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Speech

The soft tyranny of inflation expectations

Speech given by

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“A democratic despotism is like a theocracy: it assumes its own correctness.”

– *Walter Bagehot*

I am delighted to be speaking here tonight as part of the Oxford Institute for Economic Policy’s series of talks aiming to bring insights from academic research into the broader public policy discussion. I am grateful to Domenico Lombardi for thinking of me for this forum, to Oxford Economics for its support of this series, and to my esteemed predecessor on the Bank of England’s Monetary Policy Committee [MPC], Professor Stephen Nickell, for chairing tonight’s event. I am a little daunted, not just by Steve’s presence but also by our location and especially by this sophisticated audience, to presume that I could bring academic insights here. So what I would like to offer tonight as, I hope, a contribution to both future economic research and policymaking is a discussion of how I think influential academic models meet up with real-time data in the UK at present, and what guidance I take from that exchange when forecasting UK inflation over the medium-term.

My specific topic tonight is the role of inflation expectations, and how and when monetary policymakers should respond to observed movements (or lack of movements) in them. Of course, the broad subject of expectations and inflation has been one of the core issues of macroeconomics since Friedman and Phelps predicted the instability of the Phillips curve if exploited. This centrality carried through the development of rational expectations and time-inconsistency models to become the focus of most monetary policy models today. At the core of most theoretical understandings of what credible monetary commitments do is to anchor inflation expectations around a known low level. (Bernanke, et al (1999); Svensson (2011)). In empirical research as well as policy analysis, a vast literature of econometric techniques and results has accumulated assessing the behavior of inflation expectations through changes in monetary regimes and economic conditions.¹ The message of all this work is that the successful maintenance of price stability requires keeping long-run inflation expectations at the desired level, as economic shocks and policy mistakes come and go.

So far, so good, and during the so-called ‘Great Moderation’ it seemed pretty easy for central banks to maintain those expectations of low inflation. Perhaps the ease in so doing was due to good monetary policies, or perhaps to the absence of large economic shocks, or to the liberalization of labor and other markets, or to reduced importance of energy prices to growth, but probably due to some combination thereof. (Blanchard and Gali (2007)) Inflation targeting was rightly seen as a framework conducive to attaining this result of anchored long-run inflation expectations. There was theory and evidence for a positive feedback in which the anchoring of inflation expectations through targets enabled central banks to respond more flexibly to shocks than under less credible monetary regimes, and that resulted in less persistence in the economy of any deviations of inflation from its expected long-term level. (Kuttner and Posen (1998))

¹ See the discussion and references in Clark and Davig (2008); Fuhrer and Olivei (2010); Mishkin (2007); Stock and Watson (2009, 2010).

Now, the British economy has been beset by a series of significant shocks in a relatively short period of time – the global financial crisis, domestic real estate and banking failures, a step depreciation of Sterling, a leap in energy and food prices, and a fiscal consolidation (including VAT increases that raise measured inflation). As shown in Figure 1, CPI inflation has been meaningfully above the MPC’s mandated target of 2% at an annual rate for the last three years or more. Should members of the MPC be worried that long-term inflation expectations will come unanchored? Should the MPC take action to tighten policy out of regard for inflation expectations even though the committee’s just published forecast (Bank of England (2011a)) is that inflation is as likely to be below as above target in two years’ time? Putting the issue in more general terms, is de-anchoring of inflation expectations a realistic risk to inflation outcomes when the medium-term forecast based on information available to all economic agents is that inflation will be at (or evenly distributed around) target, absent an exogenous rise inflation expectations contrary to the forecast? Do all movements in inflation expectations always get fully transmitted into inflation outcomes? Should monetary policy respond to the chance of inflation expectations rising as a distinct risk?

I will argue tonight that long-term UK inflation expectations in financial markets are far better anchored than some commentators appreciate. I also will present analysis suggesting that observed recent movements in short-term household inflation expectations will not affect wage bargaining, and so will not push up inflation outcomes. While all market determined interest rates and exchange rates are subject to sudden changes in sentiment, I believe that the MPC should not set policy in fear of such potential changes, given the solid long-term fundamentals of the UK economy. All indications to date are that British and global investors broadly share the correct interpretation that recent above target UK inflation will not necessarily lead to future above target inflation and that the MPC will do what is necessary to return inflation to target over the medium-term. Therefore, it is my contention that the MPC should set policy based on a forecast that does assume long-term inflation expectations are anchored at the target level. Certainly, I believe that the MPC should not build into its forecasts an arbitrary rise in inflation due to an expectations shift that is not there, and should not tighten policy solely in response to such supposed expectations.

I do not take for granted that anchoring of long-term inflation expectations in the UK just because we (or I) say that people should be reassured – rather, I believe that there is strong empirical precedent as well as logic that such anchoring will be undiminished by recent inflation outcomes, given the causes and context of those overshoots. Markets and more slowly but painfully households are coming to recognize that we are living in a world today of greater economic volatility than was seen in the Great Moderation. That change in economic conditions is not due to erosion of central bank credibility. If anything, the justified downgrading of monetary policy’s importance as a determinant of past good outcomes implies a greater recognition of the role that the infrequency of non-policy shocks played in generating the past stability. And we are less lucky than we were.

The importance of inflation expectations does not mean that widely held and expressed expectations are always right, let alone are self-fulfilling in outcomes. That is one key way in which monetary policy in practice

has to differ from the simple models of time-inconsistency and inflation targeting where there is no distinction between types of agents holding expectations and there is immediate transmission from expectations to inflation outcomes. More recent academic research has usefully begun to unpack these assumptions and to confront them with data.² It is in this sense that I invoke de Tocqueville's spirit and Bagehot's quote regarding democratic despotism. Monetary policymakers must not be tyrannized by popular opinion, especially if the public is to be well-served.

Starting With a Reasonable Forecast for UK Inflation –

The issue that I have identified for policy depends upon the assumption that the central bank makes a good unbiased forecast for inflation, and that it is not tricking people about its intentions.³ For understandable reasons, that assumption is being questioned with regard to the MPC's forecasting track record of late. As some MPC colleagues and I have argued, we do need to learn from our mistakes, but the mistakes should not be exaggerated and must not be misunderstood.⁴ A year ago, the MPC forecast a rate of inflation nearly 3% points lower than what we have today. Part of that gap was due to the VAT rise, which by legitimate convention we could not put into our forecasts until whoever won the election (in May) announced what they would do with fiscal policy. Part of that gap was due to the rise in commodity prices, which by sensible convention we use futures market prices to forecast (see Bank of England (2011a), p. 43), and a year ago were set to remain flat. And part of that gap between forecast and outcome was due to our getting wrong the pass through effect on UK inflation from the 25% depreciation of Sterling in 2007-08 – that being the primary error which we need to learn from and take responsibility for, as I have publicly stated (Posen (2010d and e)).⁵

Figure 2 presents a version of core inflation for UK, one that takes CPI-Y (which removes the impact of indirect taxes) and adjusts for the direct impact of energy prices. The remaining amount that this measure of core inflation is above its long-run average of 1.5% is roughly our forecast error that we should try to improve upon. Two things become apparent looking at this chart: one, that the period of high inflation beyond the direct or first-round impact of VAT and energy prices has ended, and the timing of the surge adds reasonability to ascribing our error to the depreciation of Sterling (given that the rough forecast error reached a high of 2.5% in early 2009 roughly a year after the fall began); two, that in the absence of any ex post sensible estimate of impact of the exchange rate movement, core inflation would have been below its long-

² I have in mind here particularly the work of Greg Mankiw and Ricardo Reis and their co-authors on 'sticky information' and 'inattentive' economic agents, though there are several approaches to this issue in play. See the empirical analysis as well as critical literature review in Coibion and Gorodnichenko (2010).

³ In the case of the MPC, that would be each member individually making their own forecast. The goal of all MPC members is to meet our mandated inflation target.

⁴ See, among others, Bank of England (2011b); Fisher (2010); King (2011); Posen (2010e).

⁵ I am glossing over some technical issues, and more importantly assessments of the degree to which VAT and energy prices are passed through. I would assert that the range of reasonable estimates of those do not have first order effects on inflation outcomes, and that in a time when companies' margins were compressed by labor hoarding and declining productivity, high pass through of price shocks was reasonable to expect.

run trend (that assumed consistent with meeting target headline CPI inflation in the future). This core inflation measure is again below that trend at present.

This is consistent with the fundamental starting point of the MPC's February forecast – as well as with the results of mainstream empirical economics (Meier (2010); Posen (2010e); Stock and Watson (2010)) - that in the aftermath of the recession and financial crisis there is still an output gap in the UK, and that the output gap is pushing down on inflation. Economists, including members of the MPC, can have different estimates over some range for the size of the current UK output gap and what the trend rate of productivity will be when that output gap closes, but do agree on this starting point that the gap is greater than zero and that most of trend productivity growth will return. (Bean (2010), Dale (2010), King (2011), Posen (2010a,b,c), Weale (2010)) Obviously, there is more to generating a specific forecast distribution of inflation than just that, including estimating parameters, respecting adding up relationships, considering the transmission of current monetary policy settings to credit markets, and making judgments about investor and consumer behavior. On those aspects of the forecast, however, there is little reason to doubt that the MPC makes sensible robust estimates, with the benefit of analyses by the Bank's staff and by outside analysts. Again, we got one big thing wrong, the impact of Sterling's past depreciation, which we have to learn from. But Sterling has been stable since January 2009, and should not be a source of new errors over the inflation forecast horizon.

My own personal forecast for inflation differs from the forecast in the February *Inflation Report* [IR] in two significant ways. First, as I set out in Posen (2010e), I believe that private consumption growth will be lower because of increased savings by households and of the impact of fiscal consolidation, and that will push inflation below target. Second, as I will set out tonight, I do not believe that there will be upwards pressure on wages due to increased inflation expectations, so inflation will be lower than it is in a forecast which assumes non-negligible 'real wage resistance,' as the current forecast presented in the *IR* does. (Bank of England (2011a,b) This means, however, that I believe that the current MPC forecast for UK inflation in 2013-14 is too high, not too low, and that I am not challenging the fundamental basis of the forecast, just differing on the estimate of two parameters (albeit admittedly important ones). As a result, I am perfectly comfortable stating that the MPC forecast is a far more reasonable basis for making policy than forecasts which presume that the distribution of likely inflation outcomes is mostly above target in two years' time. That allows me to turn now to the question of assessing inflation expectations, their anchoring, and their impact in the UK economy today.

Taking Short-Term Inflation Expectations Less Seriously –

The Bank of England has long been at the forefront, even among inflation targeting central banks, of tracking and publishing measures of inflation expectations. Table 1 presents a summary of the major ones the Bank publicly tracks in the *IR* and elsewhere. To give a sense of whether inflation expectations have moved upwards, the right two columns show the difference between latest readings on a given measure and the

average for that measure over 1997-2007 (from start of the MPC to the crisis) and over 2002-2007 (the height of the Great Moderation).⁶ There are two measures that do show increases of over 1% in inflation expectations versus their long-run averages, both surveys of one-year ahead expectations by households, and I have highlighted these on the table. The other directly comparable survey of consumers, Barclays Basix one-year, has risen by less than 0.4% versus each average, within the range of normal variation. Neither the surveys of longer-term consumer inflation expectations, nor of professional forecasters' views, nor the inflation expectations extracted from gilt market instruments have increased beyond normal variation in the series. (See Figures 4-9; I will return to these in more detail) This development is largely consistent with households forming their short-term inflation expectations either in an adaptive backwards looking manner, using (a moving average) of latest inflation outcomes to predict inflation. (Posen (2010b))

What about households potentially beginning to doubt the MPC's (or so-labelled 'dovish' members' like me) commitment to the 2% inflation target? That would require a pretty strenuous over-interpretation of this data, with some very specific assumptions. Consider Figure 3, which plots the cumulative change in UK CPI since 1997, when the MPC was formed, as compared to a path if inflation had been steady at the mandated 2% a year.⁷ The picture shows clearly that the MPC undershot the inflation target for most of the time since 1997.⁸ We saw no sustained movements in household short-term inflation expectations downwards below the mandate target as a result of this repeated undershooting. Why should that suddenly occur now, especially when most households do understand that much (not all) of the declining real income they are suffering with is due to VAT and energy price increases, which will not persist?

Of course, the average consumer can decide to focus on only more recent data when formulating expectations, but that would take us back to where I started: that recent data determines short-term consumer inflation expectations, and there is no sign of a memory effect beyond that. If that is the case, then there is no reason to think that consumer inflation expectations will remain elevated once inflation outturns begin to decline, as both the February forecast and I personally believe they will (and as Figure 2 suggests they already are ex-VAT and energy). Similarly as shown in Figure 6, the CBI survey of non-financial firms' own one-year ahead pricing intentions (and only recently of inflation expectations) also has returned to its long-run average, rather than displaying a cumulative memory of past overshoots (and undershoots). There are more sophisticated models of more sophisticated learning by household agents – I particularly favor those building on the approach of Carroll (2003) – but even these suggest that inflation expectations are transmitted from revisions of more expert expectations, and are only updated at intervals or after large shocks.

⁶ The right reference is the series average, which has been consistent with on average target inflation outcomes over the 1997-2007 period (not versus 2%), because of variations in series construction.

⁷ Yes, I know the target was defined in terms of RPIX for part of that period. This is an illustration.

⁸ No, this does not mean that I or any other MPC member is targeting the price level. Again, this is just an illustration (and anyway, it should be clear from this picture that we are not doing so).

We have had large shocks, but if they led to revisions in households' assessment of the overall monetary regime – that the actual inflation target had risen or that the MPC's commitment to it had fallen - that should show up in upward revisions of long-run inflation expectations as well if not more so than in the short-term expectations. And it has not. As shown in Table 1 and Figure 5, there is no sign of sustained or meaningful increase in long-term inflation expectations by households, at least according to those survey measures we have available. It is outcomes for British citizens that we care about, and that is the reason for the MPC's commitment to the inflation target and to price stability. But putting the welfare of British citizens foremost does not imply taking them seriously as macroeconomic forecasters. In fact, pursuing the interest of the average citizen requires central banks to properly discount fluctuations in those citizens short-term inflation expectations.

Financial Markets Indicate Greater Economic (Not Monetary) Uncertainty –

I will now turn to financial market indicators of inflation expectations. These merit a bit more discussion, because they can offer more dimensions of analysis than whether or not they have risen versus their long-run averages. But first, it is worth repeating that financial market measures of longer-term inflation expectations have not risen of late. Figure 8 looks at inflation expectations computed from swaps and from the inflation indexed gilt market, five years ahead, and there is no sign of any trend increase in inflation expectations since Sterling depreciated, we made our forecasting error in that regard, and inflation overshot target.⁹ This is sensible – one need not believe in extreme versions of the efficient markets hypothesis (and certainly do not) to think that traders with money at stake in the deepest most transparent Sterling-denominated markets, i.e., gilts and related instruments, will get forecasts right on average. Today that means understanding the economics of temporary shocks moving inflation, as set out in King (2011) or Bank of England (2011b), and consistent with my discussion Figure 2 above.

This conclusion might be somewhat too reassuring. The MPC has long focused on publishing in the *IR* computations of inflation expectations five-years ahead due to availability of data, depth of market, and simply wanting to stick with the same measure over time. Yet, it is possible that even if the longer-term inflation expectations remain anchored, there might be doubts emerging about the willingness of the current MPC to bring inflation back to target within the current horizon, or at least so some City commentators claim. To try to get at this possibility, we have analyzed in a similar manner the two-year, three-year forward swaps and indexed gilts, presented in Figure 9. While this part of the market is thinner, so the assessment should not be considered as robust as that with the five-year, five-year, this chart seems to be pretty clear: no trend rise in inflation expectations at the three-year horizon either.

It is worth pointing out that in a standard model of inflation targeting, there can be differing degrees of gradualism in returning inflation to any given target when shocks hit the economy. (Svensson (2011)) In

⁹ Descriptions of how these measures are computed are available in Bank of England (2011a). As with the survey measures, in terms of levels, what matters is changes versus the average of the series.

these models, there is nothing inherently corrosive to credibility about adopting a more gradualist approach, depending upon the nature and size of the shock the monetary policymaker faces. Normatively, I and other MPC members have already implicitly adopted case for a gradual return of inflation to target over the medium-term (which has been explained more explicitly now in Bank of England (2011b) and King (2011) as also consistent with the MPC's remit). If I agreed fully with the forecast in the February *IR*, I could still support keeping the current policy stance unchanged for that reason. The important point for tonight's discussion of expectations, however, is positive, not normative. There is evidence that financial markets can update their estimates of Svensson's lambda (the degree of gradualism) when central banks which adopt a gradual approach in returning inflation to target after a major shock without inflation expectations becoming de-anchored.

The quintessential example is the Deutsche Bundesbank's response to the oil-shock and global recession of 1979-80.¹⁰ The Bundesbank made public that it would take several years to bring inflation back to its target long-run inflation level, even though it would partially offset the shock immediately and inflation would rise. In fact, it took six years for German inflation to be brought back to 2%, and both the Deutsche Mark and the Bundesbank retained their counter-inflationary credibility. If financial markets were to right now be updating their estimates of the MPC's composite lambda, especially given the absence of large supply shocks during the first decade of the MPC's existence on which to base those estimates, this would strike me as rational not worrisome. So it makes sense to me that financial market measures of long-term inflation expectations for our economy have remained stable as information has come in.

I believe, though, we can learn more from examination of these financial market measures. Figure 10 shows estimated gilt market beliefs about UK inflation uncertainty and the probability of high inflation outcomes derived from option prices. Again, one would not want to rely solely on this pair of estimated measures to justify an assessment of policy, but the figure certainly has some information to offer us. The four- to five-year ahead weight on RPI inflation (what these trade) being >5% has come off its highs of late 2009, and has stayed at a lower level for the last six months than any time since the start of 2009 (though justifiably is elevated versus the pre-crisis estimates). Meanwhile, the measure of four- to five-year ahead option implied inflation uncertainty has continued to rise, albeit at a diminishing rate. Similarly, as shown in figure 7, the Bank's survey of professional forecasters' estimates of the chances that inflation may be more than 1% above or below target is well above its pre-crisis levels, though off its highs of last year.¹¹ Figure 11 presents another assessment of inflation uncertainty versus inflation expectations from financial instruments. Break-even inflation rates (i.e., expected rates of inflation implicit in the market prices of the given inflation indexed gilts and swaps) have fluctuated around a steady level since late 2007, meaning they have not risen after the inflation target overshoots. Meanwhile, swaption volatility for these products, that is the market price implied estimate of UK inflation volatility going forward, has risen quite a lot between late 2008 and early 2009, and stayed at that elevated level. Usually, measures of inflation level and volatility are positively correlated, for

¹⁰ This episode is analyzed in detail in Laubach and Posen (1997).

¹¹ This is not to imply that these forecasters think at the moment that the likelihood of being >1% above target is the same as that of being >1% below target, although for four or five years ahead that is probably true.

both macroeconomic and technical reasons. So the rise in swaption volatility without a rise in break-even inflation rates would if anything be a clearer than usual signal that estimated volatility has increased without any increase in uncertainty about the inflation target over the medium-term.

I find the idea that financial markets are pricing in greater inflation uncertainty going forward for the UK versus that perceived during the Great Moderation period perfectly reasonable. I find the fact that a number of different survey and financial measures of inflation expectations and of volatility, not just one set of market prices, indicate that this update to greater volatility has not been accompanied by a rise in long-term inflation expectations very reassuring. It would seem that markets correctly perceive a rise in economic uncertainty while also correctly maintaining their perception of the MPC's solid commitment to the inflation target. It seems to me, therefore, that it is reasonable to base our inflation forecasts and thus our policymaking on the assumption that long-run inflation expectations in the UK remain well-anchored.

The Influence of Inflation Expectations on UK Wages is Over-rated –

I began my study of the British economy in a course on modern UK economic history in 1983, and went on to write my undergraduate senior thesis on Prime Minister Margaret Thatcher's policies.¹² As the people in this audience need no reminding, in the mid-1980s, the memory of the Winter of Discontent of 1978-79, of the National Union of Mineworkers' strike of 1984-85, and for economists of the wage-price spiral feeding British inflation were very raw and real. It is indisputable that the bargaining power of British workers, and of workers in the West more generally, has declined significantly since that time.¹³ This is partly a matter of labor market liberalization, started in many ways with Thatcher's facing down the NUM, and partly a matter of increased competition from the expanded global labor force following the integration of Emerging Asia and formerly Communist Eastern Europe into world markets. Whatever the reasons for this development, which lie way outside of my area of expertise, there is legitimate reason to question how much British workers' short-term inflation expectations influence wage settlements today.

Table 2 presents a set of simple regressions relating British wage growth to long-run inflation expectations (proxied by 10 year inflation break-evens from index linked bonds), productivity growth, cyclical unemployment (based on an OECD estimate of the NAIRU) and to previous deviation of real product wages from productivity, and then adding various measures of consumer (and thus presumably worker) short-term inflation expectations. In essence, this is a wage Phillips curve. The baseline model is estimated over 1985:Q1 to latest available data, 104 quarterly observations. This very simple model of wages fits the data quite well, with an adjusted R2 of 0.72, as can be seen when plotted in Figure 12. There is no statistically significant structural break in the model using standard diagnostics.

¹² No, it is not published, and I do not recommend that anyone go to the Harvard archives and read it.

¹³ Blanchard and Gali (2007) and Posen and Popov-Gould (2007) offer some cross-national evidence that real wage shocks in excess of productivity, and their transmission to inflation, have diminished over the last 30 years for the major Western economies (including the UK).

The message is simple. Long-run inflation expectations, the unemployment gap, and deviations of wages from productivity are all significant determinants of British wages – the latter in an error correcting way, meaning when past wages are out of line with productivity, the adjustment goes in the other direction. No measure of workers' short-term inflation expectations, whether from surveys or proxied by averages of recent past inflation, nor changes in those expectations (say as seen in the last year) shows up as a significant factor for wage growth (see specifications (2) – (7) in Table 2). Thus, consistent with what we would think institutionally and with the cross-national evidence, British wages do not exhibit much 'real wage resistance,' meaning much push back for higher wages when past inflation or when inflation expectations are higher. Meanwhile, on this estimate, cyclical unemployment pushes down on wage growth, and wages are restrained to be in line with productivity growth. All this suggests that British wage growth should be rather modest over the next couple of years, and the forecast projection in Figure 12 is for roughly 2% nominal wage growth annually over the inflation forecast horizon.

Some might object to such a simple model, even though it fits the facts well and the explanatory variables have plausibly signed and sized effects, because it explains a nominal variable (wage growth) primarily through real variables (like unemployment and productivity). This objection strikes me as misguided, even beyond and above my strong personal preference for simple empiricism. If we live in a world of relatively liberalized labor markets, with flexible nominal wages and workforces – and certainly the response of UK hours and wages in 2008-2010 to the crisis is consistent with such a world – then one would expect real forces to dominate in wage setting. Also, these equations are anchored by the stable long-term inflation expectations that are since 1997 the constant nominal trend set by the Bank of England's inflation target.

Interestingly, the recent survey by the Bank's Agents of private-sector employers, the results of which are published in the latest *IR* (reproduced in Figure 13 here), is consistent with the forecast of this model for wage growth. The survey asks respondents: 'How does your likely average pay settlement in the next pay round compare with your average settlement last year?'. A little higher (lower) is defined as 0.1% to 1% higher (lower) than in 2010. Significantly higher (lower) is defined as more than 1% higher (lower). Responses are weighted by respondents' number of employees. These results are based on 360 company responses (covering nearly 900,000 employees) gathered during December 2010 and January 2011. 83% of responding employers (weighted by number of employees) say that the wage increase in 2011 for their workers will be less than 1% above 2010, 62% say that it will be the same or lower than the 2010 increase. In 2010, the average wage increase was 1.7%.

Furthermore, it seems rather dubious to me to suggest that British workers' concerns over near-term inflation would not only motivate them to action, but somehow translate that action into effective bargaining power with their employers, when all the other forces that have pushed down on labor share in the economy and on wage growth (let alone worker power) over the last 30 years have not resulted in such effective resistance. In particular, unemployment remains high, and some significant number of public sector workers and employees at public sector contractors will be made redundant over the next two years as part of fiscal

consolidation efforts. I am not advocating anything here with regard to labor laws or wages, let alone fiscal policy. I am making the empirical case for why concerns about inflation expectations translating into wages is to me overblown, and as a result I would forecast no wage-price spiral and no sustained inflation in the UK for the next few of years, despite inflation likely to be above target for most of 2011. This low wage and inflation pressure is especially likely if unit labor costs are growing below their long-term average (and thus below the rate of productivity growth), as Figure 14 indicates they are doing – if, in line with my simple model of wage setting, the extreme divergence between wages and productivity during the crisis (seen in the spike in ULC growth rates in 2008-09) puts further restraint on coming wage settlements.

Confidence in the Inflation Forecast and in Expectations Consistent with It –

As my previous speeches since joining the MPC I hope have made clear, I am not a triumphalist for the power of central banks' commitments to affect outcomes, and I certainly take my share of the responsibility for the MPC's error in forecasting inflation due to the past fall in Sterling. So my offering tonight empirical evidence of the anchoring of long-term UK inflation expectations across a wide variety of measures, financial and survey based, of the realistic adjustment upwards of inflation uncertainty without increased uncertainty about the commitment to the inflation target, and of the limited likelihood of past inflation being transmitted into wage settlements, is an attempt to get the inflation forecast right by looking at data and underlying forces. I am not taking for granted that just because I know that all the members of the MPC are committed to meeting the inflation target, everyone will believe that is the case. It is one of the virtues of the inflation targeting regime, especially as constituted at the Bank of England, that we have to document transparently in detail our forecasts and economic assessments, and how they match up with the outcomes. It is our ability to convincingly explain why inflation deviations from target occur, and our inability to hide the results, that is the basis of our credibility.¹⁴ And by all indications, long-term inflation expectations do remain anchored in the UK. Starting there, I am lead to my forecast for (the bulk of the probability mass of expected) inflation to be below the inflation target at the policy relevant horizon of two- to three-years hence.¹⁵

Two concerns might be raised at this point to challenge my assessment of inflation expectations, my resulting forecast and the policy implications from it. The first would be the challenge that inflation expectations are actually a latent variable – they exist and affect economic decisions, but the various measures I examine here are just proxies for the underlying directly unobservable inflation expectation. I supposed this could be true, but I am untroubled by this concern. We have to deal with latent variables in monetary policymaking quite often, starting with the output gap itself, and while we can never be sure we have it right, we have methods to try to approximate developments in such latent variables. We can do top down statistical approaches of trends that meet certain criteria, we can do factor analyses where we take many different related observable proxies and try to get at the underlying common component, and we can

¹⁴ This is the interpretation of inflation targeting my co-authors and I offered in Bernanke, et al (1999) and Laubach and Posen (1997), and I remain convinced of its validity.

¹⁵ For the reasons discussed here regarding wages, and regarding consumption in Posen (2010e). See also Posen (2010a,c) for discussions of what I think are the economic forces at work in the UK today.

build bottom up measures of what is sensible based on theory. That is essentially what I have done in summary form here tonight, and more broadly the Bank of England does in monitoring and analyzing all of these inflation expectation measures. It seems to me a stretch beyond reasonability that there could be an underlying 'true' inflation expectation variable that would be rising at present but not showing up in any of the indicators we have looked at - especially given the core inflation outcome, which combined with the inflation target that can explain them remaining stable.

A second challenge could be that markets are subject to sudden swings in sentiment, not necessarily unjustifiably, and the current readings on inflation expectations should not give us any reassurance. Advocates of this view would argue that it is so important to keep inflation expectations anchored that we must act now to prevent this risk from crystalizing. I have a number of problems with this view as a guide to policy. The events of 2007-09 do demonstrate once again that markets can shift suddenly. Yet, that to me just says that preparing against their shift is a matter of transparency and monitoring, not of pre-emption. In terms of transparency, if we are already on a fundamentally sound path, in this case have a monetary policy consistent with inflation being at (or in my opinion below) target over the medium-term, and have explained it, why would pursuing an incorrect policy inconsistent with the target make us more credible? As the game theory literature on 'cheap talk' as applied to monetary policy tells us, there is no costless way to demonstrate toughness. Central banks have to actually move policy sufficient to move the economy to prove one's preferences are different from those consistent with prevailing conditions.¹⁶ Under present conditions in the UK, such a policy tightening would in my opinion lead rapidly to inflation outcomes that would require a reversal of that policy towards greater ease.

This kind of mistaken pre-emptive move was undertaken by the Bank of Japan to tighten policy in 2000, despite the absence of any indicators showing inflation expectations had risen. It came instead from an excessive desire to 'normalize interest rates from historically loose conditions' (roughly translated), an outlandish fear of asset price bubbles emerging following a financial crisis, and a disregard for cyclical economic conditions. This decision led to bad macroeconomic outcomes, a rapid reversal of policy back to ease, and a significant blow in my opinion to those policymakers' then in charge credibility that further de-anchored inflation expectations toward inflation. (Posen (2010a)) Similar mistakes were made by the Federal Reserve and European central banks in the early 1930s. I am not forecasting that a tightening of policy now by the MPC would lead to deflation in UK, though I would not rule that out – I am arguing that it would be a similar mistake for the MPC to try to prove its counter-inflationary toughness just for the sake of chatter about rising inflation expectations that is not there in the data nor likely to influence the actual inflation outcome for the reasons I have covered. We must make policy based on the best available forecast, learning from our past mistakes, and not be tyrannized by popular fears or spectres of expectations.

¹⁶ In this sense, I strongly agree with the remarks of Governor King (in Bank of England (2011b)) regarding the pointlessness of 'futile gestures' with monetary policy at this juncture.

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Figure 1: CPI inflation – outcomes over target

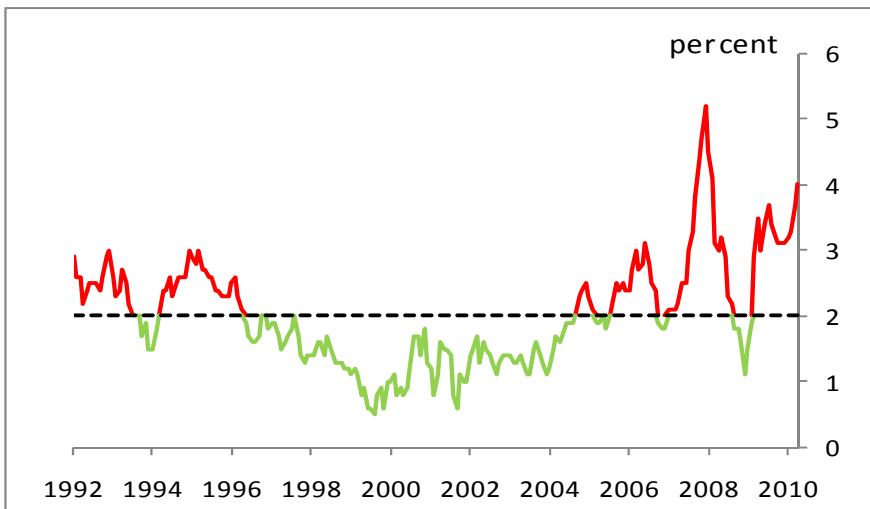
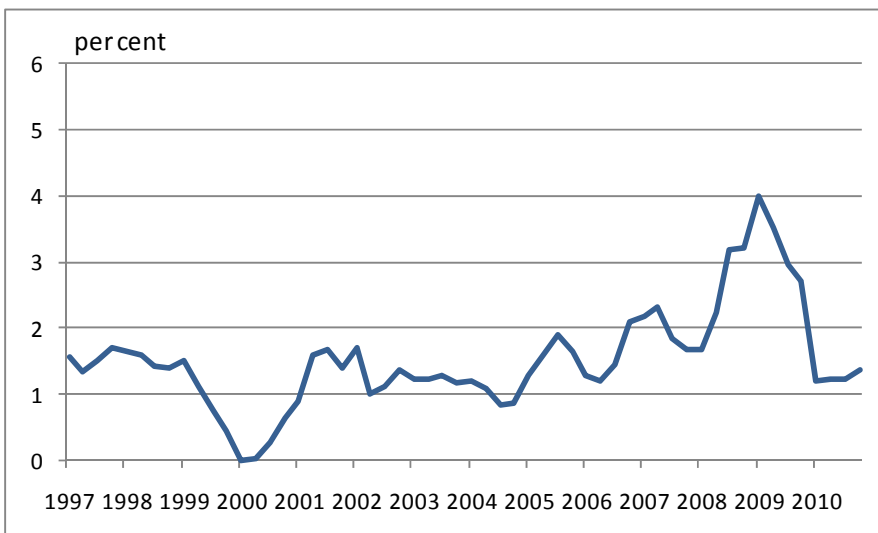


Figure 2: Core inflation (CPI-Y adjusted for energy prices)



Average Mar. 1997 to Jan. 2011 : 1.5%

Figure 3: Cumulative change in CPI since 1997

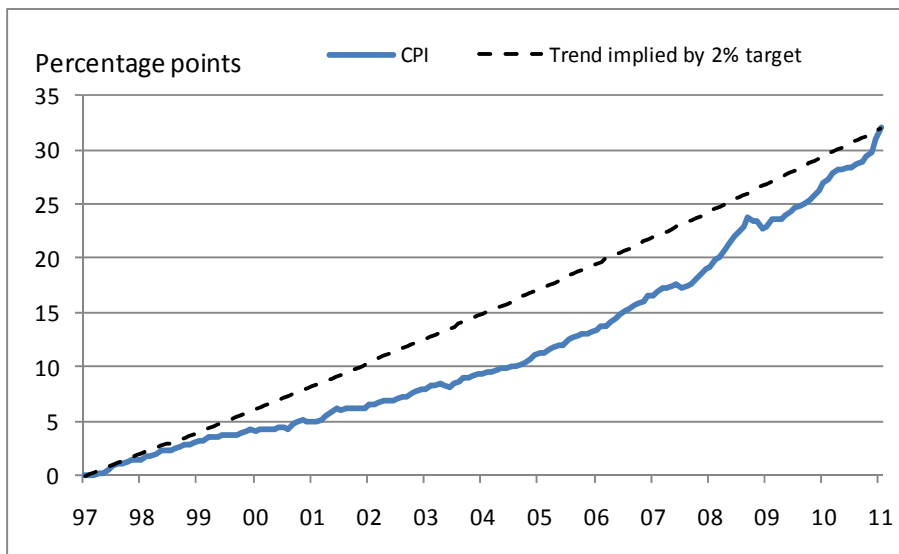


Figure 4: Household survey measures of short-term inflation expectations

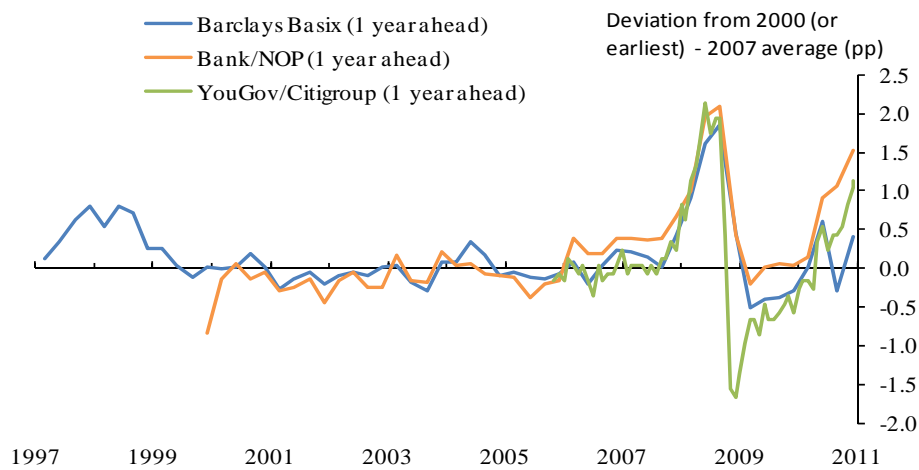


Figure 5: Household survey measures of longer-term inflation expectations

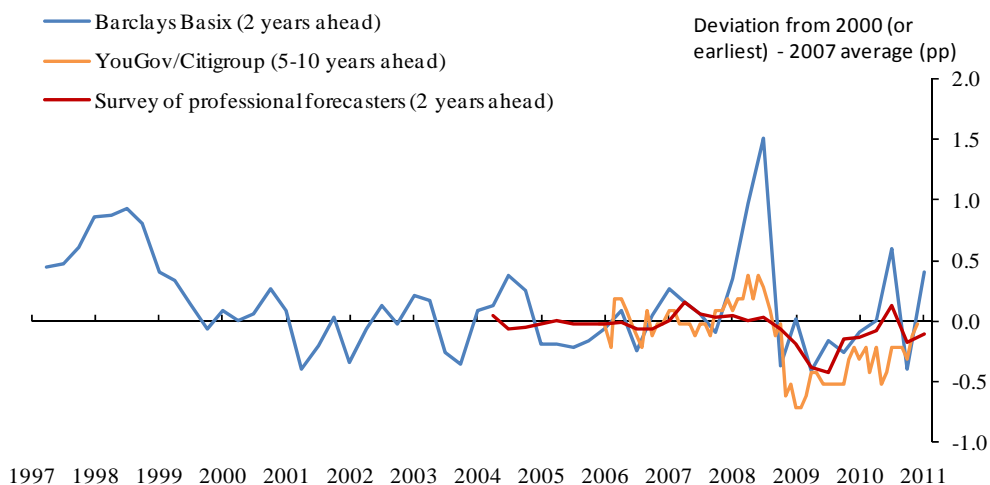
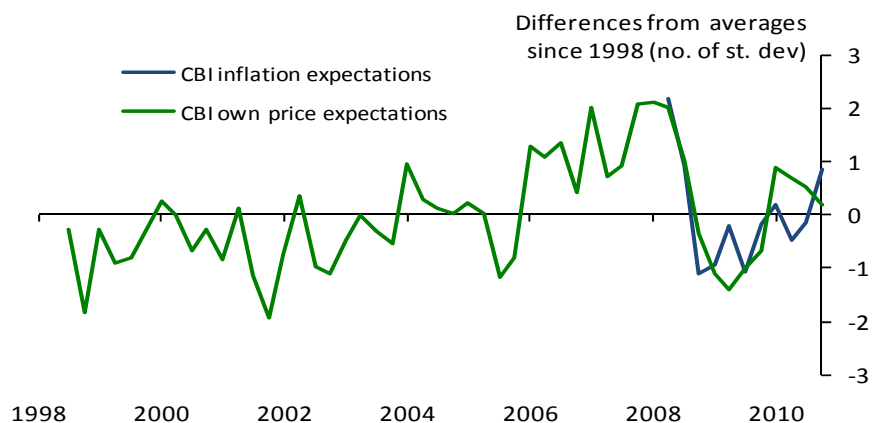


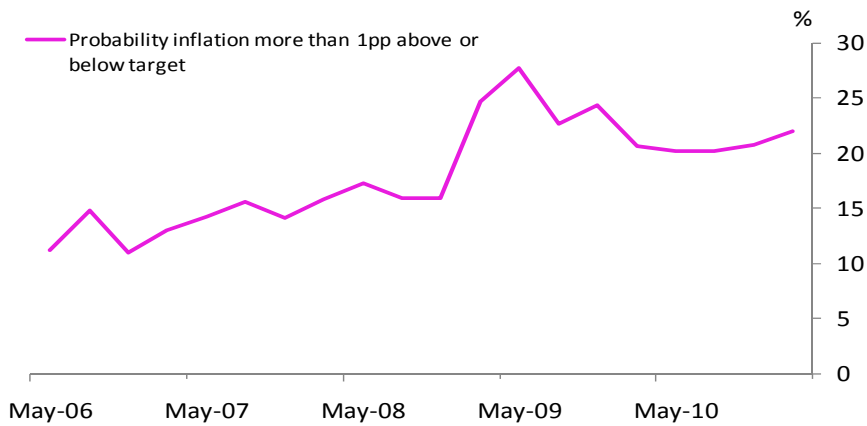
Figure 6: Companies' short term inflation expectations



Source: CBI

Questions: What been the percentage change over the past 12 months in your firm's own average output price for goods sold into UK markets and what is expected to occur over the next 12 months? What has been the percentage change over the past 12 months in the general level of prices in the UK markets that your firm competes in and what is expected over the next 12 months?

Figure 7: Professional forecasters' inflation uncertainty



Source: Bank of England

Note: Data are quarterly through February 2011. The number of survey respondents over the period averaged around 20 per quarter.

Figure 8: Medium-term inflation expectations from financial instruments

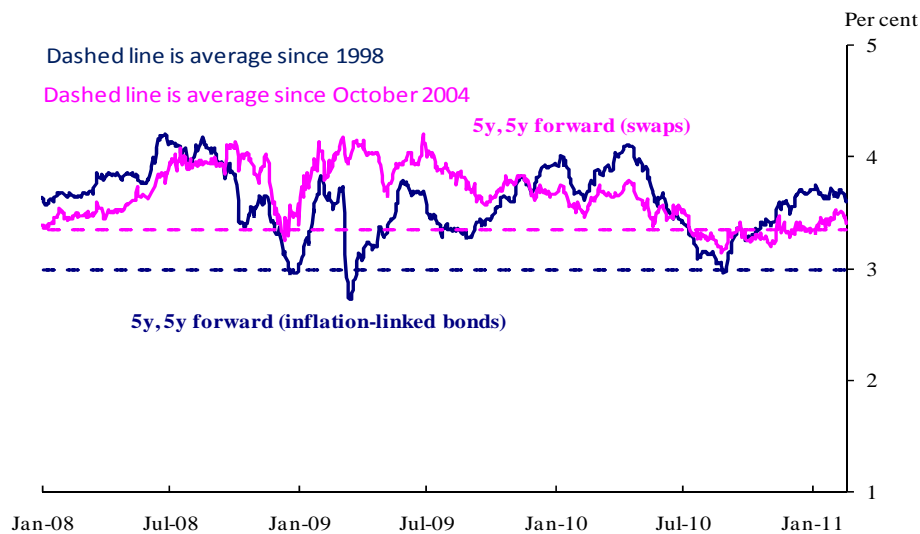


Figure 9: Shorter-dated inflation expectations from financial instruments

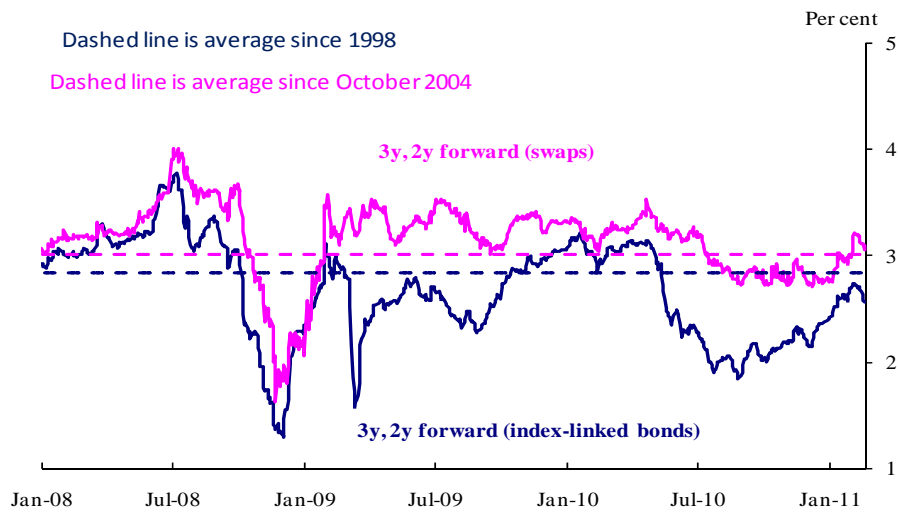


Figure 10: Inflation uncertainty and probability of high inflation derived from option prices

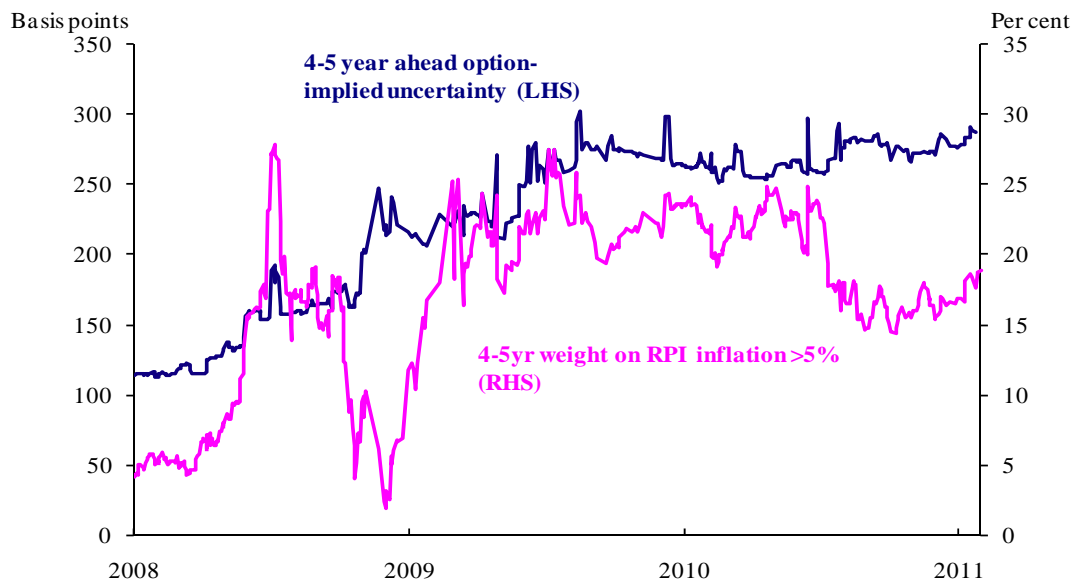


Figure 11: Inflation uncertainty versus inflation expectations from financial instruments

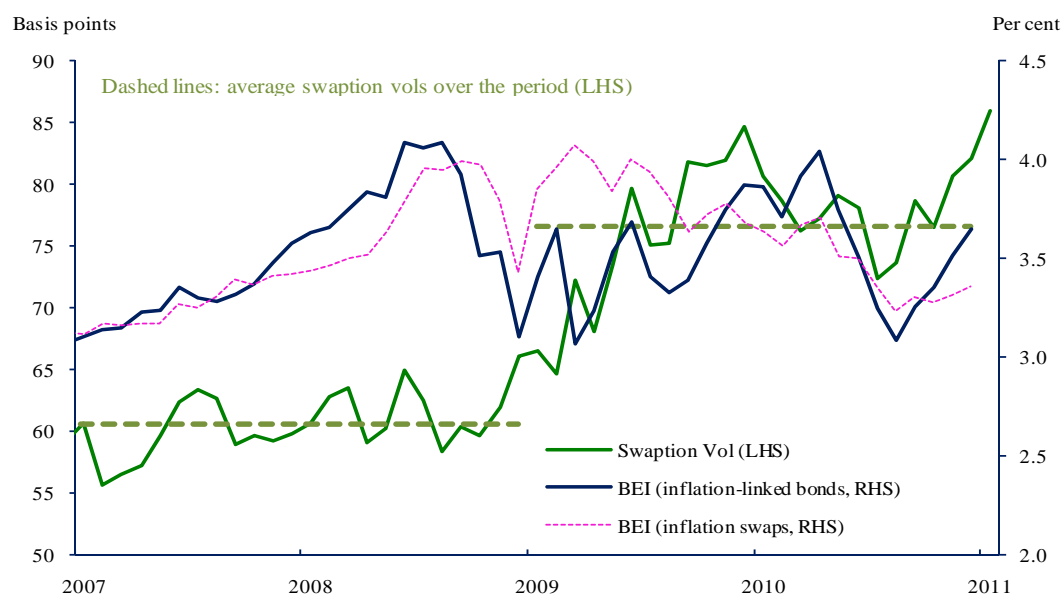
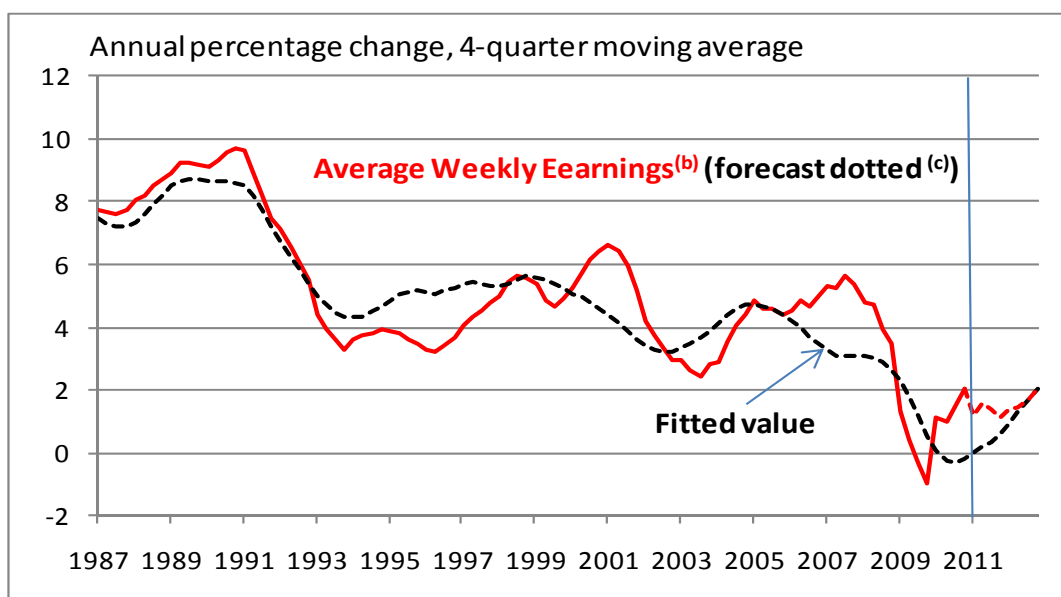


Figure 12: A simple wage Phillips curve model of wage behaviour in the UK^(a)

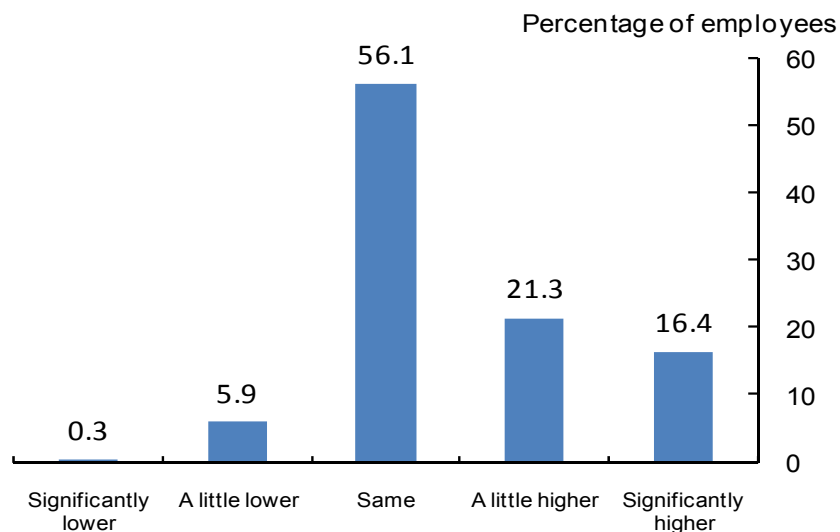


(a) The model relates wage growth to long-run inflation expectations (10 year inflation break-evens from index linked bonds), productivity, cyclical unemployment (based on OECD estimate) and to previous deviation of real product wages from productivity: $awe_t - awe_{t-1} = \beta_1 \text{breakeven}_t + \beta_2 (\text{prod}_{t-1} - \text{prod}_{t-2}) + \beta_3 \text{ugap} + \beta_4 [awe_{t-1} - 3.69 - \text{prod}_{t-1} - \text{pydef}_{t-1}]$

(b) Private-sector Average Weekly Earnings. Prior to 2000 Average Earnings Index data is used

(c) Forecast runs through 2012 Q4.

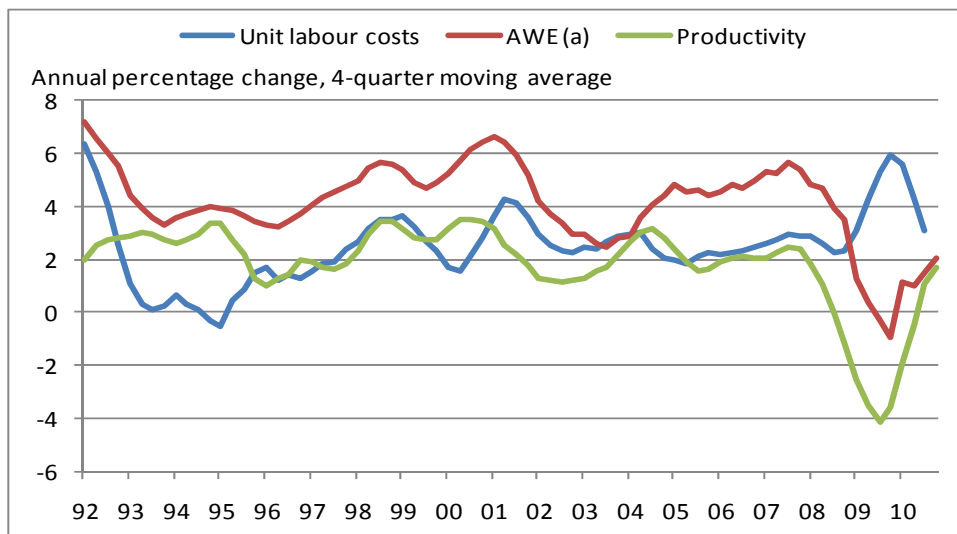
Figure 13: Agents' survey: expectations of pay settlements in 2011 relative to 2010



The survey asks respondents: 'How does your likely average pay settlement in the next pay round compare with your average settlement last year?'. A little higher (lower) is defined as 0.1% to 1% higher (lower) than in 2010. Significantly higher (lower) is defined as more than 1% higher (lower). Responses are weighted by respondents' number of employees. Based on 360 company responses (covering nearly 900,000 employees) to a survey of companies by the Bank's Agents carried out during December 2010 and January 2011.

Note: The average pay settlement in 2010 was 1.7% for the economy as a whole.

Figure 14: Wage growth versus unit labour costs growth



(a) AEI prior to 2000.

Table 1: Measures of inflation expectations

	Available Data		Average (%)		Difference compared to latest data (pp) ^(d)		
	Earliest	Latest	1997-2007	2002-2007	2009 Q2	1997-2007 Average	2002-2007 Average
Household survey measures ^(a)(b)							
<i>Monthly</i>							
YouGov/Citigroup (1)	Nov 2005	Jan 2011	2.47	2.47	1.80	1.13	1.13
YouGov/Citigroup (5-10)	Nov 2005	Jan 2011	3.52	3.52	0.67	0.18	0.18
<i>Quarterly</i>							
Barclay Basix (1)	Q4 1986	Q4 2010	2.89	2.81	0.82	0.31	0.39
Barclay Basix (2)	Q4 1986	Q4 2010	3.33	3.22	0.56	0.27	0.38
Barclay Basix (5)	Q3 2008	Q4 2010	N/A	N/A	0.17	N/A	N/A
Bank/NOP (1)	Q4 1999	Q4 2010	2.32	2.41	1.50	1.55	1.47
Bank/NOP (2)	Q1 2009	Q4 2010	N/A	N/A	0.96	N/A	N/A
Bank/NOP (5)	Q1 2009	Q4 2010	N/A	N/A	0.36	N/A	N/A
Bank survey of professional forecasters ^(c)							
Survey of professional forecasters (2)	Q1 2004	Q1 2011	1.95	1.95	0.48	0.05	0.05
Market-based indicators							
5y, 5y forward RPI inflation implied from gilts	02 Jan 1985	15 Feb 2011	2.88	2.84	0.17	0.79	0.82
5y, 5y forward RPI inflation implied from swaps	01 Oct 2004	15 Feb 2011	3.04	3.04	-0.50	0.42	0.42

- (a) The questions ask about expected changes in prices, but do not reference a specific price index. All measures are based on the median estimated price change.
- (b) The number in brackets shows the window in years over which respondents are asked to report their expectations.
- (c) The questions specifically refer to CPI inflation. Based on the mean estimated price change.
- (d) A positive number implies that expectations have increased since the specified time period/average and vice versa.

Table 2: A simple wage Phillips curve model of wage behaviour in the UK

Specification	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<u>Baseline model</u>							
Breakeven inflation (trend)	0.0092*	0.0090*	0.0065	0.0092*	0.0092*	0.0089*	0.0133*
	(12.65)	(2.45)	(1.36)	(11.49)	(11.46)	(3.05)	(3.18)
Productivity growth	0.1501	0.1262	0.1331	0.1223	0.1264	0.1512	0.1589
	(1.18)	(0.85)	(0.95)	(0.88)	(0.90)	(1.18)	(1.25)
Unemployment gap	-0.0029*	-0.0029*	-0.0024*	-0.0027*	-0.0028*	-0.0975*	-0.0022*
	(-3.50)	(-2.23)	(-1.98)	(-3.00)	(-3.07)	(-2.87)	(-2.01)
Wage deviation from productivity	-0.0963*	-0.0953*	-0.1027*	-0.0870*	-0.0911*	-0.0975*	-0.1071*
	(-3.13)	(-2.49)	(-2.64)	(-2.33)	(-2.45)	(-2.87)	(-3.29)
<u>Measures of household inflation expectations</u>							
Basix 1-year ahead expectations		0.0001					
		(0.08)					
Basix 2-year ahead expectations			0.001				
			(0.57)				
Change in Basix 1-year ahead				0.0021			
				(1.29)			
Change in basix 2-year ahead					0.0018		
					(0.97)		
RPIX 2-year moving average						0.0001	
						(0.09)	
RPIX 5-year moving average							-0.0014
							(-1.00)

t-statistics shown in brackets; 106 quarterly observations; * indicates significance at the 5% level;

The adjusted R² for the baseline specification (1) is 0.72, for (2)-(7) adjusted R² ranges from 0.69-0.72