as the major contribution of the paper. I then analyse various features which may cause us to question the generality of the paper's results. However, these features do not deny the possibility that the paper's findings are correct. I discuss the possibility that if one accepts the findings are correct, they imply that policy targets, rather than policy implementation, may need attention.

## Key findings

Monetary policymakers are normally characterised as conservative gentlemen<sup>1</sup> who implement conservative policies. This includes the practice of not implementing large changes in policy instruments (vis the prevalence over the past decade in the United States and elsewhere of quarter to half percentage point movements in discount rates at times of policy changes).

Apart from inherent conservatism, this approach can be grounded in the theoretical findings of Brainard (1967) that faced with model uncertainty the appropriate policy response is normally to “do less” than under conditions of certainty. Shuetrim and Thompson (ST) describe this result. Under some conditions, this result does not hold, and it is theoretically possible, as shown by ST, for the optimal policy response to be to “do more” under uncertainty.

The main contribution of the paper is to determine, both theoretically and within an empirical model of the Australian economy, whether policy should “do less” or “do more” in the face of model parameter uncertainty than under the more normal (but incorrect) approach of treating model parameters as being certain. ST find that monetary policy responses (cash rate movements) should initially be larger in their model under uncertainty than under certainty in response to most shocks (excluding exchange rate shocks). This is a counter-intuitive result to an ex-central banker - but all the more interesting for that.

---

<sup>1</sup> Senior central bankers in most jurisdictions are still men. The “gentleness” is a matter for greater debate in some jurisdictions, but in my experience normally also holds true.

The driving force behind this result is that ST consider uncertainty surrounding the dynamic behaviour, rather than just uncertainty regarding the steady-state behaviour, of the economy. When dynamic reactions are uncertain, the policy response is greater because there is a chance that the initial response (at the certainty level) is too small, whereas if the initial response (under uncertainty) happens to be too large it can be partially unwound in subsequent periods.

## Issues

Any result such as this, obtained within an empirically estimated model, will be subject to a range of modelling issues. I will attempt to concentrate on “higher level” issues rather than engage in commenting on detailed aspects of the estimation of the model. Comments about the model (including the shocks) are restricted to three points.

Firstly, as ST acknowledge, their result is obtained within a backward-looking, linear model. Intuitively, the risk of over-reacting is less in this type of model than it would be in a non-linear model with rational expectations. The latter type of model may magnify any over-reaction and so cause greater instability than under the model structure that ST adopt. This may call into question the generality of their results in a rational expectations and flexible price world.

Secondly, the shocks applied to the model are assumed to be of a one-off nature. If the shocks instead were mean-reverting or negatively auto-correlated (eg a dock strike<sup>2</sup> which restricts exports in one quarter but is followed by higher exports the following quarter) the result may be quite different. In this case, intuitively, a “more active” policy could be destabilising rather than a less active policy. To “do more” under such a shock, especially with lagged responses to policy actions, could result in pro-cyclical rather than counter-cyclical outcomes.

Thirdly, there is something of a contradiction between, on the one hand, the model’s aversion on the behalf of policymakers to interest rate changes and, on the other, a finding that policymakers should “do more” to offset shocks than the response under certainty would indicate. ST’s model (in keeping with other like models) contains a policymaker’s quadratic loss function which includes interest rate changes as a contributor to the loss. The model specifically excludes any form of uncertainty other than parameter uncertainty. An explicit maintained hypothesis of the paper is therefore that the model is a complete and accurate specification of all relevant economic relationships (other than parameter uncertainty). Hence the inclusion of the interest rate term in the loss function cannot reflect other unspecified economic losses due to interest rate changes. Instead, it presumably reflects a presumption that policymakers have a utility function which makes them conservative in implementing policy. But the results of the paper indicate that in most cases they should not be conservative! This problem reflects the fact that in models such as this, some parameters in the loss function are not grounded in any structural sense.

At a deeper level, we can ask what does parameter uncertainty really mean? We know that the Australian economy comprises roughly 18 million individuals (who interact with billions of individ-

---

<sup>2</sup> This being an Australian paper.

uals offshore). It is well known that we cannot accurately aggregate across individuals (except under the most extraordinary assumptions) so it must be the case that the model cannot be “true” in any sensible meaning of the word. Yet the paper is predicated on the basis of the existence of a “true” model which is subject solely to parameter uncertainty. As a modelling approach, this is perhaps appropriate, but at a philosophical level this does not appear to be sustainable, even though the authors are in strong company (along with all other macro modellers including, at times, this commentator). Nevertheless it should give us cause for reflection about what can be regarded as “true” and “false” (and “certain” or “uncertain”) in models such as these.

## Policy implications

The paper is useful in provoking some thoughts as to what the policy implications of parameter uncertainty may be. ST are careful to state that their results are not definitive with regard to implementation of policy. However let us assume,<sup>3</sup> for the purpose of exploration, that their model is a correct representation of the world and that their results are accurate. What might the implications be for policy-making? At first glance the implication appears to be that, except for exchange rate shocks, policymakers should be more active rather than less active in their policy responses in the face of shocks under uncertainty than if they were to treat the coefficients as being certain.

We can turn this around, however, and ask what the results imply for the nature of optimal targets if a policymaker is conservative; ie if the policymaker’s loss function includes an aversion to large interest rate changes.

The empirical model used by ST is a quarterly model. The ratio of uncertainty surrounding dynamic to steady-state coefficients in a quarterly model will be larger than under an annual model, which in turn will be larger than in a model estimated over periods coinciding with the length of the business cycle (eg 5-10 year windows). In the latter case, dynamic coefficients may be estimated with great certainty to be approximately zero. According to the paper, in this case the likely policy response under uncertainty will generally be to “do less” than under certainty. Thus a conservative central banker (ie one who wishes to “do less”) will generally favour a longer time horizon for targeting inflation the greater is the degree of dynamic uncertainty.

In practice, it is perhaps not surprising from the results of the paper that (conservative) policymakers do not have targets for the quarterly inflation rate. At the minimum (as in New Zealand), inflation targets are specified over annual periods and even then (in the New Zealand case) there are caveats allowing the effects of large shocks to be ignored temporarily. In the Australian case, the targets are specified as being considered over the length of the cycle, in which case the effects of dynamic uncertainty are small compared with steady-state uncertainty. Thus Australian central bankers can probably be content with “doing less” than New Zealand central bankers: but both may still “do less” than they would under conditions of certainty.

---

<sup>3</sup> As all card-carrying economists on occasions do.

## References

Brainard, William, (1967). "Uncertainty and the Effectiveness of Policy," *American Economic Review*, 57(2), pp.411-425. Shuetrim, Geoffrey & Christopher Thompson, (1998). "The Implications of Uncertainty for Monetary Policy," Paper presented to the Reserve Bank of New Zealand Workshop on *Monetary Policy Under Uncertainty*, Wellington, June.