

# Inflation Targeting: Fix It, Don't Scrap It

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A number of commentators have argued that inflation targeting is an idea whose time has passed, as, they say, it has proven inadequate to the challenge of dealing with the situations faced by many central banks in the aftermath of the global financial crisis.<sup>1</sup> Recent developments such as the Federal Reserve's adoption of an explicit quantitative "threshold" value for the unemployment rate in December 2012, and Bank of England Governor-designate Mark Carney's suggestion that there could be advantages of a nominal GDP target in a speech that same month (Carney, 2012) have been widely cited as evidence of a swelling tide of dissent against inflation-targeting orthodoxy, even among noted former proponents and practitioners of inflation targeting.<sup>2</sup>

It is indeed true that recent events expose important disadvantages of a particular conception of inflation targeting, one that is reflected in the practical implementation of inflation targeting in many countries. This does not, however, mean that an inflation target as such is undesirable, or that a superior regime could not be described as a form of inflation targeting. Indeed, what is needed is something closer to the ideal version of inflation targeting already advocated for some years in theoretical discussions of this approach.

It is important, first of all, to recognize that proponents of inflation targeting do not actually have in mind a commitment by the central bank to base policy decisions purely on their consequences for inflation, and to act so as to keep the inflation rate as close as possible to the target rate at all times. Mervyn King (1997) memorably referred to this as the "inflation nutter" position, and distinguished the "flexible" inflation targeting that he advocated from it; Ben

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<sup>1</sup> See, for example, Frankel (2012) and Wren-Lewis (2013).

<sup>2</sup> See, for example, El-Erian (2012).

Bernanke's advocacy of inflation targeting has similarly always taken pains to insist that it would not require a central bank to disregard the consequences of its policy for the real economy, and so would not be contrary to the Fed's "dual mandate" (e.g., Bernanke *et al.*, 1999; Bernanke, 2004a).

And the theoretical case for inflation targeting has never rested on an assertion that a single-minded focus on inflation stabilization would achieve the best outcome; while there exist cases in which maintenance of a stable inflation rate at all times would be an optimal outcome, the literature has stressed how special are the assumptions required in order for this to be true. Quantitative investigations of optimal monetary policy in a variety of structural models and under varying assumptions about parameters and shocks have instead found as a much more robust conclusion that optimal monetary policies involve a low long-run average rate of inflation, and fluctuations in the inflation rate that are *not too persistent*, so that a correct forecast of inflation a few years in the future remains always quite close to the same, constant long-run average inflation rate.

The essential reason for this conclusion is that while there are important real consequences of alternative paths for nominal variables in the short run, the long-run average rate of inflation has little consequence for the long-run average value of real variables --- so that there is little cost in terms of alternative stabilization objectives of adopting a policy that maintains a constant long-run inflation rate despite the occurrence of real disturbances. And indeed, there are important advantages for real stabilization objectives of maintaining confidence that the medium-run inflation outlook is not changed much when shocks occur. For example, relative constancy of expected inflation results in a stable short-run Phillips-curve tradeoff as a result of which monetary policy can more successfully stabilize real variables in response to transitory shocks, whereas if changes in the rate of inflation were expected to be highly persistent, it would be much more difficult for monetary policy to have an effect on real variables as opposed to simply affecting inflation.<sup>3</sup>

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<sup>3</sup> On the advantages of stable inflation expectations for general macroeconomic stability, see for example Bernanke (2004b).

Hence the literature has argued for the desirability of commitment to an approach to the conduct of policy that will ensure that departures of the inflation rate from a definite (relatively low) value will not last too long, and that can maintain public confidence in this property of inflation dynamics. This is what a commitment to an explicit inflation target is intended to achieve. And in fact, those central banks with explicit inflation targets (including the US, since January 2012) always commit themselves only to seek to keep inflation near the target rate “over the medium run,” or to aim to return the actual inflation rate to the target rate over some horizon two or more years in the future. They do not promise to make policy solely with a view to keeping inflation as close as possible to the target in the short run, and many central banks’ official descriptions of their policy targets make explicit reference to additional stabilization goals that are also to be pursued, subject to the constraint that this be done in a way that is consistent with the medium-run inflation target.

But while inflation-targeting central banks generally make it clear that the inflation target is only to be understood as a medium-run constraint on the conduct of policy, they are often much less clear about what *does* determine an appropriate nearer-term policy. And this is hardly a minor detail, since as a practical matter, the decision to be made at any given meeting of a monetary policy committee is only a near-term decision: it is a decision about operating targets for the bank’s policy instruments *until the next meeting* (only a few weeks in the future), with the expectation that a similar decision process will be repeated afresh when the next meeting occurs. Hence even confidence that a central bank’s policy should deliver a certain average rate of inflation “over the medium run” depends on its adopting (and being seen to have adopted) a decision procedure for *near-term* policy decisions that can be expected, over time, to deliver that average rate. If a central bank does not explain how its supposed medium-run objective determines (or at least constrains) its near-term choices, there may be little confidence in this --- or it may evaporate in response to an unexpected shock.

It has sometimes been supposed that simply defining a specific *future horizon* at which inflation should be projected to equal the target suffices to

explain how a medium-run inflation target should determine near-term policy decisions. For example, in Svensson's (1997) classic exposition of the idea of "inflation-forecast targeting," in each decision cycle the policy committee chooses the unique current operating target for the policy rate (a short-term nominal interest rate) that results in a forecasted inflation rate two years in the future equal to the inflation target. This exercise has a determinate solution, however, only because the model assumed in the exposition implies that inflation is completely unaffected by monetary policy decisions more recent than the meeting two years earlier. Thus in focusing on the implications of the current policy decision for projected inflation two years in the future, the policy committee is actually looking at the impact of the decision on inflation *at the shortest horizon for which there is an effect*. But this is not a realistic depiction of what actual inflation-forecast targeting involves; banks that focus on closing the "inflation gap" only two or more years in the future do not do so because they believe that inflation outcomes at shorter horizons are genuinely policy-invariant, as is clear when projections under alternative hypothetical policy paths are presented.

Up until 2004, the Bank of England often explained its decision procedure in terms of a "constant-interest-rate forecast" of the future evolution of inflation that was presented in the introductory section of each *Inflation Report*. According to Vickers (1998) and Goodhart (2001), in each decision cycle, projections of the future evolution of inflation and other variables were produced under the assumption that the policy rate would be held constant at one level or another; the appropriate current policy-rate decision was taken to be that interest rate with the property that, if the policy rate were to be held at that rate indefinitely, inflation would be projected to precisely equal the target at a horizon exactly 8 quarters in the future. (The verification of this condition was presented in the *Inflation Report* by plotting the inflation projection under the assumption of a constant interest rate equal to the current policy rate, together with a horizontal line at the level of the inflation target and a dashed vertical line at the 8-quarter horizon, allowing the satisfaction of the criterion to be judged by eye.)

Because only a one-dimensional family of possible policy paths is considered (alternative possible constant interest rates), a criterion involving only the inflation forecast at a single horizon suffices to uniquely determine the appropriate choice. But this apparent solution is logically inconsistent, because a policy committee that chooses a given policy rate through this procedure does not commit itself to actually maintain the policy rate at that level for the next 8 quarters; the decision will be reconsidered afresh the following month. This means that it is possible for a constant-interest-rate projection that justifies choice of a particular policy rate under this criterion to *already imply* that if the economy evolves as currently projected, the same procedure will *not* allow the bank to maintain the policy rate at that same level for more than a few months. (This will be the case if under the constant-interest-rate forecast, the inflation rate is projected to pass through the target at exactly 8 quarters in the future, but to go on to overshoot the target farther in the future.<sup>4</sup> )

Such a sequential forecast-targeting procedure can only be internally consistent if the exercise involves the choice of a non-constant path for the policy rate, with the property that the path chosen at one date will in fact be a model-consistent forecast (that is, one that is consistent with the projected evolution of the economy *according to the central bank's model*) of the path that should also be chosen at any later date, applying the same criterion in the circumstances that are forecasted to exist then. Procedures can be designed to have this property; but such a procedure must involve contemplation of a flexible class of possible forward paths for policy, as a consequence of which there is no longer a single path consistent with the desired medium-run rate of inflation. Instead, it is necessary to have a criterion for choosing among alternative near-term transitions paths, each of which would converge to the same medium-run state of affairs.

One still might imagine defining the criterion purely in terms of the rate at which inflation is projected to return to the target rate, when it is not already there. But while such a criterion could be internally consistent, it would not be

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<sup>4</sup> See Woodford (2012a) for further discussion and an illustration.

economically desirable. For the reason for not always returning the inflation rate to the target rate as promptly as possible is not simply (or even primarily) that there are distortions created by changes in the rate of inflation (in which case it would indeed make sense to target a fixed rate of convergence, regardless of the reason that inflation has strayed from the target). Instead, the primary reason is that economic disturbances that shift the short-run relationship between inflation and the output gap (or other real variables that are relevant to stabilization objectives) sometimes make it too costly in terms of destabilization of these other variables to move inflation quickly to the target (or perhaps even to keep it as close to the target as it currently is). Hence a more sensible criterion for choosing among alternative feasible transition paths must be one that balances the projected degree of continuing departure of the inflation rate from the medium-run target against the projected degree of imbalance in other stabilization objectives.

As a simple example, for a time the Norges Bank included in each issue of its *Inflation Report* a box explaining the criteria used to determine the appropriate forward path for policy at the time of each forecast-targeting exercise. In addition to specifying that the inflation rate should be projected to converge toward the target rate (without specifying a precise horizon for full convergence), the Bank stated that “the inflation gap and the output gap should be in reasonable proportion to each other until they close,” and in particular that the two gaps “should normally not be positive or negative at the same time.”<sup>5</sup> In order to allow visual inspection of the extent to which the projections satisfied this criterion, the Bank would present a figure in each *Inflation Report* in which the projections for its preferred measure of inflation and of the output gap were superimposed, allowing verification of the desired inverse relationship between them, with the two gaps shrinking to zero together.<sup>6</sup>

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<sup>5</sup> The criteria are explained more fully in Qvigstad (2006). See Woodford (2012a) for further discussion of the Norges Bank approach.

<sup>6</sup> In recent years, the Norges Bank has been less explicit about the nature of the near-term criterion used to determine the appropriate forward path of policy, although it still states in each issue of its report (now called *Monetary Policy Report*) that “the interest rate path should provide a reasonable balance between the path for inflation and the path for overall capacity utilization in the economy” (Norges Bank, 2012, p. 16), and it still always

Under such a criterion, it is not necessary to specify separately the rate at which the inflation rate should be projected to approach the target rate; the appropriate rate of convergence is exactly the rate that allows the output gap to remain in the desired proportion to the inflation gap. (Note that under such a criterion, the inflation gap *will* be projected to close eventually, as long as it is not possible to have a non-zero permanent output gap at any finite inflation rate.) In the case of some types of disturbances, this might mean that much of the convergence would be expected to occur within 8 quarters; but under other circumstances, convergence might take substantially longer. Credibility of the central bank's commitment to its medium-run target would be maintained, and confidence that convergence will eventually occur, not on the basis of the rate at which inflation is always observed to be converging toward the target rate, but on the basis of the fact that the current size of the inflation gap (or at any rate, the gap that is projected over the fairly near term under intended policy) is always justified by the current size of the output gap, rather than being allowed to grow disproportionately.

Adoption of an explicit criterion for deciding upon an appropriate forward path for policy becomes especially important in the case that the policy rate reaches its lower bound (or at least a barrier that the central bank is unwilling to breach, whether it would be technically feasible or not), as has been true in both the US and the UK since the end of 2008. In the absence of an ability to provide further stimulus to demand through further immediate cuts in the policy rate, the possibility of providing stronger incentives for current spending by creating expectations of looser monetary policy in the future than would otherwise have been expected can in principle be an important additional policy tool. But an important limit to the effectiveness of such "forward guidance" is the fact that people need to be given a reason to believe that policy will in fact be conducted differently in the future, and not simply that the central bank currently wishes

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includes the figure superimposing the projected paths for the inflation rate and the output gap under its baseline scenario (Norges Bank, 2012, chart 1.18).

them to believe this.<sup>7</sup> I believe that this can most effectively be done by announcing a target criterion that will be used to determine future policy decisions, and then demonstrating that policy deliberations are indeed organized around verification of the announced criterion.

The recent calls for new approaches to the conduct of monetary policy, that some have interpreted as repudiations of inflation targeting, arise in this context. The Fed's introduction of a threshold for the unemployment, which should be reached before it will be appropriate to begin raising the federal funds rate from its current near-zero level (assuming that inflationary expectations remain contained), is an attempt to provide assurance that interest rates will remain low for longer than might already have been expected on the basis of past conduct. My own proposal (Woodford, 2012b) that the Fed commit to maintain its highly accommodative policy until nominal GDP catches up to a target path had the same intention, and it is in this context that Bank of England Governor-designate Mark Carney has spoken of the possible benefits of a nominal GDP target as well (Carney, 2012). Indeed, Carney's suggestion occurs in the course of a discussion of approaches to the provision of "guidance" about future policy, as a form of "unconventional policy" that can be deployed when the interest-rate lower bound has been reached.

It is true that Carney refers to this option as one that is not "available to a central bank operating under flexible inflation targeting," and says that if its use were required, "the policy framework itself would likely have to be changed," which in Canada "would require the approval of the political authority." Nonetheless, it is important to recognize that he refers here to a specific conception of "flexible inflation targeting," that has indeed been institutionalized in a number of countries, but that departs from the ideal advocated by theorists of inflation targeting such as Svensson and Woodford (2005). Carney stresses that the point of a nominal GDP level target would be to introduce *history-dependence* into a central bank's policy commitment: the bank would commit itself to

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<sup>7</sup> Woodford (2012b) discusses a case in which an announcement by the Riksbank that its policy rate was projected to remain at its current low level for several quarters seems to have had a contractionary effect, rather than the desired expansionary one, owing to insufficient credibility of the asserted path of future policy.



subsequently make up for any departure from the nominal GDP target path owing to a loss of control of aggregate expenditure when the interest-rate lower bound constrains policy, by temporarily targeting a higher than usual nominal growth rate in order to get the economy back on the nominal GDP trend path that, ideally, it would never have left. This is indeed different from the purely forward-looking approach to inflation targeting that is commonly practiced. The forward-looking approach implies that once it becomes possible to achieve its target with interest rates not constrained by the lower bound, the central bank will simply pursue its normal stabilization objectives, including keeping the rate of inflation going forward within fairly narrow bounds. But an expectation that nominal growth may be insufficient for an indeterminate length of time (owing to the lower bound constraint), while it will under no circumstances be allowed to *exceed* its normal rate (when the constraint doesn't bind), can result in an undesirable contractionary bias to expectations about future policy.

Yet while a commitment to a level path for a variable such as nominal GDP would be a departure from current practice, the desirability of such history-dependence has been stressed for some time in theoretical accounts of how flexible inflation targeting *ought* to be pursued.<sup>8</sup> Woodford (2008) argues for the desirability of history-dependent targeting procedures that incorporate a commitment to *error-correction*: a central bank that misses its nominal growth target owing to a misjudgment of the required instrument setting should be expected to compensate for this later, once the mistake has become evident. To the extent that such error-correction can be anticipated, the expectation that it will occur should lead people to take actions that reduce the size of the deviation caused by the central bank's misjudgment, thus improving stabilization outcomes despite the limitations of the real-time information available to the central bank, or other constraints on the accuracy of its instrument choices. For this reason, it has frequently been argued that price-level targeting rules should have superior properties to forward-looking inflation targeting, if people in the economy are themselves forward-looking -- even from the standpoint of the kind of loss function typically considered to represent the objectives of a "flexible inflation-

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<sup>8</sup> See, for example, Woodford (1999, 2000, 2012) and Svensson and Woodford (2005).

targeting” bank.<sup>9</sup> The particular advantages of a commitment to a nominal level target when the interest-rate lower bound becomes a binding constraint were stressed by Eggertsson and Woodford (2003) and Svensson (2003), well before the recent crisis.

Moreover, a commitment to a nominal GDP level path is completely consistent with a commitment to a medium-term inflation target. One might choose, for example, a target path for nominal GDP with the property that maintenance of nominal GDP near the target path should be expected, with a fairly high degree of confidence, to result in an average inflation rate over the medium run equal to the target rate; indeed, I believe that this should be an important constraint on the selection of a nominal GDP target path, in the case of a country that already has an inflation target. And it is not simply a matter of there being *no contradiction* between the two commitments. The commitment to the nominal GDP level path could reasonably be defended as *necessary* to a more complete description of what the commitment to the inflation target should mean in practice. As argued above, the inflation target itself does not suffice to determine what near-term policy decisions should be; and yet in the absence of a clear near-term criterion that should generate the desired rate of inflation over the medium run, the way in which the central bank’s decision procedure is supposed to maintain confidence in a particular medium-run rate of inflation remains obscure. And no inflation-targeting central bank would actually maintain that the correct near-term criterion should simply be minimization of the distance between the actual inflation rate and the target rate, even at short horizons. Hence what is needed is a near-term target criterion, that will not refer simply to inflation, but that can be defended as an intermediate target, the pursuit of which in the near term can be expected to bring about the desired medium-run inflation rate (without an unnecessary degree of volatility of real variables). A nominal GDP level path is an example of a fairly simple target criterion that satisfies these requirements.<sup>10</sup>

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<sup>9</sup> See, for example, Svensson (1999) and Vestin (2006).

<sup>10</sup> At least in simple New Keynesian models, and abstracting from measurement issues, the ideal choice would be a deterministic target path for an “output-gap-adjusted price level,” as argued in Eggertsson and Woodford (2003)

Indeed, despite the view expressed by Governor Carney, I believe that adoption of a nominal GDP level path as the criterion for near-term policy decision would involve *less* of a departure from the existing policy commitments of a flexible inflation-targeting central bank than would adoption of a “threshold” for the unemployment rate of the kind announced in December 2012 by the Fed. The unemployment threshold indicates a numerical objective for a variable other than inflation that cannot be defended as an intermediate target that, if achieved, would necessarily deliver the desired rate of inflation, over the medium run; it is an objective that would not in itself imply any given rate of inflation, and that furthermore could easily conflict with achievement of the desired rate of inflation, even on average over a period of many years, if the unemployment target were consistently pursued over that time, in too single-minded a way. Of course, the FOMC’s announcement of an unemployment threshold implies no commitment or intention to treat this value as a target in this way, let alone as their sole or pre-eminent target. Nonetheless, because the adoption of an unemployment target with a specific numerical value would present such a threat to stability of the inflation rate, I believe that even a reference to a numerical threshold for unemployment of the kind that the FOMC has made involves risks to the credibility of the Fed’s commitment to its medium-run inflation target that would not arise in the case of a commitment to a nominal GDP target path.

The adoption of thresholds also creates problems for the credibility of the medium-run inflation target owing to the fact that the thresholds (in order for their announcement to accomplish something) must represent both a departure from *past* policy and an approach to the conduct of policy that is different from what one wants people to anticipate about *future* policy as well, once the current anomalous circumstances are safely in the past. (That is, the thresholds represent neither the criterion that would have determined whether a federal funds rate target near zero was appropriate under the FOMC’s past approach, nor the criterion that the FOMC should be expected to use after “exit” from the current

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and Woodford (2008, 2012a). A target path for the level of nominal GDP is a variant that would retain many of the theoretical advantages of such a proposal, while avoiding the need to agree upon the correct value of the model parameters that would determine the ideal relative weight to place on the output gap, or to be able to measure the correct value of the “natural rate of output” in real time.

period of unusual policy accommodation.) But the problem with adopting temporary thresholds of this kind is that it makes evident that the central bank's quantitative goals for the variables that define its stabilization objectives can easily shift from year to year, so that there may be little confidence about whether the goals may shift next. A nominal GDP level path --- chosen so as to represent both a path that the central bank *had wanted* to keep the economy near, in order to achieve its previous goals, and that, if reattained and followed in the future, *should deliver* the medium-run inflation rate that one wants people to continue to expect after the transition from the current situation --- need not undermine credibility on either account. It implies that the central bank should be expected to maintain an unusually accommodative stance of policy for the immediate future, and indeed that it should seek to achieve a higher nominal growth rate than usual over a temporary transition period; but the reason for this temporary departure from policy as usual would be clearly tied to the fact that nominal GDP has gotten off track to an unusual extent, so that explanation of the anomalous policy in these terms should not create doubts about how the bank will behave under more normal circumstances.

I thus believe that it would be possible to avoid the problems with inflation targeting as currently practiced, that have been the focus of recent criticism of inflation targeting as such, while retaining the essential features of an inflation targeting regime: not only a public commitment to a fixed numerical target for the medium-run rate of inflation, and a commitment to regularly explain how policy decisions are consistent with that commitment, but the use of a forecast-targeting procedure as the basis both for monetary policy deliberations and for communication with the public about the bank's decisions and their justification. And I believe that it would be desirable to retain these features of inflation targeting as it has developed over the past two decades. The key arguments made for the desirability of inflation targets prior to the crisis retain their force. Even if it is now all too evident that the stabilization of inflation and inflation expectations does not by itself guarantee that macroeconomic instability will never be an issue, there remain excellent reasons to believe that success on this dimension is conducive to macroeconomic stability more broadly. During the

recent crisis, it is likely that the high degree of stability of inflation expectations --- owing to the credibility with regard to inflation control achieved by many central banks over the previous 15 years --- has reduced the degree of instability resulting from a very substantial collapse of aggregate demand on the one hand and sharp increases in commodity prices on the other.

And the need for explicit, quantitative commitments about policy targets if medium-run inflation expectations are to remain stable is arguably greater now than it was during the decade prior to the crisis --- precisely because the unusual circumstances of the crisis, and the unprecedented policy measures required to respond to them, make it much more difficult for the public to know what to expect from central bank policy in the future in the absence of explicit guidance. These dramatic actions, while for the most part defensible as responses to a crisis, raise understandable questions about the extent to which policy remains in steady hands. The answer to those questions, however, is not to declare that the existing policy framework has exhausted its usefulness and start again from scratch. Instead, a deeper consideration of the principles that an inflation targeting regime seeks to instantiate should make it possible to fine-tune aspects of the practice of inflation targeting, in a way that addresses the needs of the current situation while making it clear that the fundamental commitments of the regime remain unchanged.

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