I. Introduction

The widespread concerns that were expressed about the possibility of deflation affecting the developed world, and of the potential limits on monetary policy in offsetting that, because of the zero bound to nominal interest rates, (see Bernanke 2003), have begun to recede. Not only has the US economy rebounded vigorously and Europe more hesitantly, from the slight (equity-bust driven) recession in 2000-2, but even Japan has now shown convincing signs of recovery.

But the trade cycle is not dead. Moreover, the last recession was countered in several countries, notably in the US and UK, by a combination of fiscal and monetary relaxation, the latter having a particularly strong effect via the housing market. When such relaxation eventually is reversed, there could be some dangers of future economic weakness. Whether for this, or other, reasons there will in future be further recessions. A recession in the context of low inflation will then, once again, give rise to worries about deflation, and whether, and how, monetary policy can cope. So it is as well to be prepared.

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1 My thanks are due to J. Amato, W. Mosler, H. Tomura, E. Truman, I. Visco and R. Werner for their help and suggestions, and to the participants of the BIS Conference at Brunnen, Switzerland, June 18/19, 2004, for their encouragement. All remaining errors are my own responsibility.
My own view is that such worries have been, in any case, greatly exaggerated; and, in so far as such worries had justification, were owing to self, or externally\(^2\), imposed limitations on the central bank’s willingness and ability to undertake expansionary open-market operations (Goodhart and Hofmann 2003). Let us start with the fact that several periods of goods’ price deflation have been associated with continuing strong trend real growth and positive nominal interest rates. Notably examples were the ‘great depression’, 1873-1896, and the People’s Republic of China, 1998-2003, (see Goodhart and Hofmann, ibid, and Bordo, Lane and Redish, ‘Good versus Bad Deflation: Lessons from the Gold Standard’, 2004).

The characteristics that mainly differentiate ‘bad’ deflations from ‘good’ deflations are that in the former asset prices on property, housing and equities are falling, and the nominal interest rate on riskless short-dated debt is driven down towards zero; whereas in ‘good’ deflations such asset prices do not decline, certainly not precipitously, and nominal short-term interest rates remain at positive, normal levels (say around 2/3%). These conditions are, of course, inter-linked by the no arbitrage requirement in efficient markets. Assuming that property has a positive (convenience/use) return, and that there is some expectation of future dividends from equities, then a zero nominal short-term riskless rate of return has to be balanced by an expectation of declining property/equity asset prices.

In the case of bond prices, deflation and a zero nominal risk-less short rate will drive bond prices so

high that the risk premium rises to adjust the risk-adjusted return into line. Indeed Japanese long-dated government bonds (JGBs) are currently, on this view, amongst the riskiest assets in the world.\textsuperscript{3} We will discuss what implications this may have for central bank operations in more detail later. We will also discuss the risks that operations in the foreign exchange market may have for central banks.

A further factor that has exacerbated recent `bad’ deflation in Japan and Hong Kong has been the persistence of expectations of deflation, which served to raise real interest rates; the evidence on what were the expectations of future price changes in the USA in the inter-war period is not clear. This contrasts with the gold standard era where inflation was extremely variable from year to year, partly owing to the importance of agriculture; trends were only observable from multi-year averaging, and expectations were normally of price stability.

Such persistence of expectations is not, however, necessarily a distinguishing feature between good and bad deflations. Rapidly rising productivity, as in China or the IT industry, can lead to a combination of persistently falling goods prices alongside stable, or appreciating, asset prices.

The maintained position of this paper, which was set out at greater length in Goodhart and Hofmann, ibid, is that bad deflations involve a combination of falling goods and asset prices. It is against this background that the rest of this paper is set out. In Section II we shall discuss whether there is any

\textsuperscript{3} Small, et al (2003), Section 4.2, and Tinsley (1999) discuss the possibility of a Central Bank, in their case the FRB, writing put options on longer-term government bonds, thereby lowering the risk premium and required yield on such bonds.
need to adjust the target of monetary policy to lessen the danger of general deflation. In Section III
the question of the interaction between financial stability and monetary policy issues will be, briefly,
considered. Perhaps the most important operational (and accounting) issue to be raised here is the
nature of the interaction between fiscal policy (including debt management) and monetary policy; this
is analysed in Section IV. Next, in Section V, I shall review the possible options of open-market
operations in other (unconventional) assets, foreign exchange, property and equities. The paper
concludes with a discussion in Section VI of whether there might be a re-entry problem from a
lengthy period of deflation. To give a flavour of the overall message of this paper, a sufficiently
aggressive, (and courageous) central bank in a fiat money regime with a floating exchange rate can
always prevent persistent deflation. In that sense deflation is a self-imposed injury, not a potentially
unavoidable danger.

II. The Choice of Targets

(a) Asset Price Targets?

If the distinguishing mark of `bad' deflations is that goods' deflation is accompanied by asset price
deflation, then this might suggest that asset prices should be included in the objective function of
central banks, either as a component part of the appropriate price index, or separately.

In practice the closest, and econometrically most reliable, relationships between asset price
movements and the real economy have been between housing and property price movements and
fluctuations in output and in other domestic prices, (see Detken, Masuch and Smets (2004) and
Goodhart and Hofmann (2003)). The relationship between equity price movements and the wider economy has been weak and erratic (Cecchetti et al (2000)), and there are few advocates of any formal inclusion of equity prices either in an expanded price index, (or only with a minuscule weight), or as a separate, additional objective.

In any case the equity market is a, presumably efficient, flexible financial market, so it is difficult for officials to claim to identify disequilibria from fundamentals, or to justify in public raising interest rates because of `bubbles’. Moreover, equity prices do not meet the Woodford criterion (2003, pp 440-3), that most weight should be placed on the stickiest prices in the appropriate price index for achieving price stability. Nor for that matter do exchange rates. Furthermore the effect of both exchange rate changes and of equity prices on subsequent movements in output and of inflation can be estimated and forecast, more or less, and hence do impact on policy.

There is, perhaps, one qualification. This is that a really large decline in equity prices might cause a (non-linear) panic reaction. No one really knows how far the crash in the New York Stock Exchange in Autumn 1929 was responsible for the `bad’ deflation there in 1929-33. Although current studies (e.g. Meltzer 2003) tend to put more blame on passive monetary policies, and the October 1987 crash was weathered quite comfortably, the risk of a severe downwards equity market adjustment triggering a more general panic is not taken lightly. Hence there is some evidence of an asymmetric approach of monetary policy to the equity market, in that severe downwards corrections may well trigger a policy response, whereas equity price surges will not, see Rudebusch and Wu (2004). This syndrome has been termed the `Greenspan Put’, and its potential effects on equity markets analysed by Miller, Weller and Zhang (1999).
In contrast, housing and property prices are (probably) relatively stickier, and have a much closer, and more stable relationship, (than do equity prices or, perhaps surprisingly, than do exchange rates for most economies), with other prices and output. So, the real issue in this context is whether, and how, to include some measure(s) of housing costs and prices in the main price indices for assessing inflation.

A problem in this respect is that the treatment of housing, and the current services such housing provides, in the preparation of overall price indices is an arcane topic that has become the speciality of a sub-set of statisticians. Euro-Stat is still, I believe, wrestling with this subject; the HICP does not at present give much (or any?) weight to housing services, but that could change in future. The subject of the treatment of housing in price indices is a statistical thicket, (there are several alternative ways of approaching the problem), into which macro-economists are understandably reluctant to enter. A result of such statistical difficulties is that housing costs and services enter with widely differing weights, and measured in quite different ways, in various countries. Whereas most macro economists are prepared to discuss in broad, general terms whether housing prices should enter price indices, few know how housing is actually now treated in their own indices, or have taken part in the nitty-gritty of the statistical debates on this matter (on all this, see Goodhart 2001).

(b) Monetary Targets?

One of the problems with asset price targets, or objectives, is that there are several key sets of asset prices, notably property and housing, equities and exchange rates; and these often are pointing in
different ways (for the economy and for policy). For example, in the UK in recent years real exchange rates have seemed too high, whereas housing prices have had an inflationary/expansionary effect on the economy. Similarly in the USA housing and equity prices have been moving in opposite directions.

Bank credit extension to the private sector is closely associated with asset market conditions. One of the advantages of a bank credit, or a broad money target, is that it can give a supplementary measure of whether the economy as a whole, including importantly asset markets in general, is subject to expansionary, or deflationary, pressures. This is, in a sense, an additional boon of monetary targets beyond the wider point that in the longer run inflation, or deflation, are in themselves monetary phenomena, see Issing (2004).

Like price indices, there are many varieties of monetary aggregate. As in the USA in 1929-33, now in Japan in recent years, the relationship between the monetary base and nominal incomes seems to have become unreliable, and subject to extension, during crisis periods. This is not to say that central banks should not aggressively expand the monetary base during severe depressions; it is rather that the quantitative test of whether enough has been done is not some % growth figure in MO itself, but some combination of data/forecasts from the economy itself (inflation, output, etc.) together with measures of credit and broad money growth. Somewhat like MO, M1 and other narrow money aggregates may also grow quite rapidly during depressions, since the decline in nominal interest rates towards zero makes the opportunity cost of holding zero-yielding monetary balances virtually nil.
So the evidence from recent periods of `bad' deflation in Japan, and to a lesser extent in Hong Kong, suggests (to me at least) that the appropriate focus on monetary variables should be on the broad aggregates, both broad money (M3) and bank lending to the private sector.

The currently fashionable, stripped down DSGE macro model has only three equations, a (forward-looking) IS and AS curve, and a central bank reaction function. In this system, the thrust of monetary policy is solely dependent on the central bank’s nominal interest rate, so that, although there is a demand for money function implicit in the model (McCallum, (2001)), it has no role in the determination of output or inflation, (shocks to the D for M function just get automatically offset by changes in the quantity of money, given the desired level of interest rates).

Underlying this model, however, is a transversality assumption that all agents always can, and do, pay off all their debts by the terminal horizon, so there is no bankruptcy, no liquidity constraints, no concern about confidence, and no real need for banks (except perhaps owing to informational asymmetries). Given the reality of default, all these other factors, e.g. liquidity constraints, the need for collateral, trust and confidence, and a role for banks, come back into a play. That said, macro models in which default enters, perhaps as a choice variable (as in Shubik (1973), Shubik and Wilson (1977) and Dubey, Geanakoplos and Shibik (2000)), are rare. This needs to be rectified. I, and my co-authors, Sunirand and Tsomocos, are making a stab at this, (Goodhart, Sunirand and Tsomocos (2004)).

In the meantime, for practical policy purposes, it needs to be realised that there will be a time-varying assessment of the risks of default. This will be exhibited both in fluctuations in risk premia
(spreads) over and above the risk-free rate of interest, and in changes in the willingness of banks to
grant credit, (at any given level of interest rates). Thus changes in commercial banks’ behaviour and
attitudes, and indeed changes in risk appetites more widely, will have an influence on the real
economy, additional to that of the risk-less (short-term) rate of interest.

There are various possible measures of such uncertainties, and of risk appetite, including many from
markets themselves, e.g. from spreads and option pricing. Nevertheless the trends in the broad
monetary aggregates will also contain potentially valuable information on the overall effects of all
these factors on the future development of the economy. That said, such information needs careful
interpretation. Structural innovations in financial intermediation can have strong effects on the
aggregates, separate from macro-economic factors. There is no fixed, or necessarily stable, inter-
relationship between the growth of any monetary aggregate and of nominal incomes. Yet there can
be much potentially useful information in their time paths.

Excessive, and unsubstantiated, reliance was placed on the robustness and stability of demand for
money functions in the era of monetary targets (notably between 1973 and 1982). But when those
relationships failed to live up to their prior billing, and monetary targets were (mostly) abandoned,
there was a general tendency to go too far in the opposite direction, i.e. to deny any useful
informative role to monetary aggregates and bank credit. As the monetarists have constantly and
correctly claimed, it is not sufficient just to look at (nominal) interest rates as the gauge of the thrust
of monetary policy. This is particularly so during deflations when nominal interest rates are
constrained by the zero lower bound. Whether it is necessary, however, to put a broad monetary
aggregate on a ‘pillar’ to give it the visibility that it does deserve is debatable, but there is certainly a
case for it.

(c) Price Level Targets?

At one stage, about three years ago, I did advocate, in one of the many (and generally fruitless) discussions with Japanese officials, that Japan adopt a medium-term price level target. The reasoning was as follows. The Bank of Japan was then publicly proclaiming its inability to employ instruments that could enable it to hit a short-term inflation target. Partly in consequence the private sector there was (apparently) expecting continuing deflation, thereby raising real interest rates and making such deflation a more probable self-fulfilling prophecy. My thinking was that a medium-term (say five year) price level target would put ever-increasing pressure on the BoJ to be aggressive in its expansionary measures, the more it failed to halt deflation in the short run. Moreover, in so far as the ultimate achievement of that price level target had any credibility, it might help to mitigate the depressing expectational effects of continuing short run failure to prevent deflation.

Now that there seems a reasonably good chance of Japan emerging from its decade-long depression, I am quite glad that my advice then was not followed. If a price level target had been adopted, say in 1999 or 2000 for end 2005, it would presumably now involve the BoJ either aiming for a relatively high rate of inflation between now and end 2005, or consciously deciding to miss the target altogether. One of the concerns, which will be discussed in Section 6, and which needs wider discussion now, is whether the combination of fiscal and monetary most often used to combat inflation entail a re-entry problem whereby the economy having exited ‘bad’ deflation becomes particularly prone to high (perhaps hyper) inflation; in which case no one should want to see inflation
in Japan bounce from, say, +1% to +5% in a year.

Of course medium-term targets with undesirable end-period implications can be, and are often, finessed by continually rolling forward the relative period. The ECB’s medium-term target for price stability is an excellent example; indeed it is so imprecise as to dates as hardly to count as a target at all! As the above suggests, the alternative of fudging the target by rolling-forward, or simply not giving dates, does not add to credibility.

However, if private sector agents are mostly forward-looking and the targets are credible, price level targets are superior to inflation targets. The reason is obvious. If there is a deviation of outturn from target, then with forward-looking expectations and credible targets, real interest rates and price/wage expectations will move in a strongly stabilising fashion without having to adjust nominal interest rates (by much), or cause output to deviate (by much) from its equilibrium level. Since price level targets, if achieved, also give greater certainty for long-term economic developments and long-term contracts, their relative advantage, under these assumed conditions, over inflation targets is clear.

The problem, of course, is that these conditions do not empirically hold. Whereas theorists like forward-looking models, most empirical work suggests that expectations are, at least half, backwards looking, see Campbell and Mankiw (1989) and Mankiw (2000). Moreover, as already indicated, experience with targetry suggests that price level targets would not, initially at least, have much credibility. Consequently, setting a price level target would run the risk of forcing a more disruptive readjustment on to the economy, following a deviation of actual from target, than any
central bank/Ministry of Finance has yet been prepared to attempt. Such readjustment frictions could be mitigated by allowing it to occur over a run of years, but that would lead to a complex, time-varying target for inflation which would be difficult to explain easily to the public. For such reasons there is little, or no, current enthusiasm amongst policy-makers for shifting from an inflation target to a price level target.

It should go without saying that \textit{ex ante} inflation and price level targets are effectively identical. They differ in their implications on how to respond to \textit{ex post} deviations of inflation from target. So the issue of whether the target should be zero inflation, or some positive number, is a conceptually separate question. That said, there has been some overlap between enthusiasts for a zero inflation objective and for a price level target, (John Crow of the Bank of Canada may fit the bill, see (2002, Chapter 11)), also see the Bank of Canada Conference on \textit{Economic Behaviour and Policy Choice Under Price Stability}, especially Session 2, October 1993, published 1994. Recent concerns about ‘bad’ deflation and the zero bound to nominal interest rates have, however, left central banks content that their targets of around 2% inflation seem about right. Again there is no current enthusiasm for a change on this front.

(d) Raising the Inflation Target

If the inflation target is higher, the likelihood of adverse deflationary shocks triggering the nominal zero bound limit becomes less. On the other hand a higher target is hardly consistent with most people’s definition of price stability. Quite a lot of simulation/empirical work on this trade-off has been done in recent years, mostly in the USA, e.g. Coenen and Wieland (2002); Fuhrer and
That work seems to have re-affirmed most central banks’ adherence to a target rate of inflation of around 2 - 2½%. I have nothing further useful to add on this matter.

III. Financial Stability Issues

`Flation’, whether bad deflation or serious inflation, is bad for financial stability, as are unanticipated shocks to the economy, (an argument for gradualism in adjusting the setting of policy). The worst periods of bank failures have coincided with severe `bad’ deflations, e.g. Australia 1891-93, USA 1893-96, USA 1929-33, Europe 1929-33, Japan 1990-2002. So, policies to prevent systemic `bad’ deflations will also help to maintain financial stability. The idea that monetary policy may be deflected from its true purpose of maintaining price stability by concerns about financial stability may have some validity in circumstances where the macro objective is to quash inflation and break inflationary expectations, but is rubbish when the perceived enemy is deflation.

The problem is rather the reverse, that policies imposed on financial stability grounds (rightly or wrongly) may make the task of macro-policy in preventing `bad’ deflation harder. Because bank borrowers are more prone to default during depressions, bad loans will rise, and the ratings of extant loans will deteriorate. The value of equity holdings of financial intermediaries will drop. So the fragility and riskiness of the individual financial intermediaries will rise. If capital adequacy is
assessed on a risk-related, fair (market) value basis, the banks are likely to become increasingly constrained by their capital adequacy ratios. This will limit their willingness to lend, and may force them to sell equities into a declining market, as with Japanese banks and UK insurance companies. The possibility of an adverse dynamic spiral whereby the recession causes banks to reduce their asset books, and such cut-backs worsen the recession, is clear, (see Cifuentes, Ferrucci and Shin (2004)).

This potentially damaging dynamic process will become worse the more banks’ accounting frameworks are on a fair (market) value basis, and the more that CARs are based on the relative riskiness of assets. Moves towards market (fair) valuations and relating CARs more closely to risk are, however, in process now. This is not the place to go into the arguments for, and against, these trends. That takes a separate paper(s), of which I am writing my share, (Goodhart 2004).

In so far as developments on financial stability issues are likely to worsen cyclicality (i.e. they exhibit procyclicality), there is a question of whether there are mitigating procedures that can, and should, be undertaken on the financial stability side; or whether the macro monetary branch of central banks will just have to act even more aggressively to counter the unhelpful macro effects of financial stability requirements. Again this is a major separate subject on which much has been written, notably here at the BIS (e.g. Borio, Furfine and Lowe (2001); Borio and Lowe (2002); Borio and White (2003)); also see Gordy and Howells (2004). Again these questions are too large and distinct a question to be taken here, so we shall move on.

IV. Monetary and Fiscal Interaction
One of the arguments against central bank operational independence used to be, and sometimes still is made, that there needs to be coordination between monetary and fiscal policies, but that such independence prevents such co-ordination. I have never accepted that argument. What operational independence does is to commit the adjustment of interest rates to the achievement of price stability. The Treasury (Ministry of Finance) knows that commitment, and can therefore co-ordinate its fiscal policy with the pre-committed monetary policy to achieve some secondary macro objective, e.g. level of real interest rate or exchange rate, should it so wish.

But when adjustments in short-term interest rates come up against the zero lower bound, the issue of co-ordination between monetary and fiscal policies re-emerges. Moreover, the central bank and Treasury may adopt separate targets and maximise separate objective functions, and both may ignore the important question of the identity of their private sector counter-parties.

Let me start with the central bank. It may decide, as did the BoJ, that given its inability to reduce nominal interest rates further, it would aim for a monetary base target. However with interest rates being very low, the purchase of long-dated government debt from the private sector would leave it exposed to potentially severe capital losses, depending on the accounting regime, (see Martinez-Resano on ‘Central Bank Financial Independence’ (2004)). So, following its own individual interests it is likely to undertake open-market-operations in relatively short-dated bonds.4 Oda and

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4 Of course any losses on central bank holdings are exactly matched by off-setting gains to the Treasury (Ministry of Finance). So, from the view-point of the public sector as a whole, there is no such risk of capital gains/losses. But, perhaps especially after ‘independence’, this is not the way that capital losses in the central bank’s books will be perceived, or treated by the accountants.
Okina (2001) comment, (p. 343) that,

“In addition, if prices of existing government bonds fell rapidly, the total asset value of a central bank would also decrease substantially, which might erode the credibility of central bank banknotes. In such a case, a reduction in money value would be induced and uncontrollable inflation might be generated. In order to avoid such a serious situation, a central bank should not increase the outright purchase of medium- to long-term government bonds when fiscal discipline is not warranted.”

Also, they write, p. 344 and 346,

“When the economy enters a recovery phase, medium- to long-term interest rates would have already risen by the time the central bank absorbed money. Thus, the outright purchase of long-term government bonds would result in unrealized losses in the central bank’s bond position at this stage. Even if the central bank absorbed money through different measures, such as bill selling operations, the bond position would lead to unrealized losses (under the cost method) and thus erode the financial condition of the central bank.

Fujiki, Okina, and Shiratsuka (2001) analyzed the current outstanding balance of government bonds issued and the BOJ’s balance sheet. They estimated the size of the Bank’s likely capital losses by applying certain assumptions with respect to factors such as the degree of interest rate rise upon economic recovery, and reported that the impact of such capital losses would be significant.”

“Fujiki, Okina, and Shiratsuka (2001) pointed out that the massive outright purchase of long-term government bonds would, even if successful in rescuing the economy from a deflationary shock, likely result in the central bank incurring a capital loss and lead to an increase in the private sector holding of government debt..... Furthermore, they argued that if the government tried to avoid such a fiscal burden by monetization after experiencing a

Moreover, especially after ‘independence’, a central bank will be loathe to approach the Ministry of Finance for ‘recapitalisation’. The IMF’s World Economic Outlook for September 2003 urged the BoJ to ignore such accounting issues; thus on p. 3 they wrote,

“Additional purchases of Japanese government bonds (JGBs) would have the added benefit of reducing the private sector’s holdings of government debt and hence lowering future interest payments from the public sector to the private sector. Concerns about potential Bank of Japan losses on JGB holdings should not be allowed to detract from the pursuit of price stability, and can in any case be mitigated through loss-sharing arrangements between the central bank and the Ministry of Finance.”

It is doubtful whether the IMF’s plea will be heeded.
deflationary shock, monetary policy would lose control over inflation. Therefore, they concluded that the outright purchase of long-term government bonds should be considered only if the Japanese economy stood on the brink of serious deflation.....

With respect to the cost attaching to the increase in the outright purchase of medium- to long-term government bonds, while Okina (1999a, 1999b) emphasized the possibility of the central bank’s balance sheet being eroded and suggested it would be a social cost that could not be interpreted in the integrated government model.”

If such OMO in short-dated bonds are with the commercial banks as counterparties, the results are likely to be almost nil. The banks have just swapped a very low interest, almost riskless asset, for a zero interest, perfectly safe asset. Much of the increase in BoJ MO was the counterpart of a portfolio reshuffle amongst the very low yielding liquid portfolio of commercial banks. Oda and Okina (ibid) appear to accept that argument.\footnote{Thus they write, pp 330/1,}

“The second argument is more straightforward: if excess reserves become huge, mere cost pressure should force banks to invest in riskier assets. However, in reality, under zero interest rates the excess reserves were piled up in the account of \textit{tanshi} brokers and banks with the BOJ, and failed to exert this kind of pressure.

In this regard, a simple quantitative illustration might be useful. Excess reserves provided by the BOJ under zero interest rates are about ¥1 trillion. (The BOJ’s current account balance, which includes required reserves, is about ¥5 trillion.) With an interest rate of 0.02 percent under the zero interest rate policy, the cost would only be ¥200 million even if a bank held all excess reserves for one year. If the BOJ increased excess reserves to ¥3 trillion – three times the current figure, as Makin (1999) suggested – the yearly cost would be ¥600 million. Even if excess reserves were increased to ¥100 trillion, 100 times more than now, the cost would be ¥20 billion, or only 0.9 percent of city banks’ aggregate annual business profit (which was an average ¥2.3 trillion during fiscal 1990-98). Therefore, the cost of holding excess reserves as a precaution could be considered practically negligible; holding huge excess reserves does not pose a serious cost pressure on banks at all.”

Also see Clouse, et al, (2003), p. 20,

“When the nominal interest rate is zero, the marginal benefits from additional liquidity (or
The purchase of long-dated government debt by the central bank from banks should have a bit more effect. At the same moment it reduces banks’ income by slightly more, with an upwards sloping yield curve, but also increases their liquidity by more. So it may make banks more willing to add to their earning assets.

Similarly a purchase of government debt from the non-bank public will raise their deposits, and hence raise both the aggregate money stock and bank liquidity. The relative effect of OMO on the non-bank public of whether the OMO are of short, or long bonds, will be the same as with the banks.

So we can try our hand at a taxonomy, a classification of relative effects:

Table 1: OMO

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means of payment) provided by open market operations are also zero, and the additional liquidity per se has no effect on aggregate demand.”
Clearly the order of effectiveness is rising. Equally clearly, the order in which a central bank with an MO target, and separate optimisation, will work is (1) (easiest to do), (3), (2), (4).

Similarly a Treasury, (Ministry of Finance), is likely to be fixated on a target for its overall deficit. In this case, however, the financial danger that it runs is with the income risk of having to pay a higher rate on its roll-over debt when normality returns. So its individual aim will be to finance the deficit as far as possible by issues of long dated debt, again without that much concern without the counterparty where the debt ends up. But now we have three possible counter-parties, banks, non-banks and central bank. Note, however, that, out of obvious concern for its inflationary consequences, central bankers have not only been trained not to finance the government directly, but that prohibition may even be written into their statutes.

Again we can go through the taxonomy of deficit financing, remembering that a deficit financed by money creation by the central bank involves less Ricardian expectation of future taxes than one financed by debt sales to the private sector. So we have six alternatives to finance a given deficit:-

(1) Long debt sales to non-bank private sector
(2) Short debt sales to non-bank private sector
(3) Long debt sales to banks
(4) Short debt sales to banks
(5) Long debt sales to central bank
(6) Short debt sales to central bank
We rank these again in ascending order of economic effectiveness for generating expansion.

Table 2

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Central Bank

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<th>Riskiness</th>
<th>Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
With the long-dated bond market being dominated by non-banks, the most likely course of action for a Ministry of Finance concerned with its own welfare will be (1), with perhaps some sale of long-dated debt to banks (3). In so far as (3) occurs, the banks will lose liquidity and approach the central bank for extra cash. The central bank, again following its own interests is likely to adopt course (1) in Table 1, again the least expansionary possible.

Again self-interest by the Ministry of Finance is likely to lead to a financing of the deficit in the least expansionary way possible, with a decreasing likelihood of more expansionary financing avenues. The point of this exercise is to note that both the central bank and the Treasury may well focus on a single aggregate (MO/deficit) as representing their contribution to counter-acting deflation, and then be led by individual self-interest to a form of financing that variable that goes some long way to negating its expansionary impact. One of the interesting issues in Japan is to assess why apparently strongly reflationary fiscal policies appear to have had so little expansionary effect there, see Werner (2004).

Table 3 below shows the % share of new issues of JGBs to the private sector between 1989 and 2003.
The relative share of both long-dated and short-dated issues have trended irregularly downwards over these years, matched by a rapid, but similarly irregular rise in medium-dated issues. Has MoF perhaps managed to achieve an unenviable combination of high roll-over risk, in the event of recovery, with a financing form that strictly limits the monetary and liquidity impacts of its initial fiscal deficit on the private sector?
<table>
<thead>
<tr>
<th>Fiscal year</th>
<th>Long-term JGB (more than 10 years maturity)</th>
<th>Medium-term JGB (2-6 years)</th>
<th>TB and FB (short-term bonds, not more than 1 year maturity)</th>
<th>Total</th>
<th>Long-term JGB (more than 10 years maturity)</th>
<th>Medium-term JGB (2-6 years)</th>
<th>TB and FB (short-term bonds, not more than 1 year maturity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>82157</td>
<td>16945</td>
<td>52936</td>
<td>152039</td>
<td>54.0%</td>
<td>11.1%</td>
<td>34.8%</td>
</tr>
<tr>
<td>1990</td>
<td>95754</td>
<td>17391</td>
<td>83861</td>
<td>197007</td>
<td>48.6%</td>
<td>8.8%</td>
<td>42.6%</td>
</tr>
<tr>
<td>1991</td>
<td>99343</td>
<td>14964</td>
<td>89644</td>
<td>203951</td>
<td>48.7%</td>
<td>7.3%</td>
<td>44.0%</td>
</tr>
<tr>
<td>1992</td>
<td>106991</td>
<td>17066</td>
<td>95059</td>
<td>219115</td>
<td>48.8%</td>
<td>7.8%</td>
<td>43.4%</td>
</tr>
<tr>
<td>1993</td>
<td>124686</td>
<td>44667</td>
<td>100162</td>
<td>269515</td>
<td>46.3%</td>
<td>16.6%</td>
<td>37.2%</td>
</tr>
<tr>
<td>1994</td>
<td>136553</td>
<td>67837</td>
<td>109604</td>
<td>313994</td>
<td>43.5%</td>
<td>21.6%</td>
<td>34.9%</td>
</tr>
<tr>
<td>1995</td>
<td>145083</td>
<td>96978</td>
<td>120638</td>
<td>362699</td>
<td>40.0%</td>
<td>26.7%</td>
<td>33.3%</td>
</tr>
<tr>
<td>1996</td>
<td>148000</td>
<td>57433</td>
<td>125001</td>
<td>330434</td>
<td>44.8%</td>
<td>17.4%</td>
<td>37.8%</td>
</tr>
<tr>
<td>1997</td>
<td>149210</td>
<td>70300</td>
<td>128026</td>
<td>347536</td>
<td>42.9%</td>
<td>20.2%</td>
<td>36.8%</td>
</tr>
<tr>
<td>1998</td>
<td>205000</td>
<td>131900</td>
<td>170076</td>
<td>506976</td>
<td>40.4%</td>
<td>26.0%</td>
<td>33.5%</td>
</tr>
<tr>
<td>1999</td>
<td>180061</td>
<td>218974</td>
<td>269794</td>
<td>668828</td>
<td>26.9%</td>
<td>32.7%</td>
<td>40.3%</td>
</tr>
<tr>
<td>2000</td>
<td>221883</td>
<td>283003</td>
<td>295660</td>
<td>800546</td>
<td>27.7%</td>
<td>35.4%</td>
<td>36.9%</td>
</tr>
<tr>
<td>2001</td>
<td>277987</td>
<td>370169</td>
<td>275943</td>
<td>924099</td>
<td>30.1%</td>
<td>40.1%</td>
<td>29.9%</td>
</tr>
<tr>
<td>2002</td>
<td>326000</td>
<td>461207</td>
<td>310451</td>
<td>1097658</td>
<td>29.7%</td>
<td>42.0%</td>
<td>28.3%</td>
</tr>
<tr>
<td>2003</td>
<td>348000</td>
<td>437600</td>
<td>341709</td>
<td>1127309</td>
<td>30.9%</td>
<td>38.8%</td>
<td>30.3%</td>
</tr>
</tbody>
</table>
If the aim is expansionary finance, then clearly the best, most effective method is a deficit which is financed by money creation by the central bank buying short-dated bills directly from the government. The supposed income risk to the Treasury will be exactly offset by the potentiality for higher seignorage transfers from the central bank to the Treasury. There is no risk then to the central bank. But just because it is most inflationary, it has been drummed into generations of central bank and Treasury officials that it would be more than unconventional. It would be almost ethically unthinkable. And so it is not done. As noted at the outset, ‘bad’ deflation in a fiat money system is a self-imposed injury. It is easy to prevent deflation if the authorities are not hidebound by convention. Let us turn next to some other ‘unconventional’ actions that a central bank can take to counter deflation.

V. Other Asset Purchases

In a fiat money system a central bank can purchase any asset, indeed any good (or service), in order to expand the money stock, unless it is prevented from so doing by legal restrictions. There may be circumstances where a central bank finds obstacles to purchases of government debt. Purchases of short bonds, especially from banks, may be subject to a liquidity trap, and ineffective. Purchases of long bonds may make the central bank’s portfolio (to be perceived as) unduly risky. Or there may be little public sector debt outstanding.

Moreover there may be other reasons, relating to their individual markets, for purchasing other types of asset. The most common example, of course, involves purchases of foreign exchange (fx).

Choices of strategy on foreign exchange regimes are usually a matter for the government, but the
central bank usually executes the operations, and advises not only on tactics but also on strategy. So large scale fx operations normally require the prior agreement of both Treasury and central bank.

A disadvantage of fx operations is that they involve transacting in the currency of a foreign country. That country’s own effective exchange rate will thereby be influenced. Since the US $ remains the hegemonic currency, the counterparty to most bilateral currency transactions, fx operations may affect geo-political relationships with the USA, and indeed have done so on various occasions. Unlike OMO in domestic assets, fx operations may be constrained both by the need for Ministry of Finance agreement and by concerns about geo-political relationships with the counterparty, usually the USA, but in some cases the Euro-zone.

Assuming that these hurdles can be overcome, there is the further issue of whether such fx intervention is sterilized, or not. So long as the central bank has a separate domestic financial objective, e.g. an interest rate peg or a desired level of MO, then fx intervention is always automatically sterilized. Moreover in the common case where the fx reserves are held to the account of the Ministry of Finance or Treasury, as in Japan or the UK, the purchase of fx reserves will be, quasi-automatically, financed by the issue of more Treasury Bills. There is no need, nor case, for the central bank to ask itself whether to sterilize, or not. It just happens quasi-automatically in pursuit of the domestic objective. It is only when the domestic objective is open-ended, e.g. interest rates as low, or monetary base as high, as possible that fx operations are not quasi-automatically sterilized.

If the purpose of the exercise is getting out of ‘bad’ deflation, there seems little point in undertaking
sterilized intervention. In any case there is a vast literature on this. So we will confine ourselves to unsterilized fx intervention. As with government debt, such intervention will be more effective if the counter-party is a non-bank rather than a bank. Again as with government debt, purchases of fx debt involve a risk of loss to the public sector, Central Bank or Ministry of Finance depending on the account on which the fx reserves are held. In one sense that risk is considerably less since policy success in restoring normality should make domestic prices higher, and hence under Purchasing Power Parity depreciate the exchange rate, (making the foreign currency more valuable), whereas success in restoring normality should lead to a fall in bond prices. Yet movements in fx rates are largely unpredictable, and losses on fx holdings can be large. Concern about the possibility of being held accountable for such losses has been a factor in limiting the willingness of governments and central banks to intervene in fx markets. Nevertheless the massive intervention by the authorities in Japan in the Yen/$ market over the months up till April 2004 has probably played a key role in fostering Japan’s recent marked recovery.

Assuming that such concerns over potential losses, and geo-political relationships with the hegemonic neighbour, can be overcome, can unsterilized fx intervention prevent ‘bad’ deflation. The answer is ‘yes’; Svensson (2001, 2003) had such a plan for Japan in his papers. Moreover in most cases the foreign exchange market, and US Treasury bond market, are so large, relative to other countries, that this can be done without much distortion to relative prices.

Bad deflation generally occurs if, and only if, other domestic asset prices, notably property but also equity prices, are also declining. Moreover bank lending is closely associated with the housing and property markets, much more so than with equity markets (see Goodhart and Hofmann, (2003,
2004), and Ludwig and Slok (2004)). These links occur both since much lending is directly for property, housing, construction and related services, and even wider lending, e.g. agriculture, is collateralised on property values. If the central bank can check the decline in such asset values, it is likely to halt the deflation. Moreover policy success in achieving normality is likely to bring about a recovery in such prices. At a time when a central bank’s portfolio will often be stuffed to the brim with highly risky government debt, (the risk dependent on the duration of that debt), a purchase of equity/property by the central bank will provide diversification, and reduce its own (individual) risk, (though raising that of the public sector as a whole). On this view the criticism of the BoJ’s policy, introduced in autumn 2002, of buying equities from commercial banks, on the grounds that it was unduly risky, was wrong. If anything, it reduced the risks of the BoJ, if taken as an individual entity.

There used to be a problem constraining central bank purchases of unconventional assets, equities and properties, that these would involve decisions about purchases of individual assets. ‘Improper intrusion’ into the operation of ‘free markets’ and general governance problems were adduced. Thus Clouse, et al, (2003), note, p. 45, that,

“While purchases of eligible private-sector credit instruments may be a way in which the Federal Reserve could provide stimulus to aggregate demand, a program of such purchases has potential problems of its own. By deciding which securities it was willing to purchase at which price, the Federal Reserve would be placing itself in the business of evaluating credit risk. And by doing so, it would be affecting the allocation of credit across firms and households. The Federal Reserve does not possess any comparative advantage relative to the private market in doing such credit evaluations, and credit-risk evaluations and credit allocations could well suffer as a consequence.”

The development of index futures, and the existence of indexed mutual funds, makes such problems considerably less for equities. Similarly the wider existence of real estate investment trusts (REITs) could allow a central bank to undertake open market operations in property generally without having
to choose, or to manage, any particular property.

That still leaves the general issue whether it is acceptable for a central bank to hold, and to affect prices/returns on, government debt and fx, but not so for equities or property. Somehow I have never fully understood the grounds for this distinction which are passionately maintained by some. Nevertheless, given such strong feelings and the historical development of central banking, there is a case for refraining from OMO in domestic private sector assets unless the need for such an unconventional measure becomes overwhelming. For an account of such a case in the shape of the Hong Kong Monetary Authority’s intervention in the Hang Seng equity market in August 1998, see Goodhart and Dai Lu (2003).

If pursued resolutely, there is no reason to doubt that direct intervention by the central bank in the property (equity) markets could prevent ‘bad’ deflation persisting. Once more we conclude that ‘bad’ deflation is easily curable in principle in a fiat money system. Its persistence is a symptom of self-imposed constraints on central bank expansionary actions.

VI. Is There a Re-entry Problem?

One reason that the BoJ put forward for not undertaking ‘unconventional measures’ was not that these would not work, but that they might work so violently as to transfer the country from deflation to serious inflation in some short space of time, see for example Oda and Okina, op cit, especially p. 355,

‘Furthermore, if the central bank tried to inflate the economy at any cost, excessive easing
would result, and the resulting stop-go policy would lead to a higher variability of interest rates and inflation expectations. Higher uncertainty regarding future inflation would increase long-term interest rates, reflecting the increased risk premium.”

also see Yamaguchi (1999), Fujiki, Okina and Shiratsuka (2001), Okina (1999 a and b), and Ito and Hayashi, (2004), especially pp 55/6. The mechanism whereby this might occur was not made clear. Of course, an indication that BoJ was adopting policies that would (finally) eliminate deflation should affect forwards-looking expectations, but surely this was to be desired?

A much greater problem, on this view, is that the delays, and policy errors, that had led to persistent deflation in Japan has also led to a build-up of deficits, and a large stock of outstanding debt, in the public sector, much of it quite short-term, see Table 3 above. If this adverse starting financial position is combined with deteriorating demographics, the prospect could be of a tax burden on labour and capital that could weaken growth prospects. If growth prospects are lower, rising interest rates could rapidly make the public sectors’ financial position unsustainable. Moreover, how far could Japan’s financial system absorb quite rapid rises in interest rates, given their large scale holdings of JGBs? The path between inflation and financial collapse may indeed have become narrower with each year of delay in restoring normality.

In this paper I have argued that the fear of deflation was always exaggerated. In a fiat money system deflation only persists because of self-imposed constraints on central bank expansionary actions. Because of such limitations on OMO, delays in restoring normality have led to a severe worsening in the public sector financial position. Now that the USA is recovering rapidly, and even Japan is returning to normal, the time has come to switch attention to the problems of the future. They are, on this view, more likely to involve dangers of renewed inflation, than of deflation.
But that deserves another paper.

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