Communicating Monetary Policy Rules

Troy Davig
Rokos Capital

Andrew Foerster
Federal Reserve Bank of San Francisco

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Communicating Monetary Policy Rules*

Troy Davig† Andrew Foerster‡

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Abstract

Despite the ubiquity of inflation targeting, central banks communicate their frameworks in a variety of ways. No central bank explicitly expresses their conduct via a policy rule, which contrasts with models of policy. Central banks often connect theory with their practice by publishing inflation forecasts that can, in principle, implicitly convey their reaction function. We return to this central idea to show how a central bank can achieve the gains of a rule-based policy without publicly stating a specific rule. The approach requires central banks to specify an inflation target, inflation tolerance bands, and provide economic projections. When inflation moves outside the band, inflation forecasts provide a time frame over which inflation will return to within the band. We show how this communication replicates and provides the same information as a rule-based policy. In addition, the communication strategy produces a natural benchmark for assessing central bank performance.

Keywords: monetary policy, inflation targeting, Taylor rule, communication

JEL Codes: E10, E52, E58, E61

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†Chief U.S. Economist, Rokos Capital, 1717 K Street, NW Suite 935, Washington DC 20006, troy.davig@rokoscapital.com.

‡Research Advisor, Federal Reserve Bank of San Francisco, 101 Market Street, San Francisco, CA, 94105, andrew.foerster@sf.frb.org.
1 Introduction

Since its advent more than 30 years ago, inflation targeting has become the dominant paradigm for how central banks conduct monetary policy. It would be natural to assume, given experience and the ubiquity of inflation targeting across the globe, questions about how central banks communicate their frameworks and monetary policy decisions would largely be resolved. However, given that no central bank mechanically follows an instrument-based monetary policy rule, such as a Taylor rule, central banks have adopted a variety of approaches in how they communicate their strategy.

Inflation targeting central banks generally seek to follow a systematic monetary policy guided by some underlying rule or optimal monetary policy framework, but are reluctant about turning policy over to a simple rule that may not be appropriate in all circumstances. This reluctance may stem from the idea that, after explicitly specifying a rule, deviations might become more difficult. Consequently, central banks face a challenge in how to convey a monetary policy strategy that is systematic and accountable for achieving some stated objectives, such as an inflation target or full employment, without having to specify a specific interest rate rule.

In this paper, we develop a clear link between rules-based policy and communication. Three ingredients are essential to an effective communication strategy and if combined properly, can replicate the information provided by a policy rule and provide a clear benchmark for accountability. Specifically, we show that specifying a point inflation target, inflation tolerance bands, and economic projections can provide the same information as if a specific policy rule was revealed to the public. This framework allows communicating policy rules by language stating that “inflation will be within the tolerance band in $N$ periods.” Further, the communication strategy naturally produces a benchmark for assessing deviations from the rule. Since many central banks already use variants of the three ingredients in how they conduct policy, the framework we study is closer to how policy is conducted in practice than the alternative of using an outright rule.

To illustrate the connection, we use two simple models—a Fisherian model of inflation and a New Keynesian model. Within these frameworks, an inflation target, tolerance band, and inflation forecast convey the underlying policy rule. For example, when inflation is outside of the band, a wide band combined with a forecast showing a slow return of inflation to a rate inside the band signals an underlying policy rule with a weak response to inflation. A tight band with a forecast showing a rapid return of inflation to within the band conveys a rule with a stronger
response to inflation. Within the frameworks that we study, we are able to highlight pitfalls of vague or incomplete communication and how they fail to produce sufficient information to convey a policy rule. The communication ingredients also produce a metric for assessing central bank performance; namely, deviations are assessed by comparing stated communication about the forecast for inflation returning within the tolerance band with outcomes. Lastly, we show how the general principles of communicating policy rules transfer to other policy environments by studying a price-level targeting framework.

While widely accepted in modeling monetary policy, often for its simplicity and approximation to optimal policy (Schmitt-Grohe and Uribe, 2007), in practice no central bank strictly follows a rule. A common rationale for this omission is that mechanical adherence to a rule may misguide practical policy decisions due to the multitude of shocks that commonly impinge on actual economies. For example, setting a single rule could generate inferior outcomes if the rule is improperly specified given the economic environment (Ikeda and Kurozumi, 2014), or in the presence of structural change in the economy (Choi and Foerster, 2019). Some central banks have addressed this gap between theory and practice by issuing monetary policy reports that include inflation, output, and interest rate projections. Such projections can implicitly convey the central bank’s reaction function, which is one of the key points of the inflation-forecast targeting literature (for example, Svensson, 1999, 2002; Svensson and Woodford, 2005; Woodford, 2005).

We build on the insights from inflation-forecast targeting, but emphasize the importance of a tolerance band as a communication device. Failure to specify a band may leave the public with a perception that hitting the target is always far into the future or conveys precision that is not achievable in practice. Even in standard New Keynesian models after a shock, a central bank following a standard Taylor rule hits its inflation point objective only asymptotically, implying that inflation is missing its target with near certainty at all points in time. The failure to hit an exact target can lead to some central banks persistently facing questions about their strategy and how to assess whether they are achieving their objectives (for example, Cochrane and Taylor, 2016; Warsh, 2017). Thus, one of the beneficial by-products of the approach is that specifying tolerance bands and a horizon for moving back into the band, as indicated by forecasts, provides

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1These results are reminiscent of some of those in Smets (2000), where shorter forecast targeting horizons are associated with greater weight on price stability in society’s objective function. Relatedly, Battini and Nelson (2001) describe an optimal policy horizon, which is the optimal time for inflation to return to target.

2The argument by Fuhrer et al. (2018) to have systematic reviews of policy would somewhat alleviate this latter concern. This practice plays a predominant role at the Bank of Canada, and was recently adopted by the Federal Reserve.
a clear performance metric with which to assess whether a central bank is meeting its objectives. Walsh (2015) discusses the importance of such metrics and how they can affect monetary policy actions, while Mishkin and Westelius (2008) relate inflation target bands to the incentives for central bankers originally studied by Walsh (1995).

While we focus on the communication aspects of inflation bands, a long line of research considers their practical and theoretical advantages. Bernanke and Mishkin (1997) argue that in practice, inflation target ranges can support a flexible inflation targeting central bank in the short run. Erceg (2002) notes that trade-offs between inflation and other variables such as output volatility, plus a choice of a policy rule or loss function, generate a range for inflation. This approach sets upper limits for inflation volatility, while by contrast, our framework requires inflation to be frequently outside the band. Orphanides and Weiland (2000) consider a central bank that has a loss function that is flat around a point target, which generates a target range.

The strategy outlined in this paper also addresses the need for clearer central bank communications to help firms and households better understand and hence promote the effectiveness of monetary policy. Coibion, Gorodnichenko and Weber (2019) study how information about monetary policy is understood by the general public, and conclude that direct communications are most effective rather than relying on news media. Communicating in terms that are understandable to a general layperson can thus improve comprehension of monetary policy actions and improve expectations, since D’Acunto et al. (2019) highlight these as potential barriers to policy effectiveness. Orphanides (2019) discusses using monetary policy rules to improve communication in the US. Additionally, in a review of Federal Open Market Committee (FOMC) communications, Cecchetti and Schoenholtz (2019) point to simplifying public statements as a way to improve FOMC statements. Using a tolerance band with a projection can be simply communicated.

The remainder of the paper proceeds as follows. In Section 2 we review inflation targeting and communication strategies around the world. In Section 3 we present a simple Fisherian model of inflation determination, and show how a tolerance band and forecasts for inflation can be used to communicate rules. Section 4 extends the results developed in the Fisherian model to a New Keynesian model of inflation and output. In Section 5 we illustrate how, using a hybrid New Keynesian model, tolerance bands and forecasts can be used to generate a metric for evaluating deviations from the implicit policy rule. Section 6 extends the communication strategy to a price level targeting regime, and Section 7 concludes.
2 Inflation Targeting Around the World

In this section, we review the conduct of inflation targeting around the world. This review indicates that the three ingredients we identify as being consistent with communicating a policy rule are rather close to how central banks conduct policy. First, we highlight that while a large number of countries have targets for inflation, they differ in whether they have tolerance bands or not. Coupling this fact with the widespread practice of producing inflation forecasts, we can conclude the method of communicating monetary policy rules that we highlight is only a slight modification of existing practice for many countries. We also note that inflation bands are already used as a means to evaluate central bank performance. After our review of central banks around the world, we discuss the experience of the Sveriges Riksbank with inflation tolerance bands as an illustrative example of the issues surrounding tolerance bands as a communication device.

2.1 Inflation Targets, Tolerance Bands, and Forecasts

Table 1 lists the countries with some form of an explicitly stated inflation target. Among these, about a third have single point targets, although these include some major economies such as the UK and US. Even among these countries that have an explicit single point target, some have supporting ranges that play a role in policy, such as the UK and Sweden. The remaining countries have some sort of tolerance band; a majority of bands have a specific midpoint (e.g. Canada’s target of 2% ± 1%), while some specify a band without an explicit midpoint (e.g. Australia’s target of 2% – 3%), and a few have one-sided bands with an inflation target that acts as an upper bound (Switzerland and the Euro area have targets of < 2%).

The table therefore highlights disagreement about how to set inflation targets across the world, and prompts some concerns about how specifying point targets in addition to, or instead of, tolerance bands helps the performance and communication of monetary policy. In the cases without a band, there may be difficulty achieving a level of inflation that exactly hits the target, which might translate to difficulty communicating an implicit policy rule. In the cases of a band without a midpoint, there may be some uncertainty or confusion about where inflation will be in the long run; for example, the Reserve Bank of New Zealand explicitly introduced a midpoint to their range in 2012 to help anchor inflation expectations (McDermott and Williams, 2018). In addition, for those countries that set a band of some sort, the widths of the bands vary across
Table 1: List of Inflation Targets Across Countries

<table>
<thead>
<tr>
<th>No Band</th>
<th>Band w/ Midpoint</th>
<th>Band w/o Midpoint</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>5.4</td>
<td>Albania 3 ± 1</td>
<td>Australia 2 – 3</td>
</tr>
<tr>
<td>Belarus</td>
<td>5</td>
<td>Armenia 4 ± 1.5</td>
<td>Botswana 3 – 6</td>
</tr>
<tr>
<td>China</td>
<td>3</td>
<td>Azerbaijan 4 ± 2</td>
<td>Eswatini 3 – 7</td>
</tr>
<tr>
<td>Congo</td>
<td>7</td>
<td>Brazil 3.75 ± 1.5</td>
<td>Israel 1 – 3</td>
</tr>
<tr>
<td>Gambia</td>
<td>5</td>
<td>Canada 2 ± 1</td>
<td>Jamaica 4 – 6</td>
</tr>
<tr>
<td>Georgia</td>
<td>3</td>
<td>Chile 3 ± 1</td>
<td>Kazak. 4 – 6</td>
</tr>
<tr>
<td>Iceland</td>
<td>2.5</td>
<td>Colombia 3 ± 1</td>
<td>Kyrgyzstan 5 – 7</td>
</tr>
<tr>
<td>Japan</td>
<td>2</td>
<td>Costa Rica 3 ± 1</td>
<td>Nigeria 6 – 9</td>
</tr>
<tr>
<td>Malawi</td>
<td>5</td>
<td>Czech Rep. 2 ± 1</td>
<td>S. Africa 3 – 6</td>
</tr>
<tr>
<td>Mozambique</td>
<td>5.6</td>
<td>Domin. Rep. 4 ± 1</td>
<td>Sri Lanka 4 – 6</td>
</tr>
<tr>
<td>Nepal</td>
<td>6</td>
<td>Egypt 7 ± 2</td>
<td>Thailand 1 – 3</td>
</tr>
<tr>
<td>Norway</td>
<td>2</td>
<td>Ghana 8 ± 2</td>
<td>Uruguay 3 – 7</td>
</tr>
<tr>
<td>Pakistan</td>
<td>6</td>
<td>Guatemala 4 ± 1</td>
<td>Zambia 6 – 8</td>
</tr>
<tr>
<td>Russia</td>
<td>4</td>
<td>Hungary 3 ± 1</td>
<td></td>
</tr>
<tr>
<td>Samoa</td>
<td>3</td>
<td>Honduras 4 ± 1</td>
<td></td>
</tr>
<tr>
<td>S. Korea</td>
<td>2</td>
<td>India 4 ± 2</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>2</td>
<td>Indonesia 3 ± 1</td>
<td></td>
</tr>
<tr>
<td>Tanzania</td>
<td>5</td>
<td>Kenya 5 ± 2.5</td>
<td></td>
</tr>
<tr>
<td>Tonga</td>
<td>5</td>
<td>Mexico 3 ± 1</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>2</td>
<td>Moldova 5 ± 1.5</td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>2</td>
<td>Mongolia 6 ± 2</td>
<td></td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>5</td>
<td>New Zealand 2 ± 1</td>
<td>Paraguay 4 ± 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Philippines 3 ± 1</td>
<td>Poland 2.5 ± 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rawanda 5 ± 3</td>
<td>Serbia 3 ± 1.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turkey 5 ± 2</td>
<td>Ukraine 5 ± 1</td>
</tr>
</tbody>
</table>

Note: List of inflation targets is for the year 2021 from Central Bank News (2021).

central banks, and this variation may signal something about the implicit policy rule.\(^3\) These bands vary between being expected upper bounds for the realizations of inflation, versus tighter

\(^3\)Central banks are well aware of these trade-offs: for example, Banco Central Do Brasil (2016) notes that an inflation band cannot be too wide, since it could signal a lack of commitment to the inflation target, which implies an instrument rule that responds weakly when inflation deviates from target.
ranges that reflect a desire to bring future inflation within a certain range. The communication strategy we discuss is more in line with the latter type of range, but a key take-away is that bands are widely used as part of inflation targeting frameworks.

Beyond the specification of inflation targets and tolerance bands, central banks widely produce forecasts of inflation and other key macroeconomic variables. The format of these forecasts can vary between model-based or subjective forecasts, and either be consensus forecasts or forecasts made by individual participants. Either way, the forecasts give an indication of the central bank’s views on future economic conditions and policy, and thus indicate to some extent the implicit policy rule or reaction function used. Finally, the inflation bands can be used as a metric for central bank performance; for example, while the U.K. has an official point target of 2%, the Governor of the Bank of England writes a letter explaining any misses exceeding 1 percentage point.

In the following sections, we develop a framework where effective communication can take the place of explicitly declaring a monetary policy rule. The keys to the framework are a point target for inflation, a band around that objective, and forecasts. As noted, these ingredients are already key elements in the conduct of policy across the world–much more so than explicitly using policy rules. Despite the fact that the Sweden appears on the list of countries that have a point target, they currently have a variation band that is used to help communicate policy. Further, the Sveriges Riksbank has changed how it communicates policy several times, and these changes illustrate some of the issues with tolerance bands and forecasts. So before presenting the theoretical Fisherian and New Keynesian models, we first examine the Riksbank’s experience in detail.

2.2 The Sveriges Riksbank’s Experience

The Riksbank provides a useful example for understanding some of the issues central banks encounter regarding tolerance bands. In January 1993, they set a 2% inflation target expected to be achieved in 1995 and then remain in effect going forward. The target included a tolerance band of +/-1%. According to Heikensten (1999), the purpose of the band was to convey that deviations from the target are probable, but that the Riksbank had an intention of limiting such deviations. In May 2010, the Riksbank removed the tolerance bands for a few reasons. First, as explained in Riksbank (2010), they believed that the public had sufficient understanding that monetary policy persistently faces uncertainty and unexpected events will cause inflation to deviate from its target. Second, the Riksbank communicated that deviations from target can be
part of a deliberate strategy under a flexible inflation targeting framework, which places weight on achieving other objectives than only hitting the inflation target. These deviations can at times exceed the tolerance interval. Third, inflation expectations were viewed as well-anchored, so deviations from the target, or even outside the tolerance interval, were not seen as having a tangible effect on longer-term inflation expectations. Between 1995 and the time of eliminating the tolerance band, inflation was outside of the band about half of the time, but was not viewed as having any effect on the Riksbank credibility. In sum, the Riksbank viewed the tolerance band as “obsolete,” as deviations outside of the tolerance band were viewed as a “natural part of monetary policy.” Dropping the bands were also viewed as having no consequences for the “way in which monetary policy is conducted and communicated.”

Later, the Riksbank revisited some of the costs and benefits of specifying a tolerance band (Riksbank, 2016). A band provides a signal that some variation around the target should be expected, though monetary policy will aim to limit such deviations; this rationale supported the original specification of the tolerance band in 1993. Monetary Policy Reports give detailed inflation forecasts, and a tolerance band could complement these forecasts by providing a “clearer alternative” of illustrating uncertainty around inflation. As a result, a band may aid in deflecting public criticism about the level of inflation, as long as it was running within the interval. Indeed, Andersson and Jonung (2017) note, rather than expecting that inflation might vary more than 1 percent from target, the external focus on the Riksbank achieving 2 percent became stronger: “Any deviation from this exact number was interpreted as a monetary policy failure. The debate became obsessed with the number 2.0, despite the fact that the Riksbank had never announced that the rate of inflation should be exactly at 2.0%. The lack of an explicit band undermined the Riksbank’s communication strategy and thus its credibility.”

The Riksbank’s experience thus presents a useful case study that highlights the fact that inflation targets, inflation bands, and forecasts can underpin an effective communication strategy. We now turn to our theoretical frameworks—first a Fisherian then a New Keynesian model—that connect communication with policy rules.

3 A Fisherian Model of Inflation

In this section, we present a simple Fisherian model of inflation and monetary policy in order to highlight how central bank communication about bands and horizons can pin down a rule.
3.1 Model Setup and Basic Results

The model is a simple Fisherian model of inflation determination. The log-linearized equation for pricing a bond that costs \(1\) at time \(t\) and pays out at a net interest rate of \(i_t\) in \(t + 1\) is

\[
i_t = E_t[\pi_{t+1}] + r_t,
\]

where \(E_t[\pi_{t+1}]\) denotes the time \(t\) expectation of inflation in the subsequent period, and \(r_t\) denotes the equilibrium ex ante real interest rate. This real interest rate is taken to be an exogenous process given by

\[
r_t = \rho r_{t-1} + \varepsilon_t
\]

with \(0 \leq \rho < 1\) and \(\varepsilon_t\) is i.i.d. with mean zero. Monetary policy follows a simple Taylor rule given by

\[
i_t = \alpha \pi_t + \eta_t,
\]

where \(\alpha\) governs how responsive the nominal interest rate is to inflation, and \(\eta_t\) denotes an i.i.d., mean zero monetary policy shock. Note that by log-linearizing around the appropriate steady state, we have already required a point inflation target for monetary policy.

In this simple setup, a rational expectations equilibrium requires the private sector to understand the monetary policy rule, and so we consider the case where policy follows a rule, and the monetary authority must communicate policy in a way that is consistent with and thus reinforces the rule. From that standpoint, communicating the current stance of policy \(i_t\) is not enough to pin down the rule, as there are an infinite set of combinations of the policy rule parameter \(\alpha\) and the monetary policy shock \(\eta_t\) that can produce a given nominal interest rate.\(^4\) As a result, communicating the policy rule directly by stating a value of \(\alpha\), or indirectly by stating the current monetary policy shock \(\eta_t\), would guide interest rate policy in response to shocks to the real interest rate that subsequently altered inflation. However, the discussion in Section 2 highlights that most central banks prefer language about hitting an inflation target or moving inflation within some band, possibly within a specified time frame. In this case, effective communication will uniquely pin down \(\alpha\), but vague communication will not.

The unique solution to the Fisherian economy in equations (1), (2), and (3), given the Taylor

\(^4\)Due to the endogeneity of current inflation, this argument can be seen a bit more clearly if lagged inflation is in the policy rule. In that case, conditional on \(\pi_{t-1}\), there are clearly a infinite set of combinations of \(\alpha\) and \(\eta_t\) that produce a given \(i_t\). We use current inflation because it greatly simplifies the remainder of the analysis.
principle \((\alpha \geq 1)\) holds, is

\[ \pi_t = \frac{1}{\alpha - \rho} r_t - \frac{1}{\alpha} \eta_t, \]  

which relates realized inflation to the current real interest rate \(r_t\), the monetary policy rule parameter \(\alpha\), the monetary policy shock \(\eta_t\), and features of the structural economy, which in this simple example are captured by the persistence of the real rate \(\rho\). Given that the shocks \(\varepsilon_t\) and \(\eta_t\) are i.i.d., expected inflation is given by

\[ \mathbb{E}_t [\pi_{t+j}] = \mathbb{E}_t \left[ \frac{r_{t+j}}{\alpha - \rho} \right] = \frac{\rho^j}{\alpha - \rho} r_t. \]  

Using this equation that characterizes the path of expected inflation given the current real interest rate, the monetary authority can give guidance about the policy parameter \(\alpha\) by communicating how fast policy will bring inflation back to target. One way to accomplish this guidance is to give the entire expected path of inflation \(\{\mathbb{E}_t [\pi_{t+j}]\}_{j=0}^{\infty}\). Communicating the path provides more than enough information for households and firms to back out the policy parameter \(\alpha\).

An additional way of communicating policy instead of producing an entire path for expected inflation is to give a specific horizon and inflation objective. If, given a current value for the real rate \(r_t\), the central bank states that it expects “inflation will be \(\mu\) from the inflation target in \(N_t\) periods,” this statement implies

\[ \mu = \mathbb{E}_t [\pi_{t+N_t}] = \frac{\rho^{N_t}}{\alpha - \rho} r_t. \]  

In this case, the choice of tolerance \(\mu\) and horizon \(N_t\) are not necessarily pinned down as there is a continuum of \((\mu, N_t)\) that are implied by a policy parameter \(\alpha\). Two important results, however, are key on how to use this communication strategy and why it works to reveal the rule.

First, the inflation target cannot be hit with precision in finite time, so \(\mu = 0\) is impossible, as this implies \(N_t \to \infty\) for all values of \(\alpha\). Since the inflation target is a point target, communication about returning inflation to target in any time frame is infeasible. In other words, specifying a degree of tolerance \(\mu\) around the inflation target is imperative.

Second, the reason a statement about a tolerance \(\mu\) and a horizon \(N_t\) is effective in communicating the policy rule is that equation (6) is invertible. Mathematically, after a shock \(r_t\) and
given $\mu$ and $N_t$, the private sector can recover the policy parameter through
\[ \alpha = \frac{\rho^{N_t \tau}}{\mu} + \rho. \]  
(7)

Further, the expected path of inflation in equation (5) can be put in terms of the tolerance $\mu$ and the horizon $N_t$, which now satisfies
\[ \mathbb{E}_t [\pi_{t+j}] = \rho^{j-N_t} \mu, \]  
(8)

and hence the communication uniquely pins down the expected path for inflation. In this simple Fisherian model, directly communicating the policy parameter is equivalent to communicating the tolerance $\mu$ and a horizon $N_t$ due to the unique mapping.

In addition, once the policy parameter $\alpha$ is pinned down through the effective communication of a band $\mu$ and horizon $N_t$, the current interest rate $i_t$ indirectly establishes the size of the monetary policy shock $\eta_t$. In this simple model, the forward-looking behavior of the economy implies that previous deviations from the rule are inconsequential for current and future economic outcomes. As a result, a comparison with \textit{ex ante} stated horizons with \textit{ex post} realized time frames is not informative about the degree of monetary policy deviation. We return to this issue in a New Keynesian model with backward-looking behavior in Section 5.

### 3.2 Examples

The mapping in equation (6) has intuitive implications for how changes in the policy parameter $\alpha$ produce different tolerances $\mu$ and horizons $N_t$. In particular, a higher $\alpha$ implies either a shorter horizon $N_t$ in order to hit a given tolerance $\mu$, or a lower tolerance $\mu$ associated with a given horizon $N_t$. Likewise, the inverse mapping in equation (6) also has straightforward implications for how changes in stated tolerances $\mu$ and horizons $N_t$ affect the implied policy parameter. Given a specified tolerance band $\mu$, then a desire to hit that band in a shorter time (lower $N_t$) necessarily implies a higher value of the policy parameter $\alpha$. Likewise, given a specific horizon $N_t$, then a desire to hit a smaller tolerance band (smaller $\mu$) requires a higher value of $\alpha$ as well.

Figure 1 shows how, given a value of $\rho$, for different policy parameters $\alpha$, the impulse response function of inflation to a real rate shock can be used to pin down the band $\mu$ and the horizon $N_t$. For example, after a shock to the real rate, a policy parameter of $\alpha_0$ can be communicated through a range of $(\mu, N_t)$ combinations given by the red line, but if the monetary authority
has an inflation tolerance of $\mu = 0.5$, then they can communicate the rule by saying “inflation will be 50bp from the inflation target in 12 periods.” Similarly, the central bank with a policy rule of $\alpha_1$ could state “inflation will be 50bp from the inflation target in 16 periods,” while one with $\alpha_2$ and a lower tolerance $\mu$ could state “inflation will be 25bp from the inflation target in 12 periods.”

Using tolerance bands and horizons also provides flexibility to vary communication after shocks of various sizes. As noted, Figure 1 depicts a band of 50bp and horizon 12 can be used to convey a policy parameter of $\alpha_0$ after a shock to the real rate. If instead, there is a smaller shock, then the same rule can be communicated by “inflation will be 50bp from the inflation target in 8 periods.” Thus, smaller shocks end up meeting the tolerance band in shorter time frames, while larger shocks extend the horizon.

The implications of Figure 1 for communication also highlight that given $(\mu, N_t)$, the communication can pin down the policy parameter $\alpha$. Figure 2 builds upon this example to show
the inverse mapping in equation (7) by showing how a tolerance band $\mu$ and horizon $N_t$ imply a unique policy parameter $\alpha$. The curves show, given $(\mu, N_t)$, the implied $\alpha$ that achieves those objectives. The mapping is unique, and given $\mu$ a larger $N_t$ implies a lower $\alpha$ as monetary policy does not have to react as strongly to meet the horizon objective. Similarly, given a horizon $N_t$, if the band is smaller, meaning $\mu$ is lower, then $\alpha$ must be larger in order to bring inflation within the band in the given time frame. Importantly, given a band $\mu$, there are values of $N_t$ that imply $\alpha < 1$, which generates indeterminacy; for example if $\mu = 1.5$ then the maximum $N_t$ is 18 periods, and if the monetary authority communicates a longer horizon the implied equilibrium is non-unique.

This simple Fisherian example thus highlights how a clearly articulated band for inflation and a horizon can be used in place of specifying an exact policy rule. Given these simple results, we now turn to a discussion of several implications for communication.
3.3 Implications for Communication

There are several important implications for how the inverse mapping between \((\mu, N_t)\) and \(\alpha\) shown in equation (7) matters for communication of policy. These results highlight how vague communication or imprecision about the objectives of \((\mu, N_t)\) can lead to a rule with undetermined parameters.

First, if the communication is vague by stating “inflation will be close to the inflation target in \(N_t\) periods,” rather than specifying an exact tolerance, a range of values for \(\alpha\) are possible. In this case, if close is interpreted as possibly a range of tolerances \(\mu \in [\underline{\mu}, \overline{\mu}]\), then the range of possible policy parameters is given by

\[
\alpha \in \left[ \frac{\rho^{N_t} r_t}{\overline{\mu}} + \rho, \frac{\rho^{N_t} r_t}{\underline{\mu}} + \rho \right].
\]

For example, if \(N_t = 12\), then Figure 1 shows that if \(\mu \in [0.25, 0.50]\), then \(\alpha \in [\alpha_0, \alpha_2]\).

Second, as a range of tolerances produces a range of possible policy parameters, so does a range of horizons. Even if a band around the target is specified, if a range of horizons is vague by stating “inflation will be \(\mu\) of the inflation target over the medium term” and the phrase medium term is interpreted as a range of horizons \(N_t \in [\underline{N}, \overline{N}]\), then the range of possible policy parameters is

\[
\alpha \in \left[ \frac{\rho^{N_t} r_t}{\mu} + \rho, \frac{\rho^{N_t} r_t}{\mu} + \rho \right].
\]

For example, if \(\mu = 0.50\), then the top panel of Figure 1 shows that if \(N_t \in [12, 16]\), then \(\alpha \in [\alpha_1, \alpha_0]\).

Third, given a fixed band \(\mu\) and horizon \(N_t\), the mapping to policy parameters \(\alpha\) is still dependent on \(\rho\). As a result, if there is structural change in the economy—incorporated by possibly a different value of \(\rho\) in this economy—then the mapping from \((\mu, N_t)\) to \(\alpha\) will change as well. From this perspective, given a constant statement about the band and horizon, the policy parameter must adjust given any changes in \(\rho\).

Fourth, while in principle the band can be time-varying along with the horizon, more straightforward communication would leave one of these two features fixed to ensure consistency and eliminate a degree of freedom in communication. This feature reflects how, as shown in Table 1, central banks pick constant bands for their inflation targets in practice.

This simple Fisherian model has therefore provided some clear implications for communicating monetary policy rules. However, the model lacks features that play an important role in the
4 A New Keynesian Model of Inflation and Output

In this section, we extend the intuition built in the previous section for a model in which inflation and output are jointly determined, and show that a similar mapping from bands and horizons to a policy parameter exists. We start with a simple forward-looking model, and discuss communication in cases with demand and supply shocks. In the following section, we consider a case where inflation has a backward-looking component to illustrate how the communication of bands and a horizon provides a performance metric.

4.1 Model Setup

The model is a simple New Keynesian model where inflation and output are jointly determined by supply and demand shocks. The two equations describing the private economy are the log-linearized equations derived from a consumption Euler equation

\[ x_t = \mathbb{E}_t [x_{t+1}] - \sigma^{-1} (i_t - \mathbb{E}_t [\pi_{t+1}]) + g_t, \] (11)

and an aggregate supply condition

\[ \pi_t = \beta \mathbb{E}_t [\pi_{t+1}] + \kappa x_t + u_t, \] (12)

where \( x_t \) denotes the output gap, \( g_t \) is an aggregate demand shock, \( u_t \) is an aggregate supply shock. The shocks follow autoregressive processes given by

\[ g_t = \rho_g g_{t-1} + \varepsilon_{g,t}, \] (13)

and

\[ u_t = \rho_u u_{t-1} + \varepsilon_{u,t} \] (14)

with, for \( j \in \{g, u\}, 0 \leq \rho_j < 1, \) and \( \varepsilon_{j,t} \) is i.i.d. with mean zero. Monetary policy is given by a Taylor rule of the form

\[ i_t = \alpha \pi_t + \eta_t. \] (15)
Again, by log-linearizing around the appropriate steady state, we have required a point inflation target for the monetary authority.

As in the Fisherian example, we consider an equilibrium where the monetary authority follows a rule and must provide communication that follows and hence reinforces that rule. The monetary authority simply giving the stance of policy \( i_t \) does not pin down a unique value of the policy parameter \( \alpha \) and the deviation from the rule \( \eta_t \). Of course, it could communicate its policy rule by stating values of \( \alpha \), but as noted in Section 2, this communication strategy is not embraced by central banks around the world. Instead, they tend to prefer giving bands around the inflation target as well as forecasts.

Following the same logic as used in the Fisherian economy, provided the Taylor principle \((\alpha \geq 1)\) holds, a unique solution is given by

\[
\pi_t = \frac{\kappa}{1 + \kappa \sigma^{-1} \alpha - \Phi_g} g_t + \frac{1 - \rho_u}{1 + \kappa \sigma^{-1} \alpha - \Phi_u} u_t + \frac{\kappa \sigma^{-1}}{1 - \alpha \kappa \sigma^{-1}} \eta_t
\]

for inflation, and

\[
x_t = \frac{(1 - \beta \rho_g)}{1 + \kappa \sigma^{-1} \alpha - \Phi_g} g_t - \frac{\sigma^{-1} (\alpha - \rho_u)}{1 + \kappa \sigma^{-1} \alpha - \Phi_u} u_t + \frac{\sigma^{-1}}{1 - \alpha \kappa \sigma^{-1}} \eta_t
\]

for output, where

\[
\Phi_z = \rho_z \left( 1 + \kappa \sigma^{-1} + \beta (1 - \rho_z) \right) \quad \text{for} \ z \in \{g, u\} .
\]

Given that the shocks \( \varepsilon_{g,t}, \varepsilon_{u,t}, \) and \( \eta_t \) are i.i.d., expected inflation is given by

\[
\mathbb{E}_t [\pi_{t+j}] = \frac{\kappa}{1 + \kappa \sigma^{-1} \alpha - \Phi_g} \rho_g^j g_t + \frac{1 - \rho_u}{1 + \kappa \sigma^{-1} \alpha - \Phi_u} \rho_u^j u_t
\]

and the expected output gap equals

\[
\mathbb{E}_t [x_{t+j}] = \frac{1 - \beta \rho_g}{1 + \kappa \sigma^{-1} \alpha - \Phi_g} \rho_g^j g_t - \frac{\sigma^{-1} (\alpha - \rho_u)}{1 + \kappa \sigma^{-1} \alpha - \Phi_u} \rho_u^j u_t.
\]

Note that, similar to equation (5), that these two equations are functions of the structural parameters governing the economy, as well as the policy parameter \( \alpha \).
4.2 Demand Shocks

We first consider a monetary authority facing a demand shock. As in the Fisherian model, the monetary authority can communicate that, given a current value for the demand shock $g_t$, that it expects “inflation will be $\mu$ from the inflation target in $N_t$ periods,” and from equation (19) this communication satisfies

$$\mu = \mathbb{E}_t [\pi_{t+N}] = \frac{\kappa}{1 + \kappa \sigma^{-1} \alpha - \Phi_g \rho_g^N g_t}$$

(21)

Conditional on policy rule parameters $\alpha$, there is a continuum of choices for guidance on the tolerance $\mu$ and the horizon $N_t$. The inflation target cannot be hit in finite time, so $\mu = 0$ remains impossible in this case. In addition, as with the Fisherian model, the communication of a tolerance $\mu$ and horizon $N_t$ is invertible in the sense that the mapping for $\alpha$ is given by

$$\alpha = \frac{\kappa \rho_g^N g_t + \Phi_g - 1}{\kappa \sigma^{-1}}.$$  

(22)

Given that under active policy ($\alpha \geq 1$), inflation and the output gap move in the same direction, no guidance beyond the simple band and horizon is needed for communication of the rule. To see this fact, suppose the monetary authority announces “inflation will be $\mu$ from the inflation target in $N_t$ periods,” which implies that $\alpha$ must satisfy the restriction in equation (22). In this case, the expected paths for inflation and the output gap are

$$\mathbb{E}_t [\pi_{t+j}] = \rho_g^{j-N_t} \mu_\pi$$

and

$$\mathbb{E}_t [x_{t+j}] = \frac{1 - \beta \rho_g^{j-N_t}}{\kappa} \rho_g^{j-N_t} \mu_\pi,$$

(23)

respectively. The key result in these equations is that providing communication about inflation directly pins down the expected paths for inflation and the output gap.

Figure 3 shows the case, given values for the structural parameters, with a 1pp demand shock ($g_t = 1$) and the monetary authority expresses a rule with a value of $\alpha_0$ by stating “inflation will be 50bp from the inflation target in 16 periods.” This communication pins down the policy parameter, as well as the dynamics for inflation, the output gap, and the nominal rate. In addition, as in the Fisherian model, if the policy parameter is a different value, this can be communicated via altering the horizon, and a smaller shock would imply a shorter horizon.

As in the Fisherian model, the inverse mapping from communication to the policy parameter after a demand shock is unique and has intuitive properties. Figure 4 shows for a 1pp demand
Figure 3: Impulse Responses from a Demand Shock

Note: Shows impulse responses to a 1pp shock (0.66pp in the smaller shock case) to demand when $\beta = 0.99$, $\sigma = 1$, $\kappa = 0.17$, and $\rho_g = 0.9$. Values for the policy parameters are $\alpha_0 = 1.40$, $\alpha_1 = 1.21$, and $\alpha_0 = 1.97$.

shock, the implied policy parameter for given combinations of bands and horizons. Given a horizon, smaller values for the band imply stronger reactions to inflation; meanwhile, given a band size, longer horizons imply a weaker inflation response.
4.3 Supply Shocks

Now we consider a monetary authority that faces a supply shock. In this case, the monetary authority could communicate that after a supply shock of $u_t$, “inflation will be $\mu$ from the inflation target in $N_t$ periods,” and from equation (19) this communication satisfies

$$\mu = \mathbb{E}_t [\pi_{t+N}] = \frac{1 - \rho_u}{1 + \kappa \sigma^{-1} \alpha - \Phi_u \rho^N_t u_t}. \quad (24)$$

Once again, there is a continuum of choices for guidance on the tolerance $\mu$ and the horizon $N_t$ conditional on policy rule parameter $\alpha$, although $\mu = 0$ is not feasible in finite time. As in the case for a demand shock, the communication of a tolerance $\mu$ and horizon $N_t$ is invertible in the sense that the mapping for $\alpha$ is a function of the communication given the structural parameters. In this case, the monetary authority could communicate that after a supply shock of $u_t$, “inflation will be $\mu$ from the inflation target in $N_t$ periods,” and from equation (19) this
communication satisfies

\[ \alpha = \frac{1 - \rho_u \rho_u^{N_t} u_t + \Phi_u - 1}{\kappa \sigma^{-1}}. \]  

(25)

Similar to the demand shock only case, communication about inflation is sufficient to pin down the expected paths of inflation and the output gap if policy is active \( (\alpha \geq 1) \). The above communication pins down \( \alpha \) and the expected paths of inflation

\[ \mathbb{E}_t [\pi_{t+j}] = \rho_u^{j-N_t} \mu \]  

(26)

and the output gap

\[ \mathbb{E}_t [x_{t+j}] = -\frac{\sigma^{-1}}{1 - \rho_u} \left( \frac{\frac{1 - \rho_u \rho_u^{N_t} u_t + \Phi_u - 1}{\kappa \sigma^{-1}} - \rho_u}{\rho_u^{j-N_t} \mu}. \right) \]  

(27)

The key result from these equations is the independence from \( \alpha \), which highlights that providing communication about inflation directly pins down the expected paths for inflation, the output gap, and the interest rate without the need to specify the exact policy rule.

Figure 5 provides evidence that, given values for the structural parameters, after a 1pp supply shock \( (u_t = 1) \), the monetary authority can express a rule with a value of \( \alpha_0 \) by stating “inflation will be 50bp from the inflation target in 16 periods.” This communication pins down the policy parameter, as well as the dynamics for inflation, the output gap, and the nominal rate. In addition, as in the Fisherian model, if the policy parameter is a different value, this can be communicated via altering the horizon, and a smaller shock would imply a shorter horizon.

Figure 6 shows the inverse mapping from communication after a supply shock retains the intuitive properties from the Fisherian model. A higher policy parameter can be communicated with a relatively tighter band, or a shorter horizon.

5 Evaluating Monetary Policy Deviations

Having established that, in both a Fisherian and simple New Keynesian framework, communicating a horizon for inflation to return to within a band from target substitutes for stating an explicit policy rule, we now turn to how this environment can be used to evaluate monetary policy deviations. The two models studied thus far are forward-looking, and hence there are no dynamic implications for monetary policy shocks beyond the period in which they occur. We
now therefore consider a model with a hybrid New Keynesian Phillips curve, given by

$$\pi_t = (1 - \theta) \pi_{t-1} + \theta \mathbb{E}_t [\pi_{t+1}] + \kappa x_t + u_t.$$  

The presence of lagged inflation on the aggregate supply equation means that previous inflation deviations from target will affect current inflation, as price-setting has a backward-looking or inertial component from indexation to lagged inflation.
Figure 6: Effective Communication Pins Down the Policy Parameter after a Supply Shock

Note: Shows the mapping from $N$ and $\mu$ to $\alpha$ after a 1pp shock to the real interest rate $\beta = 0.99$, $\sigma = 1$, $\kappa = 0.17$, and $\rho_u = 0.95$.

In this case, the existence of an endogenous predetermined variable $\pi_{t-1}$ implies there is no longer a simple closed form solution for $\pi_t$ and $x_t$, but instead there are solutions of the form

\[
\pi_t = \pi\pi\pi_{t-1} + \Gamma_{\pi\pi} g_t + \Gamma_{\pi u} u_t + \Gamma_{\pi \eta} \eta_t
\]

\[
x_t = \pi\pi\pi_{t-1} + \Gamma_{x\pi} g_t + \Gamma_{x u} u_t + \Gamma_{x \eta} \eta_t
\]

where $\Gamma_{j,k}$ are functions of $\alpha$. The expected paths of inflation and the output gap are given by

\[
E_t [\pi_{t+j}] = \pi\pi\pi_{t-1} + \sum_{k=0}^{j} \Gamma_{\pi\pi}^{j-k} \rho g_t + \sum_{k=0}^{j} \Gamma_{\pi u}^{j-k} \rho u_t + \sum_{k=0}^{j} \Gamma_{\pi \eta}^{j-k} \rho \eta_t
\]

(28)
and

\[
\mathbb{E}_t [x_{t+j}] = \Gamma_{x\pi} \Gamma_j^{\pi \pi} \pi_{t-1} + \left( \Gamma_{x\pi} \sum_{k=0}^{j-1} \Gamma_j^{\pi \pi} \rho_g^{k} \Gamma_{t\pi} \pi_t + \Gamma_{xg} \rho_g^j \right) g_t \\
+ \left( \Gamma_{x\pi} \sum_{k=0}^{j-1} \Gamma_j^{\pi \pi} \rho_u^{k} \Gamma_{\pi u} + \Gamma_{xu} \rho_u^j \right) u_t + \Gamma_{x\pi} \Gamma_j^{\pi \pi} \Gamma_{\pi \pi} \eta_t.
\]  

(29)

Assuming that inflation previously was at target, communication after a 1pp demand shock that “inflation will be \(\mu\) from the inflation target in \(N_t\) periods” implies

\[
\mu = \mathbb{E}_t [\pi_{t+N_t}] = \sum_{k=0}^{N_t} \Gamma_{N_t-k}^{\pi \pi} \rho_g^k \Gamma_{\pi \pi} \pi_t 
\]  

(30)

and similarly for a 1pp supply shock

\[
\mu = \mathbb{E}_t [\pi_{t+N_t}] = \sum_{k=0}^{N_t} \Gamma_{N_t-k}^{\pi \pi} \rho_u^k \Gamma_{\pi \pi} \pi_t. 
\]  

(31)

Now, to consider the impact of a monetary policy deviation, we focus on a demand shock. Figure 7 shows that, given structural parameters and a 1pp demand shock in \(t = 0\), a policy rule can be communicated by stating “inflation will be 50bp from the inflation target in 12 periods.” In periods after the initial shock, and absent any further shocks, the communication adjusts accordingly as the horizon shortens. For example, by \(t = 10\), the monetary authority would state “inflation will be 50bp from the inflation target in 2 periods.”

However, now consider a case when in \(t = 10, 11, 12\), the monetary authority introduces an accommodative deviation \((\eta_t < 0)\), which lowers the nominal interest rate and hence raises inflation and the output gap over their expected paths. First, in each of those periods, the expected return to \(\mu\) no longer coincides with the original communication, so the expected horizon now increases. In \(t = 12\), the communication is still at \(N_t = 2\) periods rather than the expectation to be at target. Second, this change in communication, and a corresponding assessment of ex ante statements and ex post outcomes, is a way to measure the deviations and hence how closely the monetary authority is following the rule.

As noted in Section 2, central banks around the world state policy in terms of forecasts rather than deviations from a rule. The communication strategy of tolerance bands and a horizon allows deviations to be communicated by changing the forecast of when inflation will hit the tolerance
Figure 7: Impulse Responses in the Fisherian Model

Note: Shows impulse responses to a 1pp shock (0.66pp in the smaller shock case) to the real interest rate when $\rho = 0.9$. Values for the policy parameters are $\alpha_0 = 1.46$, $\alpha_1 = 1.27$, and $\alpha_0 = 2.03$.

band, which puts communication in terms of the easily understood time dimension, and in the space of goals rather than instruments. Large deviations will therefore move the horizon by relatively longer amounts than small deviations. In addition, if the monetary authority is on average more accommodative than its implicit rule, the horizons will tend to lengthen if inflation is above the band. Further, frequent or large deviations will drive a wedge between communicated horizons and realized outcomes, whereas infrequent or small deviations will imply horizons and outcomes are closely aligned. In this way, the communication of rules via bands
and horizons creates a metric with which to evaluate central bank performance and adherence to a rule. Lastly, we note that, in principle, the entire horizon of forecasts can be used to evaluate performance. However, using the communication strategy here simplifies the metric significantly, which is a key consideration for transparency.

6 Price Level Targeting

In this section, we extend the communication strategy to an additional type of policy rule, that of price level targeting, and show the fundamental concept of bands and a horizon remains unchanged. Price level targeting is an interesting extension because it has a make-up component and has received attention in light of lower inflation and zero lower bound risk. More crucially, by changing from inflation to price level targeting, the target for monetary policy changes, leading to a necessary change in language.

To illustrate this environment, we return to the New Keynesian model in Section 4, but with an interest rate rule given by

\[ i_t = \alpha p_t + \eta_t \]  

(32)

where \( p_t \) denotes deviations from the price level, which follows

\[ p_t = p_{t-1} + \pi_t. \]  

(33)

As in examples considered, a monetary authority simply giving the stance of policy \( i_t \) does not pin down a unique value of the policy parameter \( \alpha \) and the deviation from the rule \( \eta_t \), and communicating \( \alpha \) directly is not typically followed by central banks around the world. Again, the existence of an endogenous predetermined variable \( p_{t-1} \) implies there is no longer a simple closed-form solution for \( \pi_t \) and \( x_t \), but instead there are solutions of the form

\[ \pi_t = \Gamma_{\pi_p}p_{t-1} + \Gamma_{\pi_g}g_t + \Gamma_{\pi_u}u_t + \Gamma_{\pi_{\eta}}\eta_t \]

\[ x_t = \Gamma_{x_p}p_{t-1} + \Gamma_{x_g}g_t + \Gamma_{x_u}u_t + \Gamma_{x_{\eta}}\eta_t \]

\[ p_t = \Gamma_{p_p}p_{t-1} + \Gamma_{p_g}g_t + \Gamma_{p_u}u_t + \Gamma_{p_{\eta}}\eta_t \]
where \( \Gamma_{j,k} \) are functions of \( \alpha \). The expected path for the price level is

\[
\mathbb{E}_t [p_{t+j}] = \Gamma_{pp}^{j+1} p_{t-1} + \sum_{k=0}^{j} \Gamma_{pp}^{j-k} \rho_g^k \Gamma_{pg} g_t + \sum_{k=0}^{j} \Gamma_{pp}^{j-k} \rho_u^k \Gamma_{pu} u_t + \Gamma_{pp}^{j} \Gamma_{pq} \eta_t, \tag{34}
\]

which implies

\[
\mathbb{E}_t [\pi_{t+j}] = \Gamma_{xp}^{j} \Gamma_{pp} p_{t-1} + \left( \Gamma_{xp}^{j} \sum_{k=0}^{j-1} \Gamma_{pp}^{j-1-k} \rho_g^k \Gamma_{pg} + \Gamma_{xp} \rho_g^j \right) g_t \tag{35}
\]

\[
+ \left( \Gamma_{xp}^{j} \sum_{k=0}^{j-1} \Gamma_{pp}^{j-1-k} \rho_u^k \Gamma_{pu} + \Gamma_{xp} \rho_u^j \right) u_t + \Gamma_{xp}^{j} \Gamma_{pu} \eta_t
\]

and

\[
\mathbb{E}_t [x_{t+j}] = \Gamma_{xp}^{j} \Gamma_{pp} p_{t-1} + \left( \Gamma_{xp}^{j} \sum_{k=0}^{j-1} \Gamma_{pp}^{j-1-k} \rho_g^k \Gamma_{pg} + \Gamma_{xp} \rho_g^j \right) g_t \tag{36}
\]

\[
+ \left( \Gamma_{xp}^{j} \sum_{k=0}^{j-1} \Gamma_{pp}^{j-1-k} \rho_u^k \Gamma_{pu} + \Gamma_{xp} \rho_u^j \right) u_t + \Gamma_{xp}^{j} \Gamma_{pu} \eta_t
\]

Assuming that the price level was previously was at target, communication after a 1pp demand shock that “inflation will be \( \mu \) from the inflation target in \( N_t \) periods” implies

\[
\mu = \mathbb{E}_t [p_{t+N}] = \sum_{k=0}^{j} \Gamma_{pp}^{j-k} \rho_g^k \Gamma_{pg} \tag{37}
\]

and similarly for a 1pp supply shock

\[
\mathbb{E}_t [p_{t+N}] = \sum_{k=0}^{j} \Gamma_{pp}^{j-k} \rho_u^k \Gamma_{pu}. \tag{38}
\]

In this case of price level targeting, then, policy can be communicated with “the price level will be \( \mu \) from the inflation target in \( N_t \) periods.” Figure 8 shows the case when, given values for the structural parameters, after a 1pp demand shock \( (g_t = 1) \) the monetary authority expresses a rule with a value of \( \alpha_0 \) by stating “the price level will be 25bp from the inflation target in 8 periods.” This communication pins down the policy parameter, as well as the dynamics for inflation, the output gap, and the nominal rate. A more dovish policy \( \alpha_1 \) can be communicated by stating
Figure 8: Impulse Responses with a Price Level Target Rule

Note: Shows impulse responses to a 1pp shock to demand when $\beta = 0.99$, $\sigma = 1$, $\kappa = 0.17$, and $\rho_g = 0.9$. Values for the policy parameters are $\alpha_0 = 1.63$ and $\alpha_1 = 1.04$.

"the price level will be 25bp from the inflation target in 12 periods." These communications pin down inflation, the output gap, and the nominal rate. In addition, by changing communication to the price level, the central bank preserves the principles for measuring deviations as discussed in the previous section.
7 Conclusion

Motivated by the wide-ranging communication strategies of the central banks around the world that use some form of inflation targeting, we develop a link between rules-based monetary policy and effective communication. Our framework relies on three key features: the specification of a point inflation target, tolerance bands around the point, and economic projections. In simple Fisherian and New Keynesian models, we show that effective communication about the band and a horizon for achieving that band given shocks can implicitly pin down a rule without having to explicitly express one. In addition, the results suggest that communicating rules in this way generates a metric with which to evaluate deviations from the implicit rule by comparing communication with realized outcomes. The form of the communication can easily be extended to alternative rules such as price-level targeting. Central banks that use this communication can then reap the benefits of rules-based policy without necessarily having to codify their rule.

References


