

# Deflation

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This article provides a brief review of issues relating to deflation. It explains what is meant by deflation, examines the historical experience and investigates what costs might be associated with deflationary episodes. It suggests that the adverse effects of deflation can be exaggerated by confusing the effects of the underlying shock with the effects of deflation *per se*. The costs of deflation itself are most likely to be associated with debt deflation and downward rigidities in money wages. By learning from previous episodes, it argues that deflationary episodes can be short-lived and less costly if policy responds promptly and decisively, employing the full range of conventional and unconventional monetary policy instruments.

## Introduction

### Context

Deflation is sometimes used to describe any fall in the general level of prices (as measured in the United Kingdom by the consumer prices index (CPI), retail prices index (RPI) or the GDP deflator), however short-lived. A more economically significant phenomenon, however, would be a sustained period of negative inflation.

It is widely recognised by policymakers, academics and city commentators that periods of deflation can have adverse consequences. Indeed, the persistent deflationary episodes that occurred in the United Kingdom and other developed economies during the late 1920s and early 1930s were associated with depressed economic conditions. But it is useful to acknowledge that the adverse economic outcomes that often accompany deflationary episodes may not have been entirely caused by the experience of deflation itself but rather by the circumstances that caused inflation to fall into negative territory. So an important question this article will address is the extent to which deflation *per se* makes matters worse.

In fact, not all deflationary episodes have been associated with depressed conditions. Deflations have arisen, for example, when the supply potential of the economy has been boosted by a series of beneficial shocks but prices have fallen because the supply of money did not expand sufficiently to meet the higher demand. But deflation has also resulted when the economy has been subject to an adverse demand shock which has driven demand below capacity, causing unemployment to

rise. With an inappropriate policy response in the past, this has also caused inflation to fall for a sustained period.<sup>(1)</sup> In both types of situation, deflation might have been avoided if policymakers had acted to stimulate nominal demand as necessary. This is an important lesson for policymakers in current circumstances.

This article examines how the costs associated with inflation and deflation respectively might differ and whether the behaviour of the economy changes significantly when prices fall rather than rise. Of course, in the context of the UK regime of inflation targeting, any sustained departure in the rate of inflation below the target of 2% is costly since this will tend to create uncertainty for firms and households and will potentially dislodge long-run inflation expectations away from the target. This article takes these important costs as given and does not consider them further. This article sets out to clarify whether a period of falling prices might impose additional costs on the economy. In any case, the Monetary Policy Committee's (MPC's) central projection in the February 2009 *Inflation Report* was for its target measure, annual CPI inflation, to remain above zero throughout the forecast horizon. And the MPC will take the necessary steps to bring inflation back to target by making changes to monetary policy so that any deviation from target is short-lived and less costly.

One important feature of deflationary episodes is that they increase the likelihood that nominal interest rates will be driven down towards the zero bound, as discussed later.

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(1) To distinguish between the different underlying shocks Bordo and Filardo (2004) refer to 'good', 'bad' and 'ugly deflations'.

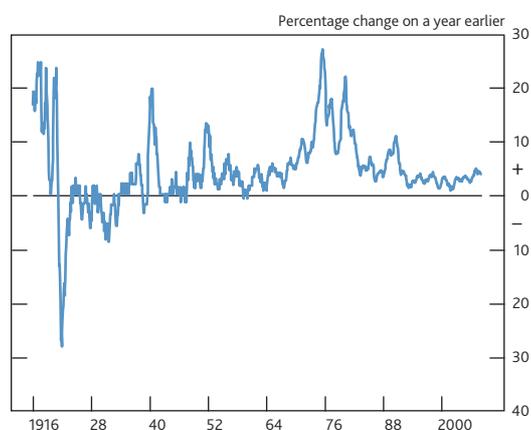
In these circumstances, a range of alternative monetary policy instruments is available to central banks to allow them to loosen the stance of monetary policy. Such measures are discussed in more detail in King (2009), the February 2009 MPC minutes and the February 2009 *Inflation Report*. Indeed, the MPC voted on 5 March 2009 to undertake a programme of asset purchases (along with a cut in Bank Rate of 0.5 percentage points) worth £75 billion financed by the issuance of central bank reserves. These issues are beyond the scope of this article and will not be evaluated here.

The structure of this article is as follows. The rest of this introductory section defines deflation and describes the historical experience in the United Kingdom and elsewhere. It then goes on to examine the different ways that falling prices might potentially magnify or modify the economic costs of a given economic situation and then finally concludes.

### Definitions

Although deflation is often loosely referred to as any period where prices are falling, deflation as an economic phenomenon is more conventionally defined as a persistent fall in the general level of prices (such as CPI, RPI or the GDP deflator). A short period of falling prices is generally considered less likely to be a cause for concern. So for example, in the United Kingdom, the twelve-month inflation rate of RPI was negative for the occasional month in 1959 and 1960 but this is not considered a period of deflation in an economic sense. And in the coming months, the RPI is likely to fall temporarily, mainly reflecting reduced mortgage interest payments (see February *Inflation Report*, Section 4.1, page 30). As **Chart 1** shows, these brief periods of falling prices can be contrasted with periods of genuine deflation, for example that between 1923 and 1933, when prices fell more or less continuously.

**Chart 1** UK retail prices index<sup>(a)</sup>



(a) Long-run UK annual RPI inflation (monthly frequency).

A generalised fall in the price of a particular class of goods is not considered to be a case of deflation either so long as this is a relative price fall offset by correspondingly greater increases

in the prices of other goods. So for example, in the United Kingdom, the inflation rate of goods in the CPI basket was almost always negative between 1999 and 2005, their prices falling by up to around 2% per annum. But the overall level of CPI inflation mostly stayed between 1% and 2% during that period, as service price inflation averaged around 4% (**Chart 2**).<sup>(1)</sup>

**Chart 2** UK consumer prices index<sup>(a)</sup>



(a) Annual CPI inflation (monthly frequency).

It is also important to distinguish between periods of deflation, when the level of prices is falling, and those of disinflation, when the rate of increase of the price level is falling. In the post-war period in the United Kingdom, disinflation most notably characterised the period from the mid-1970s to 1992, when CPI inflation fell from above 20% to 2% as policymakers successfully reduced inflation. This article will note that although many of the costs of deflation are quite distinct from those of disinflation, some effects are similar, for example in how unanticipated changes in inflation transfer wealth from debtors to creditors (as will be explained in more detail later).

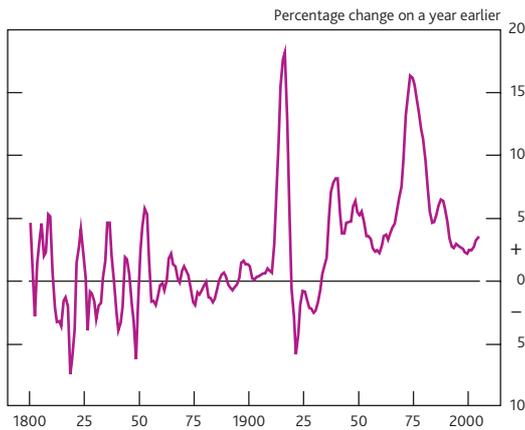
Of course, in discussing whether or not the economy is experiencing deflation, it is important to remember that general indices of prices are not uniquely defined. Since the RPI and CPI are different price indices measuring somewhat different baskets of goods and services, there may be times when one is falling, perhaps temporarily, and one is increasing, so the question of whether an economy is in a state of deflation may not at times be clear-cut. Of course, if many of the general price indices are falling, as was the case in Japan between 1999 and 2005, then it is more likely that deflation is genuinely occurring.

### Historical experience

From a historical perspective, deflation is not uncommon.

**Chart 3** shows a smoothed measure of UK consumer price

(1) Indeed, within the CPI basket, it is normal for the prices of many items to be falling, reflecting demand and supply conditions in those markets. In December 2008, for example, around a fifth of the prices in the CPI basket (weighted by expenditure shares) were lower than a year earlier.

**Chart 3** UK consumer prices<sup>(a)</sup>

Source: The Composite Price Index, ONS.

(a) Five-year moving average of annual consumer price inflation. From 1947, the index is the RPI, 1870–1946 the index is the consumption deflator. Prior to 1870 various indices are used.

inflation from 1800 to 2008. Prices were almost as likely to fall as to rise over the period 1800–1914, when average annual inflation was close to zero. But since the Second World War (WWII), annual inflation has averaged around 7%, and on an annual basis prices have not fallen in a single year. Data for other industrialised countries look similar.

In part, prices declined during the 19th and the early part of the 20th century because of the constraints imposed by the Gold Standard. Under this regime, money was freely converted into gold at a set price so the supply of money was linked to the size of a country's gold reserves. When the world's gold supply could not keep pace with the growing supply capacity of the world economy, this frequently led to periods of falling prices (IMF (2003)). Since this was often caused by an increased supply of goods and services and not by a shortfall of demand, the resulting deflation was benign.

The Gold Standard was abandoned by many countries, including the United Kingdom, during the First World War whereupon prices tended to rise. But after the war, many countries aimed at restoring the Gold Standard at the pre-war parity, which required prices to fall back. For this reason, the immediate post-war period was characterised by an initial policy-induced deflation across the industrialised world.<sup>(1)</sup> In fact, since the return to the Gold Standard was preannounced in many countries, prices were often expected to fall.<sup>(2)</sup> This helped contribute to an environment with relatively flexible prices and nominal wages. Even so, numerous countries suffered large contractions in economic activity.

By 1925, many countries had managed to return to the Gold Standard. Since then, prices fell at a modest rate across much of the industrialised world until 1929, while output grew steadily.<sup>(3)</sup> This deflation is likely to have been the consequence of beneficial developments reflecting the increased ability of the economies to provide goods and

services.<sup>(4)</sup> For example, there was a renewal of international trade and strong growth in new high-tech industries producing goods such as telephones, radios and automobiles. But the global deflation that took place between 1929 and the mid-1930s was much more malign, characterised by sharp declines in real output and quickly falling prices.<sup>(5)</sup> It has been argued that the downturn was initially caused by tight monetary policy in the United States and transmitted to the rest of the world via the fixed exchange rates that were part of the Gold Standard.<sup>(6)</sup> Indeed, countries that left the Gold Standard, including the United Kingdom in 1931, typically performed better than those that remained.

Since WWII, there have been few episodes of deflation in the United Kingdom or elsewhere. Perhaps the most notable episode was in Japan, where consumer prices fell by an average of 0.5% per year between 1999 and 2005. This mild deflation was prompted by an unwinding of inflated asset prices associated with a crisis in the Japanese banking system and as other commentators have suggested, an insufficient policy response (see Bernanke (2000) and Kuttner and Posen (2001)). This resulted in a protracted decade-long period of low growth.

Overall, one clear lesson can be drawn from previous deflationary episodes in the United Kingdom and internationally. The economic costs associated with deflationary episodes are primarily determined by the underlying shocks which cause prices to fall in the first place. What is unclear from this simple narrative, however, is whether the fact that prices were falling itself made the costs of deflation any greater by impairing the functioning of the economy. In particular, if falling prices created additional costs, then policymakers would need to take this into account when setting policy. The next section of this article examines this question in more detail.

## Costs of deflation

So how does the behaviour of the economy change when prices are falling rather than rising? Briault (1995) provides an exhaustive examination of the costs of inflation, but the focus here is to understand how the nature of those costs might be different under deflation. To reiterate, the intention here is not to examine the overall economic cost of deflationary episodes since, as noted above, this will depend on why the economy has fallen into a deflationary state. Rather, the aim is to

(1) Demobilisation could have contributed to the severity of the recession in addition to policy.

(2) Capie and Wood (2004) and Fregert and Jonung (2004).

(3) One exception was the United Kingdom, where high interest rates and sluggish growth prevailed throughout the 1920s. Some argue that this reflected attempts to protect the chosen parity with the Gold Standard or the effect of labour market reforms (Cole and Ohanian (2001)).

(4) For this argument, see Bordo and Filardo (2004).

(5) See, for example, Bernanke (1995).

(6) See, for example, discussions in IMF (2003) and Mundell (2000).

examine whether deflation *per se* has additional costs and whether it changes the way that the economy behaves.

The potential costs associated with deflation can be divided into five broad categories, many of which are interrelated:

- menu costs and taxation effects;
- consumption postponement;
- downward nominal rigidities;
- debt deflation; and
- the impact of the zero interest rate bound.

### Menu costs and taxation effects

Any form of price adjustment is potentially costly since firms face 'menu costs'. These partly relate to the physical cost of altering price lists (although technological advances such as the internet may be tending to reduce these). But they are also incurred by firms who find it costly to recalculate the optimal price continually in an environment of changing prices. And consumers face costs in deducing whether such changes are specific to particular goods or reflect a change in the overall price level. However, all these costs will be present whether prices are rising or falling, so if this were the only criterion, zero inflation would be the ideal.

Friedman (1969) highlighted one potential benefit of deflation. This relates to the fact that holders of cash receive no interest payments. The cost of holding money can be thought of as the income lost from not depositing it in a bank account, where it would yield a return equal to the nominal interest rate. As long as the nominal interest rate is positive, holding money is costly. For this reason, people tend to hold too little money compared to what they would optimally like to hold.<sup>(1)</sup> In other words, a positive nominal interest rate distorts money holdings. Friedman therefore proposed that the nominal interest rate should be set to zero, in which case the cost of holding money would be zero. Since the nominal interest rate equals the real interest rate adjusted for expected inflation, and because, on average, the real interest rate tends to be positive, to deliver an average nominal interest rate of zero, inflation would need to be persistently negative. So from this perspective, deflation could be good. It is important to note, though, that Friedman's proposition holds only under very special conditions. And Sinclair (2003) showed that various imperfections in the economy make it likely that a small positive rate of inflation is beneficial.

Another way to think about this is that the interest rate can be seen as a tax on holders of money. This tax gives revenues — so-called 'seigniorage' — to the government. And this tax distortion is only eliminated when there is the right amount of deflation to offset the real interest rate.<sup>(2)</sup>

Deflation has other implications for the tax system as well. In most countries, including the United Kingdom, the tax system

is not fully indexed to inflation; *ceteris paribus*, effective tax rates will tend to be higher with inflation and lower with deflation.<sup>(3)</sup>

Bakhshi *et al* (1997) calculated the benefits to households and businesses arising from a fall in UK inflation from 4% to 2% per year, suggesting that the benefits arising from the seigniorage and tax effects would be small, amounting to around 0.2% of GDP per year. It is possible that a further fall from a small positive to a small negative rate of inflation would bring some additional benefits from these effects, but it is also likely that some of the other costs associated with deflation could outweigh any benefits. This article now turns to these other costs.

### Consumption postponement

One commonly cited fear associated with deflation is that if prices are expected to fall, consumers will defer purchases until goods are cheaper, amplifying any slowdown in aggregate demand. While superficially convincing, this argument is flawed at least in its simplest form. That is because the timing of purchases by consumers will be determined not only by their inherent preference for consuming now rather than later, but importantly also by the real rate of interest that they face, ie the nominal interest rate adjusted for expected inflation. For a given level of nominal interest rates, if inflation turns negative this will tend to raise real rates and indeed cause consumers to postpone spending; they will prefer to earn more interest on their savings and spend later. But typically policymakers would cut nominal interest rates in response to weaker prospects in aggregate inflation, as the MPC has done over the recent past. For real interest rates to fall to encourage consumers to spend more, nominal interest rates would have to be cut by more than the fall in inflation.<sup>(4)</sup> But as inflation falls towards zero and then below, it becomes more likely that interest rates will hit the zero bound. This means that the consumption-postponement cost associated with deflation may be present but is simply part of the wider issue of the costs associated with hitting the zero interest rate bound, as discussed later. But the MPC has other more unconventional tools that it can use to loosen the stance of monetary policy and ensure the inflation target is met.

### Downward nominal rigidities

One important asymmetry in the economy is that it may be difficult for businesses to reduce money wages when economic conditions warrant such falls, either because the conditions facing the firm are very depressed or because aggregate prices are falling. If this were the case, a period of deflation could

(1) In perfect markets, the price of any good or service should equal the cost of producing it. Because the cost of physically producing money is negligible, the welfare distortions from money holdings will only be eliminated when the nominal interest rate is zero.

(2) Seigniorage will be positive as long as the nominal interest rate is positive.

(3) For a discussion about this, see Bakhshi *et al* (1997).

(4) This is known as the Taylor principle, originally described in Taylor (1993).

have adverse consequences, with unemployment higher than it would otherwise be. This is a potential cost of deflation.

If aggregate prices were to fall, and nominal wages fell by the same amount, the purchasing power of money wages would be maintained. But employees may suffer from money illusion — the tendency to focus on the nominal, rather than the real, value of money and this may make it difficult to cut nominal wages. If they do suffer from money illusion, they may be unwilling to accept a pay cut, since they incorrectly believe that doing so will reduce their ability to buy goods and services.<sup>(1)</sup>

It is important to remember that, even if aggregate prices fall, there may be no need for nominal wages to fall. Over the medium term, money wages would be expected to rise in line with labour productivity — the amount of output produced per worker — plus the rate of inflation. Over the past 30 years, UK labour productivity has risen by around 2% per year on average. This suggests that even if prices were to fall at a modest rate, there would not necessarily be a need for aggregate nominal wages to be cut. But because some sectors are more likely to be affected by a downturn than others, it is still possible that wage cuts would be needed in those sectors. And if employees were resistant to such wage cuts, then unemployment would likely be higher than otherwise.

Is there any evidence for downward rigidity in money wages? Previous studies of individual firms have suggested that in the past employers have usually been prepared to cut nominal wages, and employees are prepared to accept them, only when firms face severe problems.<sup>(2)</sup> Historical data typically show an asymmetry in the distribution of wage changes for individuals; a larger proportion of individuals have received wage increases than wage cuts, and wages have remained unchanged for a significant number of individuals.<sup>(3)</sup> This has often been interpreted as evidence for downward rigidity in nominal wages.<sup>(4)</sup>

But it is important to recognise that most of this evidence has come from periods when inflation has been positive — in which case a cut in the nominal wage is certainly associated with a fall in the real wage. And even if employers found it difficult to cut the nominal wage, there may be other ways to cut down on labour costs: non-wage benefits and bonuses could be cut, and firms may avoid customary wage increases due to merit and seniority. Firms could also hire new workers on wages below those paid to existing workers.

More recent data, also discussed in the box on page 33 of the February 2009 *Inflation Report*, show that the proportion of freezes in pay settlements in 2008 H2 was about twice that in 2008 H1, but the number of pay cuts remained very small. Nevertheless, with a sharp slowdown in growth forecast, a recent British Chambers of Commerce survey does suggest

that about 10% of companies plan to implement nominal pay cuts in 2009. This suggests that nominal wages may be more flexible downwards in the current conjuncture than they have previously been.

### Debt deflation

Another frequently cited cost associated with deflation relates to the implications of falling prices for firms and households who have entered into debt contracts fixed in nominal terms. With such contracts, falling prices will increase the real debt burden for borrowers in terms of the principal repayments and the ongoing interest payments (for fixed-rate loans at least).<sup>(5)</sup>

This is known as the debt deflation mechanism, first articulated in detail by Fisher (1932, 1933).<sup>(6)</sup> And there is empirical evidence to suggest that this channel has been important: during the global downturn of the late 1980s and early 1990s, the most severe recessions occurred in those countries which had previously experienced the largest increases in debt (see King (1994)).

The key element to the debt deflation channel is the transfer of wealth from debtors to creditors caused by an unexpected fall in inflation.<sup>(7)</sup> Since debtors are likely to have a higher propensity to consume than creditors, demand is likely to fall. For this mechanism to matter, the fall in inflation must be unexpected relative to when the debt contract was entered into; so for example, if inflation were to fall unexpectedly by 2% for two years, the real debt burden on existing nominal contracts would necessarily be 4% higher. To the extent that borrowers are committed to fixed interest rate payments on their loans, then the burden of real interest payments will be correspondingly greater too; in the United Kingdom, some 40% of mortgages are on a fixed-rate basis.<sup>(8)</sup> And real interest payments would also increase if nominal interest rates did not fall in line with inflation either because policy is prevented from doing so (as discussed in the next section) or because banks increased their lending margins. There is some evidence that this has been happening recently in the United Kingdom (see pages 13–16 of the February 2009 *Inflation Report*).

(1) It could also be difficult for businesses to reduce wages because of institutional reasons, for example the national minimum wage, which prevents wage cuts for workers that are paid at this level.

(2) Akerlof *et al* (1996) discuss this type of evidence.

(3) For the United Kingdom, see Barwell and Schweitzer (2007), Schweitzer (2007), Smith (2000) and Smith (2006).

(4) Downward rigid nominal wages could also be helpful in tending to prevent runaway deflation, as noted by Akerlof *et al* (1996). IMF (2003) argue that this effect helped contain the extent of Japanese deflation in the 1990s.

(5) For floating-rate loans, the real burden will depend on how nominal interest rates move relative to inflation.

(6) Fisher's ideas are closely related to earlier work by Veblen (1904), contemporaneous analysis by Schumpeter (1934) and more recent work by Minsky (1977). For a comparative evaluation of these contributions, see Raines and Leathers (2008).

(7) Tobin (1980) was the first to emphasise this channel, subsequently elaborated in King (1994).

(8) Bernanke (2000) attempted to illustrate the likely impact of the unexpected deflation experienced by Japanese borrowers taking out a ten-year loan in 1997. He calculated that the real debt burden would have been some 20% higher by the time the loan matured.

Although the debt deflation mechanism is usually emphasised in the context of deflationary episodes, in fact an unexpected fall in inflation from 10% to 5% is comparable in its effect to a fall from 2% to -3%. So in principle, this aspect of debt deflation is not specific to periods when inflation is negative. Nevertheless, there are some features of unexpected deflation which do suggest that such an episode may have a more marked effect when prices are actually falling. If the deflationary episode has been caused by an adverse shock to demand, this is likely to be associated with falling output and higher unemployment, making the debt burden even more difficult to service. Furthermore, these economic circumstances are often also associated with a sharp fall in asset values (ie a fall in asset prices relative to general prices).<sup>(1)</sup> And if this degrades the value of the collateral on which the loan is secured, this could magnify the effect of the initial shock as firms and households become more likely to default. These conditions can also have deleterious implications for financial institutions holding bad loans with a substantially lower recovery value, prompting them to cut back on their lending to rebuild their balance sheets.<sup>(2)</sup>

In fact, this configuration of falling asset prices and depressed economic conditions in the face of an adverse demand shock is consistent with recent and prospective macroeconomic developments in the United Kingdom and internationally, as described in the February 2009 *Inflation Report*. These influences help to explain the fall in growth and inflation over the forecast horizon while uncertainty surrounding the strength of these effects motivates some of the downside risks to that projection. Notably, these effects are present despite the fact that deflation itself was not expected in the central projection in the February 2009 *Inflation Report*. This serves to emphasise the point that many of the costs typically associated with debt deflation are not caused by falling aggregate prices themselves.

One other feature of the adverse effects associated with debt deflation is that they can be viewed as 'transitional effects'; if deflation was expected to persist for a prolonged period, firms and households would likely adjust to an environment of falling prices and nominal debt contracts would likely be redesigned to reflect this new expectation. But in the context of the inflation-targeting regime in the United Kingdom, this is less relevant since policy will be set to ensure that inflation is returned to its target level.

Overall, the debt deflation channel is likely to imply that deflationary episodes will tend to be associated with higher costs compared to a situation where there is low and predictable inflation. But it is likely that high costs are only truly incurred when deflation is accompanied by sharply falling asset prices and depressed economic conditions. The effect of a low level of deflation alone may not be enough to have serious consequences via this channel. For example, in

describing the Japanese experience of the 1990s, Posen (2006) argues that the feed-back from deflation on to the debt burden and then back into deflation and the real economy was limited in magnitude.

### The impact of the zero interest rate bound

The final set of potential costs associated with deflationary episodes relates to the increased possibility that interest rates will be driven down to the zero bound.<sup>(3)</sup> Unlike the other costs considered so far, these are not necessarily incurred when deflation occurs; it will depend on whether the deflationary episode actually causes policymakers to want to bring nominal interest rates down to zero. This matters because nominal interest rates cannot fall below zero even if the central bank wished to loosen monetary conditions further; no one would be prepared to lend money at negative interest rates because they could always earn a better return by holding cash.<sup>(4)</sup> Instead, the central bank will use so-called 'unconventional' monetary policy measures to stimulate the economy (see King (2009)). Indeed, the MPC voted in March 2009 to use these more unconventional policy instruments.<sup>(5)</sup>

Whether this situation would actually be costly in practice would depend on the relative effectiveness of the other monetary policy instruments available to the central bank compared to the conventional interest rate instrument in providing an appropriate countercyclical response. Possible options are discussed in more detail in King (2009).

## Conclusions

This article has explained how the economic costs of deflationary episodes will be largely determined by the underlying circumstances which have caused prices to fall. If deflation has occurred because of beneficial supply shocks, the economic costs may be much less than if deflation has arisen because of an adverse demand shock.

But this conclusion does not tell us whether the experience of falling prices, *per se*, makes the deflationary episode more costly. The association of the 1930s' deflationary episode in the United Kingdom with a deep depression has led many commentators to demonise deflation, but it is important not to confuse the effects of the underlying shock (for example a credit crunch) with the effects of deflation itself.

(1) Falling commodity prices alongside asset prices sometimes exacerbated this effect. For example, during the Great Depression in the 1930s, large falls in the price of agricultural products caused many farmers into liquidation, especially in the United States.

(2) These effects on bank lending are known respectively as the credit channel and the bank capital channel.

(3) In practice, the effective lower bound on interest rates may be slightly above zero, partly for operational reasons relating to money markets, partly due to the impairment of the banking sector transmission mechanism at low levels of interest rates.

(4) Yates (2003) discusses circumstances when it might be possible to charge a negative interest rate on money.

(5) [www.bankofengland.co.uk/publications/news/2009/019.htm](http://www.bankofengland.co.uk/publications/news/2009/019.htm).

Consequently, the main purpose of this article is to examine whether the cost of deflationary episodes is made worse by the fact that prices are falling. This article has examined the different costs associated with deflation and how they might change our view of the monetary transmission mechanism.

Some theoretical work suggests that mild deflation might actually enhance welfare, as originally argued by Friedman. But other distortions are likely to overturn that theoretical result.

Another source of distortion associated with deflation relates to the possible existence of downwardly rigid money wages. During a deflationary episode, this might prevent the labour market adjusting in the conventional manner and could potentially exaggerate the unemployment consequences of adverse demand shocks. But very recent evidence tends to suggest that money wages are flexible downwards to some extent in the United Kingdom in the face of the current downturn. However, it is too early to conclude that there would be no effect from this potential distortion.

Another important mechanism associated with deflation is that of 'debt deflation'. Debt deflation might magnify adverse shocks as unexpectedly lower inflation increases the burden of

debt fixed in nominal terms, especially if this is accompanied by even greater real falls in asset prices. In practice, the effects of falling asset prices and lower incomes are likely to be more costly than falling prices themselves.

Deflation also increases the chance of interest rates reaching the zero bound. Once at the zero bound, monetary policy loses its ability to affect the economy in a conventional manner by cutting interest rates countercyclically in response to a deflationary shock. But other monetary policy tools are available to stimulate the economy as necessary (as discussed in King (2009)). Indeed, the MPC voted in March 2009 to use these more unconventional policy instruments.

To understand how to respond to a potential deflationary episode, it is crucial to learn the lessons of history from previous episodes in the United Kingdom and abroad. Perhaps the most important insight from such analysis is that the costs of previous deflationary episodes have been exacerbated by inappropriate policy responses, or by constraints imposed by existing policy regimes, in particular the Gold Standard. But if policy responds sufficiently promptly and decisively employing the full range of conventional and unconventional monetary policy instruments, deflationary episodes should be short-lived.

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