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Won’t Get Fooled Again – Or Will We? Monetary Policy, Model Uncertainty, and ‘Policy Model Complacency’

July 2015
Working Paper 16/2015
Department of Economics
The New School for Social Research

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Won’t Get Fooled Again – Or Will We? Monetary Policy, Model Uncertainty, and ‘Policy Model Complacency’

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January 22, 2016

Abstract

The question addressed in this paper is: can monetary policy succeed in stabilizing the economy even when the policy model on which it is predicated is mis-specified? Using variants of the 3-equation macroeconomic model, it is shown that this question can be answered in the affirmative. The purpose of the paper is not to encourage indifference towards model uncertainty, however, but rather to warn against the perils of “policy model complacency”. This arises if the success of policy is misinterpreted as successful understanding of the workings of the economy, which makes the policy maker vulnerable to surprises: events with systematic origins in the “true” model of the economy that are not anticipated by the (mis-specified) policy model. To safeguard against this problem, policy makers should always entertain eclectic views of the workings of the economy. This task is easily accomplished by paying attention to heterodox macroeconomics, which frequently makes predictions that are very much at variance with those of the dominant policy model.

JEL codes: E12, E13, E52, E58
Keywords: Monetary policy, central banking, model uncertainty, Lucas critique, Tinbergen principle

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1 Introduction

Prior to the onset of the Great Recession, mainstream macroeconomics was in thrall to the idea of a “Great Moderation”, according to which there had been a marked reduction in the cyclical volatility of advanced capitalist economies since the 1980s. This coincided with the notion that, aided by the New Consensus Macroeconomics (NCM) as codified in dynamic, stochastic general equilibrium (DSGE) models, monetary policy had been refined to the point of a science (Clarida et al., 1999). Indeed, a popular hypothesis posited that the Great Moderation was, in fact, a product of good monetary policy (see, for example, Galí and Gambetti (2009)). From the perspective of heterodox macroeconomics, this thinking completely overlooked the steady accumulation of financial fragility associated with the deteriorating balance sheets of households, caused not by optimal consumption smoothing but attempts to shore up consumption growth in the face of stagnating real wages (Godley and Izurieta, 2002; Palley, 2002; Cynamon and Fazzari, 2008). Following the onset of the Great Recession, mainstream macroeconomics was sanguine about the prospects for recovery. Feldstein (2010) predicted that US growth would accelerate in the second decade of the twenty-first century despite a decline in the natural rate of growth, precisely because of the prospects for rapid adjustment back towards the economy’s potential output path afforded by the severity of the Great Recession. Heterodox macroeconomics was far less optimistic, however (see, for example, Cynamon et al., 2013). It suggested a choice between either once again “winding up the clock springs” of unsustainable household debt accumulation (an outcome considered unlikely because of the propensity of debtors to de-leverage following a financial crisis) or secular stagnation, resulting from manifestation of innate problems with the demand-generating process as identified by Palley (2002) and others.

In light of all this, it is tempting to conclude that the last two decades have witnessed two examples of catastrophic predictive failure on the part of mainstream macroeconomics.
coinciding with two examples of marked predictive success on the part of heterodox macroeconomics. One might even expect to have witnessed at least the seeds of a macro-theoretic revolution in policy circles in response to these events. There has certainly been no shortage of calls for such a revolution, with even authors previously well-respected in policy-making circles, such as [Goodhart (2009), pp.826-7], describing the NCM as a “fair weather” framework that drastically over-simplified real-financial interactions in the economy and, as a consequence, led policy makers astray\(^1\) But instead of this revolution, NCM models have been “patched up” with financial frictions and ad hoc appeals to “behavioralism” so that they can explain the Great Recession after the event. Meanwhile, mainstream macroeconomics has belatedly discovered the possibility of secular stagnation in an “NCM friendly” form that identifies the phenomenon with a persistently negative natural rate of interest in an environment of low inflation and near-zero nominal interest rates ([Summers] 2014). As one distinguished commentator on the history of ideas attests:

> the Great Recession of 2007-09 and the related financial crisis stimulated impassioned cries for a deep conceptual reform of economics – and not just form the clueless outsider, but from some mainstream economists as well. Yet little has changed. Some financial equations were added to the fundamentally real-business-cycles core of ... DSGE models; preference functions were generalized to nest some hypotheses drawn from behavioral economics and psychology; but fundamental conceptual change has proved to be tiny-to-nonexistent, and the established paradigms of economics remain unshaken. ([Hoover] 2015, pp.7-8)

If the case for a macro-theoretic revolution has seemingly been rejected, can it be argued that in light of recent experience, there should at least be significant evolution in policy making that affords greater prominence to heterodox macro theory and its fundamentally

\(^1\)The “no Ponzi” requirements built into the optimal control problems that lie at the core of NCM models, and that rule out the possibility of default by assumption, are a particular source of Goodhart’s ire.
different conceptions of the workings of an advanced capitalist economy? This paper makes the case that it is in the self-interest of policy makers themselves to adopt this course of action. The starting point is the observation that recent experience, as documented above, raises important questions about macro policy models and the potential vulnerability of policy makers to model uncertainty. Variants of a generic 3-equation short-run macroeconomic model are used to show that it is possible for modern monetary policy to work even if the macroeconomic model on which the central bank bases its policy interventions is mis-specified. In what follows, “modern monetary policy” is understood to consist of an interest rate operating procedure (IROP) on the basis of which the central bank changes the interest rate in response to deviations of one or more macroeconomic variables from their target values. Monetary policy is understood to work, meanwhile, if it succeeds in stabilizing the economy – more specifically, if it results in the movement of targeted macroeconomic variables towards their target values. The paper therefore provides examples of the efficacy of monetary policy in the face of policy model uncertainty, suggesting initially that the latter need not altogether impede successful policy. The ultimate purpose, however, is not to encourage indifference towards model uncertainty, but instead to warn against the perils of “policy model complacency”. Specifically, it is suggested that, precisely because policy may work even when the underlying policy model is mis-specified, central banks are vulnerable to “surprises” – that is, events with systematic origins in the “true model” of the economy that are not anticipated by the policy model because of profound errors of omission in the latter that assert themselves at low frequency. It is argued on this basis that in order to avoid vulnerability to such surprises, central bankers would be well advised to entertain far more eclectic views of how the economy operates. This can be achieved by paying more attention to models that lie outside the mainstream of macroeconomic thinking, and that make predictions that are very often greatly at variance with those of the dominant class of models on which policy making is based at any given point in time.
The remainder of the paper is organized as follows. The next section outlines the basic 3-equation NCM model on which the exercises in subsequent sections are based. Sections 3 and 4 then examine the consequences for monetary stabilization policy of two different examples of policy model mis-specification. The first involves mis-specification of the IS curve, the second mis-specification of the Phillips curve. Section 5 reflects on the lessons to be drawn from the results of the two previous sections. The chief among these is that the seeming ability of successful stabilization policy to survive policy model mis-specification should not be allowed to foster policy model complacency, and that policy makers can avoid this outcome by paying more attention to heterodox macroeconomics. Section 6 concludes.

2 A basic 3-equation model

Both examples of model mis-specification and its consequences for stabilization policy of policy that are examined in this paper are derived from (extensions to) a generic variant of the 3-equation short-run macroeconomic model (see, for example, Carlin and Soskice (2005)). This can be thought of as a “consensus technology” that can be derived from either mainstream optimizing micro-foundations (see Clarida et al. (1999), among others) or heterodox behavioral relationships (see, for example, Setterfield (2009)), and that captures certain basic short-run properties of the economy. Carlin and Soskice (2005) draw attention to variants of the 3-equation model that differ with respect to their lag structures. The analysis in this paper is, however, conducted in continuous time, as a result of which the models developed do not have lag structures. This modeling choice is defensible in light of the focus of the paper on stability. In Carlin and Soskice (2005), the lag structure of different 3-equation models is shown to be important because it affects the ease with which the central bank’s policy reaction function can be associated with the optimization of a loss function. In other words, lag structure is important for the conduct of welfare analysis rather than
stability analysis.

2.1 The IS curve

The IS curve, relating the interest rate to the level of output, takes the following form:

\[ y = A - \delta r \]
\[ r = b + m \]
\[ \Rightarrow y = A - \delta(b + m) \]  

(1)

where \( y \) denotes output, \( r \) is the commercial loan rate, \( b \) is the base (overnight) interest rate set by central bank, and \( m \) is the mark up applied to \( b \) by commercial banks (so that \( m = r - b \) is the spread between the central bank’s overnight rate and the commercial loan rate). \( A \) captures factors that influence \( y \) independently of \( r \), and is taken as given. All variables are in real terms. In mainstream macroeconomics, the IS curve reflects the effects of changes in optimal saving behavior in response to changes in the interest rate. In heterodox macroeconomics, it captures the interest-sensitivity of components of autonomous demand that are debt-financed \cite{Setterfield2009,O'DonnellandRogers2016}.

2.2 The Phillips curve

The Phillips curve, written as a relationship between inflation and real output (rather than the rate of unemployment) is stated as:

\[ p = \psi + \phi p^e + \alpha y \]  

(2)

\cite{O'DonnellandRogers2016} refer to the inverse relationship between output and the interest rate as an IY curve to distance the fundamentalist Keynesian behavioral foundations of their construct from those of the neoclassical synthesis, with which they associate the “IS curve” nomenclature.
where \( p \) and \( p^e \) are the actual and expected rates of inflation, respectively. Setting \( p^e = p \) yields a long-run Phillips curve of the form:

\[
p = \frac{1}{1 - \phi} (\psi + \alpha y)
\]  

(3)

which expresses a direct long-run relationship between output and inflation. This is characteristic of the integration of nominal and real variables in a monetary production economy stressed in heterodox macroeconomics.

Note, however, that if we set \( \phi = 1, p^e = p_{-1}, \) and \( \psi = -\alpha y_n \) (where \( y_n \) denotes the natural level of output determined on the supply-side of the economy), then the Phillips curve in (2) can be re-written as:

\[
\dot{p} = \alpha (y - y_n)
\]  

(4)

In this case, the Phillips curve takes a form that is recognizable from mainstream macroeconomics. It is vertical in inflation-output space (\( \dot{p} = 0 \) yields the unique equilibrium output solution \( y = y_n \)) and the accelerationist hypothesis applies: any lasting deviation of \( y \) from \( y_n \) will cause inflation to increase or decrease without limit.

2.3 The interest rate operating procedure

The central bank’s reaction function or interest rate operating procedure (IROP) takes the following form:

\[
\dot{b} = \lambda (p - p^T) + \mu (y - y^T)
\]  

(5)

In general, then, the central bank changes the base interest rate in response to deviations of inflation and/or output from their target levels \( (p^T \) and \( y^T \), respectively), where \( y^T = y_n \)
in the event that the Phillips curve is vertical (as in equation (4)). From a mainstream perspective, equation (5) can be thought of as capturing the spirit of the Taylor rule, according to which the central bank chooses to use the overnight rate as its policy instrument. From a heterodox perspective, the same equation is consistent with the “activist” approach to monetary policy in an endogenous money environment, in which the instrument of monetary policy is necessarily the overnight rate (Fontana and Palacio-Vera, 2006; Palley, 2007).

2.4 Stability

It is straightforward to show that the NCM model in equations (1)-(5) is stable. First, note that it follows from equations (1) and (5) that:

\[ \dot{y} = -\delta [\lambda (p - p^T) + \mu (y - y^T)] \] (6)

When the Phillips curve is vertical and embodies the accelerationist hypothesis (as in equation (4)), we have:

\[ \dot{p} = \alpha (y - y_n) \] (7)

and \( y^T = y_n \) in equation (6). Substituting \( y^T = y_n \) into equation (6) and solving the resulting equation, together with equation (7), under the equilibrium conditions \( \dot{y} = \dot{p} = 0 \) yields the equilibrium solutions \( y = y_n \) and \( p = p^T \). This describes a unique equilibrium configuration consistent with policy maker’s target values of inflation and output. The same equations yield the Jacobian:

\[
J = \begin{bmatrix}
-\delta \mu & -\delta \lambda \\
\alpha & 0
\end{bmatrix}
\] (8)
from which it can be seen that \( \text{Tr}(J) = -\delta \mu < 0 \) and \( \text{Det}(J) = \delta \lambda \alpha > 0 \) – i.e., that the system is stable in the vicinity of its equilibrium.

Suppose now that the Phillips curve is of the form in equation (2) that admits a long-run relationship between inflation and output as in equation (3). Following Flaschel et al. (1997), assume that decision makers possess myopic perfect foresight, so that \( p^e = p \). Then it follows that:

\[
\dot{p} = \alpha \dot{y}
\]

which, on the basis of (6), means that:

\[
\dot{p} = -\alpha \delta [\lambda (p - p^T) + \mu (y - y_n)]
\]  
(9)

Under the equilibrium conditions \( \dot{y} = \dot{p} = 0 \), both (6) and (9) yield:

\[
p = (\lambda p^T - \mu y^T) + \mu y
\]

This expression tells us that, consistent with the direct long-run relationship between output and inflation in equation (3), there now exists a continuum of equilibrium values of \( p \) and \( y \). Equations (6) and (9) also yield the Jacobian:

\[
J = \begin{bmatrix}
-\delta \mu & -\delta \lambda \\
-\alpha \delta \mu & -\alpha \delta \lambda
\end{bmatrix}
\]  
(10)

from which it follows that \( \text{Tr}(J) = -\delta (\mu + \alpha \delta) < 0 \) and \( \text{Det}(J) = \delta^2 \mu \lambda \alpha - \delta^2 \mu \lambda \alpha = 0 \). The singularity of this matrix is consistent with the continuum of equilibria previously identified, while \( \text{Tr}(J) < 0 \) implies the (local) stability of each of these multiple equilibrium configurations.
3 Monetary policy with a mis-specified IS curve

In this and the next section, we develop two extensions of the generic 3-equation model introduced above. Each of these extensions provides an example of the impact of policy model mis-specification on stabilization policy. We begin with an example in which the central bank mis-specifies the IS curve. Assume that the “true” model of the economy consists of equations (1) and (4), augmented by:

\[ m = -\eta b \]  

(11)

Equation (11) is a simplified version of the endogenous commercial bank mark up modeled by Setterfield and von Seekamm (2012). It is consistent with the hypothesis that in an environment of fundamental uncertainty about the future, commercial banks perceive an information asymmetry between themselves and the central bank, and act on the basis of this perception. Specifically, commercial banks believe that the central bank has more and/or better information about the likely future state of the economy than they do themselves. As a result, they raise their mark ups if the central bank cuts its overnight rate, interpreting a cut in \( b \) as an indication of a weakening of the general state of the economy, and hence an increase in the risk of default, and hence an increase in lenders’ risk. The relationship between \( m \) and \( b \) to which this behavior gives rise is consistent with empirical evidence suggesting that in the US, the Federal Funds rate is negatively correlated with credit spreads (Weise and Barbera, 2009).

The policy model used by the central bank, meanwhile, is assumed to consist of equations (1) and (4), augmented by:

\[ m = \bar{m} \]  

(12)
Substituting equation (11) into equation (1) reveals that the IS curve in the “true” model is:

\[ y = A - \delta (1 - \eta) b \] (13)

whereas that used by the central bank in its policy model, based on equations (1) and (12), is:

\[ y = (A + \delta \bar{m}) - \delta b \] (14)

The IS curve used by the central bank is clearly mis-specified. In fact, the policy model used by the central bank is vulnerable to the Lucas critique, since it involves the central bank taking as given (in equation (12)) a “parameter”, \(m\), that is actually endogenous to its own policy variable, \(b\) (in equation (11)). Blind to this issue, and therefore thinking itself to be confronting nothing more than a conventional NCM reality (represented by equations (4) and (14), the central bank therefore conducts monetary policy using the IROP in equation (5) (with \(y^T = y_n\)).

What are the implications for stabilization policy? It follows from equation (13) that:

\[ \dot{y} = -\delta (1 - \eta) \dot{b} \]

Substituting equation (5) into this expression yields:

\[ \dot{y} = -\delta (1 - \eta) [\lambda(p - p^T) + \mu(y - y_n)] \] (15)

Meanwhile, it follows from equation (4) that:

\[ \dot{p} = \alpha (y - y_n) \] (16)
Solving equations (15) and (16) under the equilibrium conditions $\dot{y} = \dot{p} = 0$ yields the equilibrium solutions $y = y_n$ and $p = p^T$. In other words, the system possesses a unique equilibrium consistent with policy maker’s target values of inflation and output. At the same time, it follows from these same equations that:

$$J = \begin{bmatrix} -\delta(1 - \eta)\mu & -\delta(1 - \eta)\lambda \\ \alpha & 0 \end{bmatrix}$$

(17)

Inspection of the Jacobian in (17) reveals that the (in)stability of the economy is crucially affected by the endogeneity of rate spreads to the overnight rate ($\eta \neq 0$), since $\text{Tr}(J) = -\delta(1 - \eta)\mu$ and $\text{Det}(J) = \delta(1 - \eta)\lambda\alpha$. This is, of course, precisely the behavioral feature of the commercial banking sector to which the central bank’s policy model fails to attend. Note, however, that both $\text{Tr}(J) = -\delta(1 - \eta)\mu < 0$ and $\text{Det}(J) = \delta(1 - \eta)\lambda\alpha > 0$ as long as $\eta < 1$. The system is therefore stable as long as the commercial bank’s reaction to changes in the overnight rate is not “too large” (specifically, as long as it is somewhat less than proportional). While this condition might be violated during a time of economic and financial crisis (such as that experienced from late 2007 through early 2009, for example), it otherwise appears plausible.

The upshot of this analysis is, therefore, that the central bank’s mis-specification of its policy model does not prevent successful execution of monetary policy. The intuition behind this result is straightforward. Stabilizing the economy requires that the real commercial interest rate rises (falls) in response to the central bank increasing (decreasing) the overnight rate (the so-called Taylor principle). Although the behavior of commercial banks in equation (11) acts against this, it will not (in general) so completely offset the central bank’s policy interventions as to set up a destabilizing indirect relationship between the overnight rate and the commercial rate. The central bank is therefore free to practice successful stabilization policy in blissful ignorance of the endogeneity of commercial bank behavior to its policy
variable. Note that given the nature of the model mis-specification entertained, the result in this section also serves to demonstrate that the Lucas critique does not always matter. Even when the problem posed by the critique exists (as it does in this exercise, by design), it need not thwart successful policy intervention.

4 Monetary policy with a mis-specified Phillips curve

Suppose now that the “true” model consists of equations (1), (2), and (12) augmented by:

\[
\dot{p}^e = -(1 - k)(p - p^T)
\]  

(18)

Following Lima et al. (2014), equation (18) describes the expected rate of change of inflation \(\dot{p}^e\). This is seen to vary inversely with the product of: (a) the difference between the actual and target rates of inflation \((p - p^T)\); and (b) the fraction of credulous agents in the population \((1 - k)\), whose inflation expectations are anchored to the policy target, \(p^T\) (so that \(p^e_c = p^T\) where \(c\) denotes a credulous agent). (The remaining fraction of the population, \(k\), consists of incredulous agents who are assumed to set their inflation expectations adaptively in accordance with the currently observed inflation rate, so that \(p^e_i = p\) where \(i\) denotes an incredulous agent). Equation (18) is derived as follows. The expected change in the rate of inflation is a weighted average of the change in inflation expected by incredulous agents \(\dot{p}^e_i\) and the change in inflation expected by credulous agents \(\dot{p}^e_c\). In other words, \(\dot{p}^e = k\dot{p}^e_i + (1 - k)\dot{p}^e_c\). As credulous agents expect the convergence of current inflation to the policy convention, \(p^T\), while incredulous agents expect inflation to remain unchanged from its current rate, it follows that \(\dot{p}^e_c = p^T - p\) and \(\dot{p}^e_i = 0\). Substituting these expressions for \(\dot{p}^e_c\) and \(\dot{p}^e_i\) into the equation for \(\dot{p}^e\) stated previously yields equation (18).

\[^3\]In this paper, the fractions of credulous and incredulous agents in the population are taken as given, as in Lima and Setterfield (2008). See Lima et al. (2014), however, for treatment of \(k\) as evolving endogenously in accordance with a satisficing evolutionary dynamic.
The policy model used by the central bank, meanwhile, is now assumed to consist of equations (1), (4) and (12) augmented by:

\[ p = p^T \]  

(19)

The rationale for equation (19) is that, following Lima et al. (2014), the central bank assumes that the rate of inflation is managed by a different policy authority using a non-monetary instrument (such as formal indexation or, as in Lima et al. (2014), an incomes policy). It therefore perceives its role as being only to adjust real output towards the target value of output \( y^T \) (which it interprets – incorrectly in view of equation (2) – as the natural level of output, \( y_n \)) in order to eliminate inflationary/disinflationary pressure arising from the (perceived) operation of the accelerationist hypothesis in equation (4). In view of all this, the central bank adopts the IROP:

\[ \dot{b} = \mu(y - y^T) \]  

(20)

In this case, the central bank’s mis-specification of its policy model appears to render policy making vulnerable to the problem associated with violation of the Tinbergen principle\(^4\), according to which there must be as many policy instruments as targets. Because of the trade-off between \( p \) and \( y \) in equation (2), ceteris paribus the target level of output \( y^T \) will be consistent with the target rate of inflation \( p^T \) only by chance. By using one policy instrument \( b \) to (implicitly) pursue two policy targets, the central bank is thereby unknowingly guilty of using too few instruments to pursue too many policy targets.

Once again, the critical question is: how does this affect stabilization policy? Combining equations (1) and (12) yields:

\[^4\text{See Tinbergen (1952).}\]
\[
y = (A + \delta \bar{m}) - \delta b
\]

from which it follows that:

\[
\dot{y} = -\delta b
\]

Substituting equation (20) into this expression yields:

\[
\dot{y} = -\delta \mu (y - y^T)
\]

(21)

Meanwhile, it follows from equation (2) that:

\[
\dot{p} = \phi \dot{p}^e + \alpha \dot{y}
\]

(22)

Here, the actual change in inflation depends on the expected change in inflation and the actual change in output. Substituting the descriptions of \( \dot{p}^e \) and \( \dot{y} \) in equations (18) and (21), respectively, into equation (22), we arrive at our final expression for the rate of change of inflation:

\[
\dot{p} = -\phi(1 - k)(p - p^T) - \alpha \delta \mu (y - y^T)
\]

(23)

Solving equations (21) and (23) under the equilibrium conditions \( \dot{y} = \dot{p} = 0 \) yields the equilibrium solutions \( y = y^T \) and \( p = p^T \). We again see that a unique equilibrium configuration exists, consistent with the target values of output and inflation. Furthermore, it follows from these same equations that:

\[
J = \begin{bmatrix}
-\delta \mu & 0 \\
\alpha \delta \mu & -\phi(1 - k)
\end{bmatrix}
\]

(24)
As is evident from the Jacobian in (24), since \( \text{Tr}(J) = -(\delta\mu + \phi[1-k]) \) and \( \text{Det}(J) = \delta\mu\phi(1-k) \), the (in)stability of the economy is clearly sensitive to an aspect of the “true” model \( (k \neq 0) \) that the central bank has failed to incorporate into its policy model. Since \( \text{Tr}(J) = -(\delta\mu + \phi[1-k]) < 0 \) and \( \text{Det}(J) = \delta\mu\phi(1-k) > 0 \) as long as \( k < 1 \), however, the system is stable as long as inflation expectations remain heterogeneous – specifically, as long as at least some private sector decision makers remain credulous and continue to invest faith in the inflation target \( p^T \) as an anchor for their inflation expectations. While this condition might be violated during a period of increasing inflation and enhanced inflation volatility (such as was experienced during the 1970s), it otherwise appears reasonable, especially in light of survey evidence suggesting that there exist persistent differences in inflation expectations within the private sector.\(^5\)

It is once again the case, then, that a mis-specified policy model does not prevent successful execution of monetary policy. This time, the nature of the model mis-specification means that the result derived in this section also serves to demonstrate that the Tinbergen principle, according to which the successful execution of policy requires at least as many policy instruments as there are policy targets, does not always apply. One policy instrument \((b)\) apparently suffices to pursue two policy targets \((p^T \text{ and } y^T)\). The intuition behind this result is that there are, in fact, two adjusting variables in the system \((b \text{ and } p^e)\), one of which is adjusted by the central bank, the other adjusting unbeknownst to the central bank (whose policy model overlooks its adjustment) in accordance with private-sector behavior. It is the combined adjustment of these variables that stabilizes the economy. To be more precise, the limited adjustment of \( \dot{p}^e \) implied by heterogeneous inflation expectations, as a result of which \( \dot{p}^e_i = 0 \) and the expected change in the rate of inflation is rendered “sticky”, complements central bank interventions in such a way as to make the latter sufficient for the successful prosecution of monetary policy.\(^6\) As a consequence, even when the Tinbergen

\(^5\)See Lima et al. (2014, pp.257-63) for a recent survey of this literature.

\(^6\)This result dove-tails with one of the key conclusions reached by Mankiw et al. (2004) (whose “sticky
principle is violated (as it is in this exercise, by design) it need not thwart successful policy intervention.

5 Monetary policy, model uncertainty, and the perils of “policy model complacency”

The analysis in the preceding sections presents monetary authorities with both good and bad news. The good news appears obvious: the efficacy of modern monetary policy is at least somewhat robust to policy model mis-specification, and is therefore invulnerable to at least some sources of model uncertainty.

The bad news is rather more subtle, emanating as it does from the potential for the good news outlined above to give rise to ‘policy model complacency’. As has been illustrated, central bank policy may succeed even when the central bank’s understanding of the macroeconomy is in some way deficient or incomplete. The danger, then, is of the success of policy being misinterpreted as successful understanding of the underlying workings of the economy itself, when in fact it need indicate no such thing. In other words, policy makers may be tempted to celebrate successful policy as an indication of their successful understanding of the economy, without their actually knowing the “true model” governing macroeconomic outcomes at all. The resulting ‘policy model complacency’ creates vulnerability to surprises: events with systematic origins in the workings of the “true” model, and that are not anticipated by the mis-specified policy model used by the central bank, that arise whenever aspects of the “true model” that are hidden from the view of policy makers assert themselves.

Model uncertainty is a phenomenon of which mainstream macroeconomic theorists are well aware (McCallum 1988; Taylor 1999; Brock et al. 2003, 2007; Cogley and Sargent 2003; 2007; Mankiw and Reis 2002, 2003; Cogley and Sargent 2007; Brock et al. 2003; 2007; Mankiw and Reis 2002, 2003).
But in mainstream macroeconomics, model uncertainty is limited to variations within the NCM class of models, and the understanding is that it can be addressed and overcome in a manner that results in the selection of a policy rule that, in all circumstances, “works well” (as in various of the contributions to Taylor (1999)) or is even optimal. Hence Cogley et al. (2011) use Bayesian forecasting methods to parameterize a Taylor rule so as to minimize the average losses associated with implementation of the rule in a variety of (NCM) models. This approach creates the impression of a “fault tolerant” policy model – one that is ultimately robust to sources of model uncertainty – when, from a heterodox perspective (and as events such as the onset of the Great Recession and subsequent secular stagnation arguably attest), any such fault tolerance is strictly local.

Both of the models developed in sections 3 and 4 provide examples of the vulnerability to surprise inherent in policy model complacency. In section 3, the necessary condition for stability – that \( \eta < 1 \) – may be plausible in general, but may cease to be true in particularly turbulent times. In the event that \( \eta \) does, indeed, become “too large” in this fashion (so that \( \eta \geq 1 \) – i.e., rate spreads become strongly counter-cyclical), the difference between the “true” model and the central bank’s mis-specified policy model will assert itself to the central bank’s disadvantage. A monetary policy that previously appeared to be working seamlessly (thus appearing to validate the central bank’s policy model) will suddenly cease to stabilize the economy. Similar events will unfold in the model discussed in section 4 if \( p_T \) loses all credibility with the private sector so that we observe \( k = 1 \). Once again a monetary policy that previously appeared to be working flawlessly (thus again appearing to validate the central bank’s policy model) will suddenly cease to stabilize the economy.

This is the substance of Goodhart’s claim, cited earlier, that the essential failing of the NCM is that it is a suite of “fair weather” models.

“Fault tolerance” is a term commonly used in the design of computer systems. It refers to the capacity of a system to continue operating properly even if a fault in one or more of its components becomes manifest. Operating quality may (but need not) decline somewhat, but in all events a total breakdown of the system is avoided. This outcome is sometimes called “graceful degradation”.

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only do the conditions under which monetary policy will cease to work in sections 3 and 4 have intuitive behavioral interpretations (rate spreads become strongly counter-cyclical; policy-makers’ inflation target loses all credibility as an anchor for inflation expectations), it is also possible to imagine real-world circumstances under which these conditions have emerged (the 2007-09 financial crisis and the Great Inflation of the 1970s, respectively). From a mainstream perspective (at least prior to the post hoc re-engineering of DSGE models noted by [Hoover (2015)]), such occurrences can only be understood as “tail events”. From a heterodox perspective, however, they represent a greater failure on the part of mainstream macroeconomics to account for systematic features of the “true” model – features that may give rise to events that occur at low frequency, but that are nevertheless something other than just remotely possible random events that “no-one could see coming”\textsuperscript{8}. It is the mistaken faith too narrow a set of priors that results in policy model complacency and vulnerability to surprise.

By design, the models developed in sections 3 and 4 lend themselves to this heterodox interpretation of events, introducing heterodox behavioral elements (such as a non-vertical Phillips curve and mark-up pricing by commercial banks that is influenced by the perception of lender’s risk) into the specification of the “true” model. The 2007-09 financial crisis, meanwhile, can be interpreted as a real-world case study of the heterodox perspective and the attendant problems of policy model complacency and vulnerability to surprise. In this case, a dominant (NCM) suite of policy models, featuring neither banks nor the possibility of default ([Goodhart, 2009], pp.826-7), misrepresented macroeconomic performance based on rising (but latent) financial fragility as being part of a Great Moderation. The eventual manifestation of financial fragility as the crisis broke therefore came as a major surprise to policy makers, and a variety of “unconventional” and ad hoc policy responses (including bail

\textsuperscript{8}As is well known, various heterodox macroeconomists – including [Godley and Izurieta, 2002] and [Palley, 2002] – anticipated the Great Recession.
outs of financial corporations and massive fiscal stimuli) were required to avert the onset of a full-blown depression.

What all this suggests is that even if they are not prepared to undertake a revolution in their macro-theoretic thinking, policy makers need to evolve in response to the experience of the Great Recession and its aftermath. Specifically, they should entertain substantially more eclectic views about how the economy functions in light of the fact that the efficacy of monetary policy for protracted periods does not, in and of itself, substantiate the notion that the central bank correctly understands the “true model” of the economy to a degree that is properly “fault tolerant”. Such eclectic thinking would help safeguard against, for example, the endogenous emergence of the downside consequences of financial fragility and systemic instability in circumstances where the central bank’s policy model does not admit such possibility, and the (initial) efficacy of monetary policy appears to corroborate the central bank’s model.

Fortunately, it would be very easy for central banks to engage in such eclectic thinking. There is no shortage of heterodox macroeconomic models that differ fundamentally from the still-dominant NCM suite of models, both with respect to their basic behavioral hypotheses and their resulting descriptions of how the economy works. These models are, moreover, provided free of charge by the academy. The results of this paper suggest that they amount to a free insurance policy against the downside risks of policy model mis-specification. Even if it is not accepted that heterodox models should displace NCM models as the “workhorse” framework of reference for monetary policy analysis, having policy makers pay more attention to these models would certainly appear to involve low or no cost coupled with substantial potential gains, and therefore be of unambiguous net benefit to society.

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9 This suggestion is, in fact, compatible with the notion of fault tolerant system design, according to which if fault tolerance cannot be achieved, an appropriate solution is duplication. In the present context, this would involve using heterodox macroeconomic models in parallel with those associated with the NCM in order to think more broadly about macroeconomic developments and the proper policy responses to them.

10 One need only think of the welfare losses entailed by the Great Recession, and the significant advantages
6 Conclusions

There has been no lack of expressions of discontent with macroeconomic theory since the onset of the financial crisis and Great Recession. These have included calls for wholesale abandonment of the New Consensus DSGE models that dominate modern monetary policy analysis. The conclusions reached in this paper are rather more modest, but remain important nonetheless. They suggest that even if calls for the abandonment of the NCM framework go un-heeded by monetary policy makers, there remains a clear-cut case for paying more attention to heterodox macroeconomic models in policy circles. Not only are such models provided at no cost to central banks by the academy, they frequently suggest systematic tendencies in the workings of the economy that are not present in (or even consistent with) the operation of DSGE models. As such, paying closer attention to them amounts to obtaining free insurance against the downside risks (adverse surprises) inherent in “policy model complacency” – the condition associated with over-confidence in a potentially misspecified policy model resulting from the successful practice of monetary policy. As the events of 2007-09 and the ensuing Great Recession testify, the upside gains of adhering to this simple policy rule are potentially enormous.

References


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that would have resulted from some anticipation of its possibility by policy makers, to justify this last claim. Again, anticipations of a macroeconomic crisis resulting from the precipitous deterioration of household balance sheets were freely available in the work of Godley and Izurieta (2002) and Palley (2002), for example, but went unheeded in the run-up to the Great Recession.

11 See, for example, Colander et al. (2008), Goodhart (2009), and Dutt (2011) for representative examples.


