

# THE END OF INFLATION TARGETING: LESSONS FROM THE LIQUIDITY TRAP

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*The international financial crisis has led to much criticism of the Central Bank's, including the ECB's, overwhelming focus on inflation targeting. In this exceptionally relevant paper, Andrew Salter provides a thorough review of inflation targeting while presenting the alternatives: price level targeting and nominal-GDP targeting. The paper makes a strong case for a reevaluation of Central Banks policies.*

## Introduction

In a now notorious paper, IMF chief economist Olivier Blanchard observed that “the state of macro is good” mere weeks before the greatest contraction in global economic activity since the Great Depression. Blanchard’s assertion rested on the convergence he detected in macroeconomics towards a New Keynesian perspective; a world-view in which inflation targeting constituted optimal stabilisation policy (Blanchard, 2008: 10). From the end of the Great Inflation in the early 1980s to the onset of the Great Recession in 2008, this view appeared to correspond with the developed world reality: inflation targeting had presided over the ‘Great Moderation’. But warning signs were increasingly evident. Real interest rates had declined steadily (Williams, 2009: 16). Increasing disinflationary pressure from emerging market imports was profound (Bernanke, 2010). Meanwhile Japan, poster-child for economic success during the post-war period, was laid low for over a decade by an academically unfashionable phenomenon: the liquidity trap. The vast majority of developed countries have since joined Japan in its malaise. This paper will explore the implications of these developments for monetary policy. To do so, this paper will elaborate a liquidity trap model within Loanable Funds and New Keynesian frameworks. Armed with the implications from both models, three approaches, representing increasingly broad explicit mandates for monetary policy, will be evaluated: Inflation Targeting, Price-level Targeting and Market Monetarism. The author will conclude with policy recommendations.

Some might argue that the liquidity trap is a ‘100-year flood’. Surely then, it should not form the basis for stabilisation policy: hard cases make bad law. It can however be viewed as an acid test. The effect of all of the above policies ought to be the same in ‘normal’ times: nominal growth equal to trend real growth plus target inflation. Any increased efficacy in dealing with ‘100-year floods’ is thus a pure welfare gain. Given the

human cost of the 2008 Great Recession, this welfare gain is potentially enormous. Further, this paper is about policy goals, not the transmission mechanism. We are interested in asking which objective(s) best induce(s) stability in all environments.

### On liquidity traps

A liquidity trap occurs when people are indifferent between holding money and bonds because they offer the same rate of return (Krugman, 1998: 141). The goods market can then become stuck in disequilibrium for an extended period due to money market

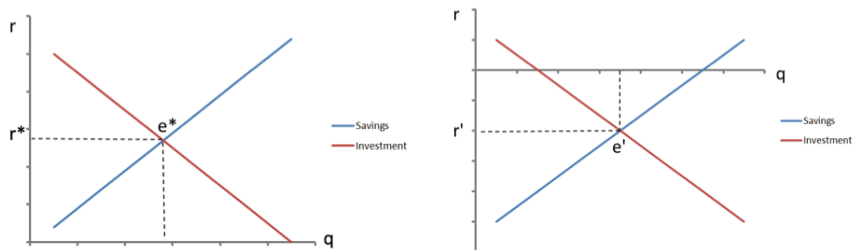


Figure A: Real Interest Rates in the Loanable Funds Model

failure. This is largely due to the zero-lower bound (ZLB). Consider a loanable funds model. Suppose we start at  $e^*$  in Figure A. Here, the market is in equilibrium. The preferences of savers and investors select a real interest rate  $r^*$ . What if there is a large ‘deleveraging’ shock, wherein savings increase while investment falls for all  $r$ ? One possibility is that we end up at  $e'$ , with a negative natural interest rate given by  $r'$ . This implies, due to the paradox of thrift, a negative output gap for any interest rate higher than  $r'$ <sup>11</sup>.

In reality, the nominal rate,  $i_t$ , is the rate people are familiar with, and it is in practice bound at zero<sup>2</sup>. The real interest rate,  $r_t$ , is:

$$r_t = i_t - \pi_{t+1}$$

A negative real interest rate can therefore only be achieved through inflation. We turn now to the New Keynesian approach to clarify the policy implications.

The basic New Keynesian model is described by three key relations:

<sup>1</sup> Liquidity preference binds rates at zero: otherwise people would simply hold only money (with  $i_t = 0$ ) and no bonds (with  $i_t \leq 0$ ) (Krugman, 1998). Investment doesn’t therefore absorb all of the increase in savings, and so output adjusts.

<sup>2</sup> For discussion on the feasibility of negative nominal rates see Svensson 2010. A Gesselian negative rate on money has also been proposed (Buiter, Panigirtzoglou, 2003). In this paper I assume a zero bound.

An IS curve:

$$D_t = Y_t = \frac{\rho}{\theta} - \frac{r_t}{\theta} + E_t(C_{t+1}) + g_t + u_t$$

A Taylor Rule:

$$r_t = r_n + \gamma(y_t - y_n) + \beta(\pi_t - \bar{\pi}) + \epsilon_t$$

A Phillips Curve:

$$\pi_t = \varphi E_t(\pi_{t+1}) + \psi(y_t - y_n) + v_t$$

Consider the IS curve. There is a large negative shock  $u_t$ , reducing output below potential. From the Phillips Curve, this causes disinflation. The central bank lowers  $i_t$ , in an effort to offset the shock, but hits the ZLB. Krugman's (1998) path-breaking research showed that the central bank now faces a credibility problem. Further stimulus can only be affected through  $\pi_{t+1}$ : the central bank must promise higher future inflation. Increases to base money after the ZLB is reached must be permanent to have any effect; if people believe money growth today is simply money growth we won't have tomorrow, it becomes an intertemporal wash. But this policy is dynamically inconsistent; everybody believes the Central Bank will withdraw the money at the first sign of recovery<sup>3</sup>.

This analysis typically provokes two objections:

1. *Damaged financial systems curtail monetary policy transmission*: Koo's analysis of Japan rules out a supply-side explanation, citing the failure of unencumbered foreign banks to expand credit as evidence: it is therefore a demand problem (Koo, 2010: 8).
2. *High debt levels preclude borrowing*: Firstly, there are always those unencumbered by debt who can be induced to borrow. Secondly, increasing inflation expectations induces spending generally, not just borrowing, and companies are sitting on record cash-piles<sup>4</sup>. Thirdly, it reduces real debt burdens today through the promise of future debt erosion.

Recent empirical findings show that countries with higher inflation recover much more strongly after financial crises, exhibiting little apparent evidence of intractable structural problems (Calvo, Coricelli, and Ottonello, 2012). Armed with these insights, the next section will evaluate the implications for three disparate policy mandates.

## Inflation Targeting

The rationale for inflation targeting stems largely from two observations found in most

<sup>3</sup> Much as happened when the Bank of Japan ended the Zero Interest Rate Program in 2000 (Ueda, 2005).

The economy stalled again, and subsequent measures have had little effect.

<sup>4</sup> Apple, for example, has cash reserves of \$137 billion.

macroeconomics textbooks:

1. Excessive inflation imposes ‘shoe leather’ and ‘menu’ costs on consumers and producers respectively.
2. The ‘divine coincidence’: It follows from the New Keynesian Phillips Curve (NKPC) that meeting a well-anchored<sup>5</sup> inflation target will stabilise output at potential.

Point one is inarguable, but currently of minimal concern. Point two is crucial: it suggests that meeting an inflation target is a win-win situation; there is no trade-off between inflation and output<sup>6</sup>.

What if the NKPC is wrong? Its form arises due to ‘Calvo Pricing’: firms can change prices only with a certain probability each period, leading to sticky aggregate prices. This is clearly nonsense; there is no ‘Calvo Fairy’. But what if it isn’t even a good metaphor? Consider the deviation from Calvo proposed by Mankiw and Reis (2001), where information rather than prices is sticky. This destroys the ‘divine coincidence’. Prices will be set based on old price-level expectations. Stabilising the rate-of-change will not be enough to maintain output at potential if the path of prices has changed; a history-dependent rule is required.

What about the acid test of the liquidity trap? The ‘divine coincidence’ rests on stable expectations. Central bankers have therefore become obsessed with credibility. A mandate, it is thought, must be pursued consistently to be credible<sup>7</sup>. But this is inconsistent with what we know about liquidity traps. Here, heresy is required: the explicit unseating of expectations. There are also deeper issues. Inflation has remained remarkably stable and expectations well anchored since 2008 (Koenig, 2012: 5). This explains why Fisherian ‘Debt-Deflation’ failed to emerge (Williams, 2009: 16). Yet output gap estimates are large. This suggests that downward nominal rigidity is of greater magnitude than upward rigidity. A classic study of the Canadian labour market in the early 1990s suggested the same conclusion for a low-inflation environment, as do recent U.S. wage data (Fortin, 1996; Figure B). This would mean that the disinflationary pressure from a negative output gap is weaker than its counterpart with low target inflation. Inflation in times of extremely low activity, as tend to characterise liquidity traps, could look similar to inflation at times of full employment: the NKPC breaks down. This would make it difficult to justify accommodative action. The ‘divine coincidence’ therefore rests on shaky foundations.

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<sup>5</sup>  $\phi=1$ .

<sup>6</sup> Strictly speaking, this only holds for demand shocks.

<sup>7</sup> Prima facie, it shouldn’t matter if the commitments change or what they are, once they are feasible and credibly pursued. The Swiss Central Bank’s commitment to a price ceiling on the Franc was a radical change which seems to have had no impact on its credibility.

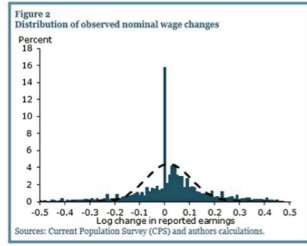


Figure B: U.S. Nominal Wage Changes (Daly, Hobin and Lucking, 2012).

Central bankers are not entirely blind to the exigencies of the current situation. Many subscribe to a “flexible” approach; Bernanke (2011) suggests that inflation-targeting credibility means that easing can be pursued now which won’t unseat expectations. The approach de rigueur is Quantitative Easing (QE), the basis for which is Preferred Habitat Theory (Doh, 2009):

$$i_{nt} = \sum_{i=0}^n E_t \left( \frac{r_{1i} + \pi_{1i}}{n} \right) + \rho$$

The rationale here is that investors have preferences beyond those captured by expected future rates. The Federal Reserve’s stated goal with QE is to lower  $\rho$ , which is determined by individual market characteristics, by influencing demand and supply (Bernanke, Reinhart and Sach, 2004). The evidence is broadly supportive: Japanese purchases of U.S. government bonds in 2004 appeared to lower 10-year rates (Bernanke, Reinhart and Sach, 2004: 57). Such effects ought to be larger in times of economic unrest when fear heightens liquidity premia, and QE appeared to lower rates in 2009 (Doh, 2009).

However, QE doesn’t address the fundamental liquidity trap problem. We need strongly negative real rates through expectations that loose future policy will generate above-target inflation. Lowering  $\rho$  eases long-run rates, but the magnitude of the effect can’t possibly be sufficient when short-run riskless rates aren’t low enough to start with. To take an extreme example: in November 2008, U.S. real rates were approximately 7%; the Taylor Rule suggests the required rate was approximately minus 5%! (Haubrich, Pennacchi and Ritchken, 2008). It also causes potential market distortions; while raising inflation expectations lowers all real rates, preserving premiums and thus the market’s capacity to price risk, QE actively seeks to erode these premiums. The effects of this tampering are uncertain and potentially store up future problems. It should be noted that if the effect of QE is really, as Woodford (2012) suggests, through the implicit promise of inflation, then we are no longer discussing inflation targeting in any meaningful sense.

### Price-Level Targeting

A price-level target would address many of the criticisms of inflation targeting. The history-dependency of the rule makes it a stabilisation policy candidate in a Mankiw-Reis world. It would also mean that in response to a period of below-trend inflation due to a negative demand shock that the central bank would be obliged to pursue above-trend inflation later: exactly as required to generate negative real rates in a liquidity trap (Blinder, 2000: 1095). It does not indulge a ‘let bygones be bygones’ philosophy. But does it go far enough?

Consider the U.S. case since 2008. If we take the beginning of 2007 as a time when prices were ‘on trend’ they are still ‘on trend’ now (Figure C). Why? Two counter-vailing forces: above target inflation in 2008 due to commodity prices, and at or below target inflation since. The period of supply-shock driven high inflation pre-crisis meant that a price-level target would not actually have engendered expectations of above-target inflation when the liquidity trap took hold (Davis et al, 2012: 17). As Williams (2009: 28) points out, this unfortunate coincidence is a common characteristic of business cycles; adding history dependence to a price-based rule does not, therefore, guarantee an optimal response.

### Market Monetarism

Consider the Quantity Theory of Money identity:

$$M.V = P.Y$$

The circulation of money must equal nominal output. Market monetarism proposes that the central bank commit to a nominal output growth path. This is a history dependent rule, engendering the same positive attributes in that regard as price-level targeting. But it goes further than that, combining the dual mandate of a central bank like the Federal Reserve into one consistent objective (Clark, 1994). What are the benefits of a nominal GDP target?

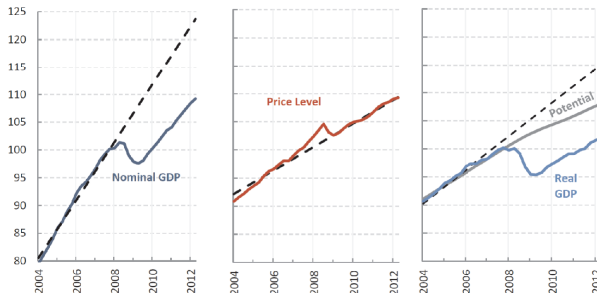


Figure C: U.S. Economic Variables (Davies et al., 2012)

The first stems from a point which is often the elephant in the room in such discussions: defining inflation is difficult (Sumner, 2012). It is unclear which measure is optimal, and they can diverge wildly due to everything from tax-code changes to oil prices. Nominal GDP is simply nominal income. Secondly, it deals with supply shocks more evenhandedly, the composite target dividing the weight of adjustment evenly between real GDP and prices (Frankel, 2012). Finally, and most importantly, it targets stabilisation explicitly: it is a commitment by the central bank to demand management (Clark, 1994: 12). As Keynesians have long argued, the Great Depression was not caused by financial crisis, but by a collapse in spending (Sumner, 2012: 14). What matters for demand is the level of nominal spending: contracts are made and settled in nominal terms. Allowing the level of nominal spending to collapse invites disaster. U.S. nominal GDP collapsed in late 2008 and has not returned to its original path (Figure C). Unless one accepts the dubious assertion that U.S. productivity fell off a cliff in 2008, the initial response to increasing demand would be real output growth.

What about the liquidity trap? A central bank targeting nominal GDP would pursue vigorous expansion until nominal GDP returned to trend. Because policy is 'too tight' now, it would be obligated to keep it 'too loose' later in order to make this happen (Koenig, 2012: 8). This explicit, mandated commitment to 'policy smoothing' would overcome dynamic inconsistency, raising inflation expectations in a liquidity trap as required. Inflation expectations would become countercyclical under a nominal GDP targeting regime: in a boom inflation expectations would fall, just as they rise in a liquidity trap. This would enhance the power of stabilisation policy in general.

## Conclusion

Why has monetary policy failed since 2008? The answer is surely timidity. In the case of the Federal Reserve, policy has gradually drifted towards what is required. Quantitative Easing was followed by unprecedented forward guidance; vague promises became an explicit unemployment target. This is a positive trend. But it has taken four years! And it is still not enough: the latest Fed projections still forecast inflation at target well into the future, allowing dynamic inconsistency to hamstring policy (Avent, 2012). Bold action is required. Inflation targeting was fine when it coincided with broader goals; its obsession with anchored expectations is now counterproductive and increasingly myopic. It is also baffling; if there is one thing monetary policy has successfully done, it is quell inflation<sup>8</sup>. That fear of it should cause us to suffer high unemployment without attempting to intervene is ludicrous. Economists have generally accepted the power of monetary policy, so much so that activist fiscal policy has become anathema to many. Monetary policy must fully accept the responsibility such primacy and faith entails. Central bankers have until now been like divers poised at the brim of an unfamiliar pool; dipping in a toe, a foot,

<sup>8</sup> For evidence of this see the Volcker disinflation of the early 1980s..

and now a leg. It is high time they took the plunge. Inflation targeting has failed; its credibility obsession precludes an adequate policy response. Price-level targeting is inadequate, vulnerable as it is to supply-shock pressures. Barring dubious coincidences, why should a stabilisation rule focus only on prices? A nominal GDP target marries both inflation and employment concerns into one target, making it simple and comprehensive. In a liquidity trap it is the only mandate which is both necessary and sufficient.



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