



BANK OF ENGLAND

Speech

Nominal income targets: an old wine in a new bottle

Speech given by

Charlie Bean, Deputy Governor for Monetary Policy, Bank of England

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Good morning! The UK's inflation targeting regime came into being just over 20 years ago, in the aftermath of sterling's exit from the Exchange Rate Mechanism. On the surface, the first 15 years looked pretty successful, with steady growth and inflation close to target. But we now know that dangerous financial imbalances were developing below the surface, not only here but also in other advanced economies. Those fault-lines have been brutally exposed in the past five years, which saw the worst systemic financial crisis in a century, followed by a deep recession and a tepid recovery that has left output still some 3% below its previous peak.

That experience has fuelled the debate over the extent to which central banks should lean against an asset-price and credit boom. Having discussed the issue elsewhere¹, I do not intend to dwell on it today, other than to say that I believe the right response to such threats is to rely primarily on the more active application of regulatory tools. But there will be occasions – when the excesses are building up outside the regulatory perimeter, for instance – when a more activist monetary policy leaning against the building financial imbalances will also be required. So the central bank's mandate needs to permit a temporary undershooting of its inflation target if it thereby reduces the risk of a subsequent painful bust.

The past few months have, however, seen questions asked of our inflation-targeting framework for other reasons. According to some, the framework has constrained the ability of monetary policy to support the recovery; an objective giving higher priority to growth or employment might have produced a better outcome. A particular, and increasingly popular, variant of this involves combining growth and inflation into a single target for nominal income.

The first thing to be said is that the MPC's mandate already incorporates a growth and employment objective. While our primary objective is to maintain price stability, subject to that we are also expected to support the Government's policies for growth and employment. The Chancellor's annual remit letter puts flesh on those bones, by specifying not only the 2% target for CPI inflation but also the Government's desire for high and stable growth and employment. And the letter goes on to note “that the actual inflation rate will on occasions depart from its target as a result of shocks and disturbances (and that) attempts to keep inflation at the inflation target in these circumstances may cause undesirable volatility in output.” If we had tried to offset the impact on consumer prices of, say, sharp movements in import prices, then we would need to engineer countervailing movements in domestically generated costs, in particular pay. But, given the stickiness of pay and prices, that would necessitate inefficient fluctuations in activity and employment.

Now during the first decade of the MPC, such shocks were small and generally benign, with access to cheap manufactures from emerging economies providing steady downward pressure on prices. But the past few years have provided a less felicitous backdrop. Not only have we had to deal with the consequences of the financial crisis but we have also had to manage several major cost shocks. These include: a 25% fall in the

¹ See e.g. Bean et al. (2011).

sterling effective exchange rate; fluctuations in the price of oil between \$35 and \$145 a barrel; and movements down and up in VAT. Moreover, the impact of these changes has often proved hard to predict. For instance, we significantly underestimated the pass-through into inflation of the exchange rate depreciation. So it should not be surprising that inflation has been both higher and more variable than during the Great Moderation.

The question is: would outcomes have been materially better under an alternative framework, such as a nominal income target? The first thing to be said is that the idea of directing macroeconomic policy towards targeting nominal income is by no means new. James Meade advanced the idea in his 1977 Nobel Prize lecture², and my MPC colleague, Martin Weale, spent much of the early part of his career working with Meade to develop the idea³. Samuel Brittan, coming from a slightly different perspective, wrote an important IEA pamphlet in 1981, which argued that controlling nominal spending was what monetarists were really seeking to achieve. I even wrote my PhD thesis⁴ on the topic over thirty years ago.

There is an important distinction between targeting the level or the growth of nominal income. The recent revival of academic interest in the issue relates to the scope for a target for the level of nominal income to provide additional traction for monetary policy when policy rates reach their zero lower bound. Some of the recent public commentary, however, has centred on the possible virtues of switching to a target for nominal income growth, so let me deal with that case first.

In a normal environment, nominal income growth and inflation targets generate similar responses to aggregate demand shocks. But a nominal income target is more "forgiving" than a narrowly-defined inflation target in the case of cost shocks. An adverse cost shock simultaneously tends to raise the price level and reduce output. Stabilising nominal income requires a one-for-one trade-off in the response, whereas stabilising inflation, or the price level, requires that all the burden of the shock is transferred onto output. That is the basic case put forward for the superiority of a nominal income target over a strict inflation target.

This comparison involves something of a straw man, however. As already noted, inflation targeting as practised, here and elsewhere, allows for an accommodating response to cost shocks, so long as it is consistent with inflation being stabilised in the medium term. Such flexible inflation targeting can thus look quite similar to targeting nominal income growth.

This is illustrated by the red line in Chart 1, which shows the four-quarter rate of growth of nominal income over the lifetime of the MPC. The stability of nominal income growth is notable – it stays pretty close to 5% with the exception of two periods. First, the Great Recession of 2008-9, which saw four-quarter nominal

² See Meade (1978). James Tobin, another Nobel prize-winner, also advocated adopting a target for nominal income around the same time (Tobin, 1980). I discuss the relationship between Meade's ideas and inflation targeting in Bean (2009).

³ See Meade, Vines and Maciejowski (1983) and Weale, Blake, Christodoulakis, Meade and Vines (1989).

⁴ See Bean (1983). I showed there that nominal GDP targets had good operating properties in the face of shocks to total factor productivity, as well as to aggregate demand when the main source of nominal frictions lies in the labour market. Bean (2009) explores the connection between Meade's ideas and modern inflation targeting.

GDP growth fall to minus, rather than plus, 5%. And, second, the past couple of years, when – at least according to the present vintage of data – nominal GDP growth was nearer 2%-3%.

In neither case, however, was the shortfall by design. The MPC does not presently directly generate an agreed forecast for nominal income growth, but we can construct a proxy for such a forecast by combining the MPC's central (mean) projection for GDP growth with its central (mean) projection for CPI inflation⁵. The corresponding one and two year ahead synthetic forecasts are also shown in Chart 1, denoted by the green and blue lines respectively. These forecasts are always in the region 4%-5%, with one notable exception, namely those made during 2009, when the Committee implicitly expected nominal income growth to recover more slowly than it in practice did. That was because our central expectation was for markedly lower inflation during 2010 than took place, in large part because of unexpected increases in energy prices and VAT, together with an unexpectedly large pass-through from the depreciation⁶.

So the deviations of nominal income growth from around 5% appear to have been largely associated with forecast errors. In particular, the collapse in demand after the demise of Lehman Brothers was so sudden and deep that there was no way that monetary policy could in practice have been relaxed early enough, and by a large enough amount, to prevent it. It is, though, a moot point whether policy would have been set even more stimulatory during the latter part of 2009 if we had been operating under a nominal income growth target, given that we were implicitly expecting a rather slow recovery in nominal income growth. Given how stimulatory policy already was, I suspect that we might well have taken the view that it was simply not feasible to get nominal income growth back much faster.

The unexpected weakness of nominal income growth in the past year or so does, however, serve to highlight a more significant difference between an inflation target and a nominal income growth target. A remarkable feature of the current cycle has been the juxtaposition of a weak recovery in output with robust growth in employment. One possible explanation is that the financial crisis has led to a fall, possibly temporarily, in the underlying rate of growth of supply. If that is so, then a fixed nominal income growth target would obviously go hand-in-hand with a higher inflation rate, whereas a fixed inflation target would be associated with lower nominal income growth. But this hardly provides an argument in favour of a nominal income growth target. Indeed, in this case one would surely want to set the target growth rate for nominal income lower to reflect the lower rate of growth of supply, though by how much might be hard to judge.

To me, the choice between the present flexible inflation target and a nominal income growth target – probably also pursued with a degree of flexibility – therefore centres less around any differences in macroeconomic outcomes, which are likely to be relatively minor, and more around issues connected with

⁵ There is reasonably close correspondence between four-quarter nominal GDP growth and the sum of four-quarter real GDP growth and CPI inflation (over 1993-2012, the correlation coefficient between the two is 0.9 and the average absolute deviation is 0.8 percentage points) which suggests that this is a reasonable approach.

⁶ See, for instance, the forecast errors box on pp.48-9 of the August 2010 *Inflation Report*.

accountability and communication. The issue here is not whether our objective should include growth – it already does – but whether a target for nominal income growth provides a better way of describing policy.

One advantage of a nominal income growth target is that it might lead to fewer instances where we have to resort to the use of our “constrained discretion” to justify a temporary acceptance of inflation away from the target in order to avoid undue volatility in output and employment. Fifteen years ago, when the current arrangements were instituted, I calculated⁷ that inflation should be expected to deviate from the target by more than one percentage point – thus triggering an Open Letter of explanation to the Chancellor – on about 40% of occasions. In fact, since 1997, inflation has been more than one percentage point away from the target, just 20% of the time. But those instances have been entirely concentrated in the past six years, which has seen inflation varying between 1.1% and 5.2% and averaging 3.1%. As I noted earlier, that reflects the preponderance of adverse cost shocks, which we have largely accommodated, whether by accident or design. But the concentration of such shocks runs the risk that the MPC is no longer seen as taking the target seriously. Having a target in which the acceptable deviations from target are in effect hardwired in might reduce that risk.

Against that, a nominal income growth target has two drawbacks. The first is that the data for nominal income is less timely than that for inflation and subject to revision, sometimes significantly so. Chart 2 shows the first estimate of nominal income growth, together with the current vintage of data; one should not take comfort from the concordance between the two series in the recent past, as the recent data have not yet had much opportunity to be revised! The average absolute revision over 1993-2009 is a full percentage point. Now the susceptibility to revision is hardly a knock-out blow. After all, the data on growth and employment are also subject to revision and recognising that the data are an imperfect guide to reality is part and parcel of setting policy. But the susceptibility of the data to revision would make it somewhat harder for the public to understand the MPC’s objectives and for Parliament to hold us to account.

The second drawback is that a nominal income growth target would probably mean less to the average person than does an inflation target. One virtue of an inflation target is it provides people with a simple heuristic for forming their expectations of how fast prices will rise. That would be muddled under a nominal income growth target.

The bottom line from all this is that I do not believe that a shift to a nominal income growth target would represent a major change in the regime. Most of the time, policy settings would probably be pretty similar. The main consequences would instead lie in how the MPC explained and justified its decisions.

The same cannot be said of a shift to a target for the *level* of nominal income, as recently advocated by Michael Woodford⁸. As the incoming Governor of the Bank of England, Mark Carney, explained in a recent

⁷ See Bean (1998).

⁸ See Woodford (2012).

speech⁹, such a target would ensure that past control errors have to be subsequently corrected. Bygones are not bygones, in other words. In the current context, this is usually taken to mean returning nominal income to a continuation of its pre-crisis trend line. As Chart 3 reveals, the nominal income shortfall in the United Kingdom is presently very large – in excess of 15% in fact.

Such history dependence in policy is potentially of value when private agents are sufficiently forward-looking and the regime is fully credible. For instance, suppose that demand depends on current and future expected real interest rates, and inflation depends on expected inflation and the margin of spare capacity in the economy. Now suppose there is an adverse cost shock that pushes inflation up. One can stabilise inflation by tightening policy sharply but temporarily. Alternatively one can generate the same disinflationary impact on demand by tightening policy less aggressively, but maintaining it for longer. And under normal policy objective functions, the latter course turns out to be preferable because it spreads the burden of adjustment more evenly over time.

The problem is that such a policy is not time-consistent. The central bank has the incentive to say that it intends to do this. But once tomorrow comes, it makes sense not to go through with its promise of holding policy tight, as it suffers a cost in terms of output foregone, while the benefit has already been gained in the earlier period. It is better simply to renege on the earlier promise to keep policy tight for a while. Knowing that, private agents will not believe the central bank's original promise in the first place. So to exploit this "policy-expectations" channel fully, the central bank needs some way of making its promise credible. The issue of how such credibility is achieved tends to be ignored in the literature: it is simply assumed that policy makers can commit themselves – or more often their successors – to behave in the necessary fashion. But that is rarely possible in practice, other than perhaps a very short distance ahead.

The difficulty of utilising this particular policy channel is probably not a great issue in normal times. But it looms larger when policy is constrained by the zero lower bound on interest rates. In such circumstances – and assuming that alternative policies, such as quantitative easing, are unavailable or ineffective – an ability to exploit this policy-expectations channel becomes much more valuable, as the commitment to hold policy loose in the future feeds back onto aggregate demand today by reducing expected future real interest rates. This comes about both through a low future nominal interest rate *and* a higher future rate of inflation because policy is held "loose for long".

The intent of such a loose-for-long strategy is in some ways similar to quantitative easing, as both reduce interest rates further down the yield curve. But the former does so by changing the path of risk-free rates at the near end of the yield curve, while the latter operates mainly through variations in the term premium further out along the yield curve brought about by changes in relative asset supplies. Moreover, the

⁹ See Carney (2012).

loose-for-long approach partly works by raising future inflation, which is not an objective of quantitative easing.

In order to illustrate the mechanism in operation, I have simulated a small macroeconomic model of the sort used by Woodford and others to study alternative monetary policies (see Annex for details). Real demand depends inversely on the current and expected future path of real interest rates, while the central bank sets the nominal interest rate. Prices in this economy adjust slowly, with a Phillips-curve relationship linking inflation to the current and expected future path of slack in the economy. Private agents understand how the economy works and have rational expectations. The key parameters – the interest elasticity of demand and the responsiveness of inflation to the output gap – are set to be broadly in line with empirical evidence for the United Kingdom, but given the extreme simplicity of the model, the results should be taken as merely illustrative.

In this economy, the slow adjustment of prices in the face of shocks to demand or supply leads to efficiency losses, which depend on the square of the deviation of inflation from target and the square of the output gap. The policy maker wishes to minimise the present value of these efficiency losses. Such an objective can be thought of as describing the rationale for flexible inflation targeting, namely seeking to stabilise inflation but in a manner that avoids excessive variability in output.

Chart 4 shows what happens in this economy when there is a large and relatively persistent drop in demand, but monetary policy is constrained by the zero lower bound on interest rates. I consider three policy scenarios. In the first scenario (the green line), the central bank can credibly commit to its future policy settings. I do not regard this as attainable in practice over anything other than very short time horizons, as central bankers generally cannot tie the hands of their successors. But it does provide a useful benchmark against which to judge alternative policies. The nominal interest rate is cut straight to its zero lower bound and remains there for over six years, far longer than is necessary to bring output back to potential and enough to generate subsequent overheating and excess inflation. But it is precisely that expectation of temporarily higher future inflation that reduces expected future real interest rates and boosts demand today.

In the second scenario (the red line), the central bank cannot commit in this way; the best it can do is simply to set policy on a quarter by quarter basis. Interest rates are again cut to their zero lower bound but now the monetary stimulus is withdrawn earlier, after about four years, and there is no overheating phase. The consequence is that expected real interest rates are higher than under the first scenario, demand is weaker and the output gap larger. From a welfare perspective, the first scenario offers a better outcome, because – at least in the model – the overheating period is a price worth paying to generate higher activity and less deflation in the near term. But this better outcome is not achievable when the central bank cannot tie its hands in regards to its future behaviour.

In the third scenario (the blue line), the government gives the central bank the mandate of stabilising the level of nominal income around a continuation of its pre-shock trend. The central bank then pursues this different objective, but again on a quarter by quarter basis. In this case, the output and inflation outcomes lie between the previous two scenarios¹⁰. Giving the central bank a mandate to target the level of nominal income is, in effect, a way of getting closer to the first, but unattainable, scenario.

So much for the theory behind a target for the level of nominal income. It is essentially one way of trying to hardwire in a commitment to maintaining a policy that remains loose long after conditions have normalised in order to generate the expectation of temporarily higher inflation in the future. But what may work in an economist's model may not be such a good idea in the real world. How sensible would it be in practice? And what pitfalls might there be?

First, the simulations show the impact of a pure demand shock resulting in strong deflation and, given the zero lower bound on the policy rate, also a high real interest rate. That hardly characterises the UK in the past five years, where inflation has averaged well above our 2% target and the real interest rate has as a consequence been pretty low. Moreover, it is by no means obvious that the UK's economic problem is simply one of deficient aggregate demand. The limited disinflationary pressures coupled with consistently weak productivity growth suggest that the financial crisis may have wrought significant damage to the supply side of the economy.

Our November *Inflation Report* discussed a variety of possible explanations for the weakness in productivity, relative to a continuation of its pre-crisis trend. Some of the weakness may unwind naturally as the recovery gathers pace, some may require policy intervention to fix, and some may persist indefinitely. But it seems unwise to assume that all of it will unwind with a recovery. That part of it which is attributable to a supply-side deterioration will instead be absorbed as a higher price level under a nominal income target. Of course, this issue could be addressed by adjusting the target level of nominal income down for the presumed deterioration in supply, but unfortunately we do not presently have a good handle on just how big this is. Moreover, it is worth noting that since the MPC's mandate dictates that we should support growth and employment provided that it does not conflict with achieving the inflation target, we are in any case charged with seeking to eliminate that part of the shortfall in nominal demand that is associated with an output gap, or that can be eliminated without generating inflationary pressure.

Second, hard-wiring in higher inflation for a while is not without risk. In many economic models – including the one I used earlier – it is only the real interest rate that matters: it is irrelevant whether a lower real interest rate comes about through a lower nominal interest rate or a higher inflation rate. In the real world, inflation erodes the real value of cash, nominal bonds and fixed-interest debts. In itself, that may reduce the impact on demand of the promise to keep policy loose for long. But it is also apt to breed suspicion of a

¹⁰ The path for the policy rate in this scenario may seem surprisingly close to that under the previous scenario, but it needs to be remembered that the *real* interest rate – which is what matters for demand – is nevertheless lower here because inflation is higher.

deliberate attempt to inflate away debt burdens, and may thus lead to inflation expectations becoming de-anchored. This is a serious risk: we should not forget the high levels of unemployment in the 1970s and 1980s associated with bringing inflation expectations back under control.

Third, maintaining low interest rates even after the economy has recovered carries financial stability risks. My baseline simulations suggest that the period of very loose policy is already quite extended. But I think there are good reasons for believing that demand may be presently somewhat less responsive to real interest rates than usual. Uncertainty rose sharply after the collapse of Lehman Brothers and rose again during the worst of the euro-area sovereign debt crisis. Banks and highly indebted households and businesses have focussed on deleveraging and improving the resilience of their balance sheets. Under these circumstances, it would be hardly surprising if changes in the cost of borrowing have less traction on demand than is usually the case. Chart 5 shows the implications of assuming the interest elasticity is just a third of the size assumed in the earlier experiments. The key point is that the policy rate under a nominal income target is now kept at the zero lower bound for more than six years, even though the output gap is closed after four. That long period of low interest rates is necessary to generate enough of a fall in expected future real interest rates to boost demand today.

But a world where policy is kept loose for so long after the economy is back to normal is somewhat troubling. The period of low US policy rates during 2004-5 was in part the result of the FOMC's desire to make good on its earlier promise during the 2001-3 downturn to maintain low interest rates for a considerable period in order to head off deflation worries. While I do not believe that the evidence supports the view that this was the sole cause of the pre-crisis build-up in financial imbalances in the United States, it is plausible that they made some contribution¹¹. Maintaining very low interest rates long after the economy has recovered must run the risk of encouraging a new credit/asset-price boom and the reappearance of financial imbalances. While macro-prudential policies, such as the application of the counter-cyclical capital buffer in Basel III, are intended to be the primary instrument to head off such excesses, it seems unwise to place too great a burden on them. For that reason, I believe one should be cautious about committing to monetary policies that remain loose for a very long period after the economy has normalised.

Let me conclude with a few more general remarks about the role of monetary policy at the current juncture. The sluggishness of the recovery has led some to question whether the framework is flexible enough to allow for sufficiently expansionary policies to support the recovery. Conversely, others suggest that the persistent overshoot of the inflation target indicates that if anything the MPC has interpreted its mandate too flexibly. Given these fears, I think it is sensible to review the framework to assess whether it is fit for purpose or can be materially improved, though the hurdle for change should be high.

¹¹ See Bean et al. (2011).

But there is a danger of expecting too much from monetary policy. The Great Recession of 2008-9 was unlike earlier policy-induced downturns aimed at reining back excessive inflationary pressures. The period of stability in the decade or so preceding the crisis encouraged an increasingly relaxed attitude to risk and an excessive build-up of debt, particularly within the financial system. That was shattered by the cardiac arrest of the global financial system in the autumn of 2008, resulting in a large downward shock to demand, here and elsewhere, and the realisation that substantial adjustments to balance sheets were called for. So it should not be surprising that the recovery since the middle of 2009 has been so muted.

Monetary policy can – up to a point – play a smoothing role in such circumstances by encouraging households and businesses to bring forward spending from the future to the present. And other, more targeted, central bank policies can help unblock dysfunctional markets or else, as with the Funding for Lending Scheme, support the supply of credit. We stand ready to take further such action should it be warranted. But such policies cannot – and should not seek to – prevent the necessary de-leveraging and rebalancing of production away from non-tradables towards tradables. That is a real process that takes time and means that the recovery is likely to remain somewhat subdued by historical standards. Thank you!

Annex

The model used for the simulations is standard in the monetary policy literature and comprises just two equations. The first is the demand for goods and services (a dynamic IS curve):

$$x_t = E_t x_{t+1} - \sigma(i_t - E_t \pi_{t+1} - r_t),$$

where x_t is the output gap, π_t is the deviation of inflation from target (the inflation gap), i_t is the nominal policy rate, r_t is the natural real rate of interest, and E_t denotes a rational expectation. This makes the level of demand today a decreasing function of present and future expected real interest rates. A fall in demand can then be simulated by reducing the natural real rate of interest, r_t , which is then allowed to unwind gradually.

The second equation describes the supply side and embeds within it an assumption that prices are sticky (a New Keynesian Phillips Curve):

$$\pi_t = \beta E_t \pi_{t+1} + \kappa x_t.$$

This makes inflation an increasing function of present and future expected output gaps. In the baseline model, $\sigma = 0.6$; $\kappa = 0.025$; and $\beta = .99$; in the low interest elasticity variant, $\sigma = 0.2$.

The loss function that the policy maker wants to minimise takes the form:

$$V_t + \beta E_t V_{t+1} + \beta^2 E_t V_{t+2} + \dots, \quad \text{where } V_t = \pi_t^2 + \kappa x_t^2 / 6.$$

Under a nominal GDP target, the above expression for V_t is replaced by:

$$V_t = (y_t - y_t^*)^2,$$

where y_t is nominal income and y_t^* is the corresponding target level.

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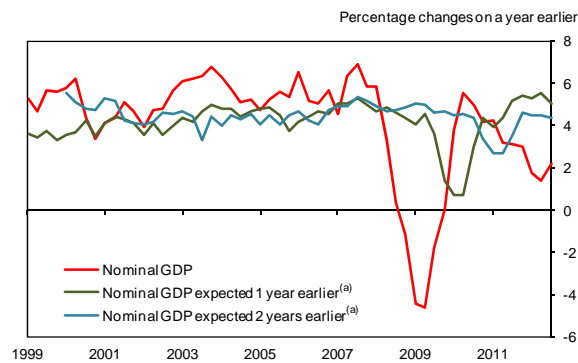
Nominal Income Targets: an Old Wine in a New Bottle

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Charlie Bean, Deputy Governor Monetary Policy

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Chart 1: Nominal GDP growth



(a) Sums the Monetary Policy Committee's mean forecasts for real GDP and inflation. The Committee's forecast for RPIX inflation is used prior to February 2004, adjusted for the difference in the inflation target.



Chart 2: Revisions to nominal GDP growth

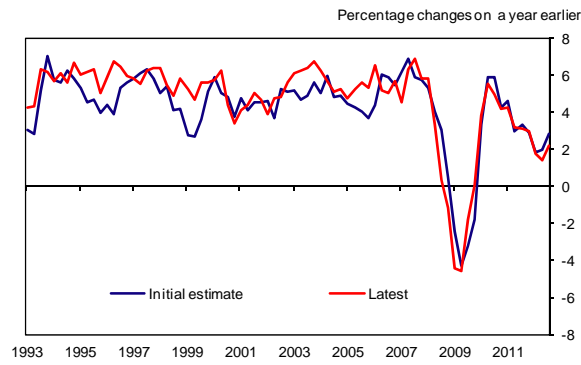


Chart 3: Nominal GDP shortfall

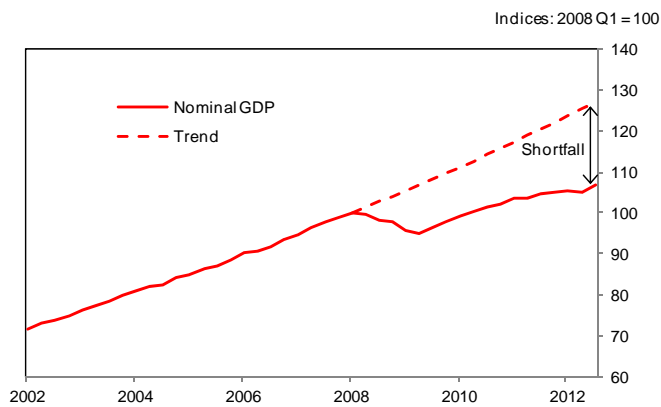


Chart 4: Response to a large fall in demand

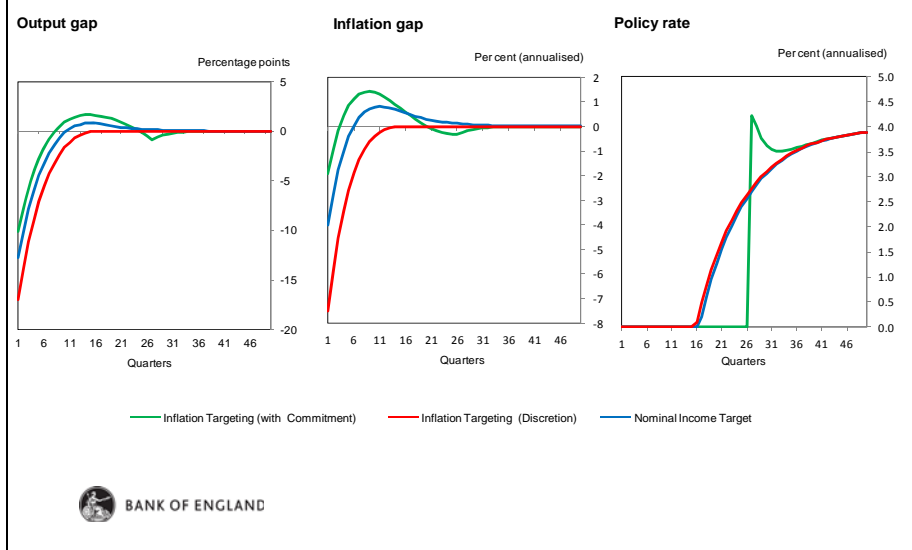


Chart 5: Response to a large fall in demand with a low interest rate elasticity

