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Lombard Street Research Ltd.

30 Watling Street,

London, EC4M 9BR

Tel: 020 7382 5900

Fax: 020 7382 5999

e-mail: lsr@lombardstreetresearch.com

www.lombardstreetresearch.com

Sterling's fall is inflationary

A rise in interest rates should be under consideration

Rules-of-thumb give an initial feel for effect of fall in pound on UK inflation

How much will the fall in the pound affect inflation? Various rules-of-thumb are available for thinking about the question. One standard approach is to note that imports are over 30% of gross domestic product and to assume that, with a lag, the bulk of the exchange rate move will be reflected in their prices. This leads to the proposition that, after a year, a 10% fall in the exchange rate will cause price indices - including the retail price index - to register an increase about 2% higher than would otherwise have been the case. Another method is to use an inflation (or change in inflation) equation with both the exchange rate and other terms. Lombard Street Research has a change-in-inflation equation where the exchange rate and the oil price matter, but the dominant influence is the level of the output gap. With the output gap (i.e., the difference between trend and actual output) probably close to zero at present, exchange rate and oil price developments will be crucial in coming quarters. The coefficients in the equation are consistent with the 2% effect on the RPI.

Recent decline in exchange rate may add about 1 1/2% to RPI after a year

The next question is, "how much has the pound gone down?". This may sound very simple, but of course the answer depends on when the analysis starts. Using the effective exchange rate, the pound peaked in April 2000 at a monthly-average rate of 110.1, while in 2002 the rate averaged 106.0. At the time of writing the rate is fluctuating at around 97 1/2. In other words, the decline from the peak is over 11% and from the 2002 average it is about 8%. In the absence of a large-scale macroeconomic model, it is a matter of judgement how one combines the exchange-rate change with the rules-of-thumb to deliver an assessment of the inflation mini-shock. But a reasonable view is that in spring 2004 the adverse impact of the annual increase in the officially-targeted RPIX index (i.e., retail prices excluding mortgage interest costs) might be 1 1/2%. There is scope for discussion about what the RPIX figure might have been without the pound's depreciation, but few forecasts had a number much beneath 2%. Logically, forecasts of RPIX inflation above 3 1/2% ought now to be appearing. There is even a chance that the 3 1/2% figure (when the Governor of the Bank of England has to write an Open Letter to the Chancellor) will be breached in June this year.

Ultimately, the value of money depends on supply and demand

Given this background it is baffling that so many commentators are talking about the possibility of an early interest rate reduction. Admittedly, UK inflation - like inflation around the world - will benefit from the recent fall in oil prices. But it is vital to remember the underlying determinants of inflation and not to be distracted by erratic one-off movements in relative prices. At the most fundamental level, the value of money - like the value of every commodity - depends on supply and demand. If too many pounds are supplied (i.e., created by the banking system) compared with the demand to hold them, the value of the pound will fall. In the year to end-March, the quantity of money (on the broad M4 measure) increased by 7.2% and in the six months to March at an annualised rate of 7.6%. These are not disastrously high figures, but they are too high to be compatible with 2 1/2% inflation in the long run.

and it will fall if there is excess supply

Summary of paper on

'Debt management and deflation 2.'

Purpose of the paper

Despite zero short-term interest rates, Japan has suffered from persistent weakness of demand in recent years. This research paper - which builds on the analysis in the March issue of the *Review* - proposes that debt management be activated to overcome deflation.

Main points

- * **As explained in the March issue, open market operations are of two kinds - *money market operations* (conducted by the central bank to influence banks' cash reserves) and *debt market operations* (where the government acts as principal and transacts with all agents in the economy, including the non-bank private sector).**
- * **Money market operations will fail to raise the quantity of money and so to stimulate an economy suffering from "a narrow liquidity trap", but debt market operations can increase the quantity of money without limit and are available to policy-makers at all times.**
- * **Debt market operations have two advantages over money market operations - they prevent an unnecessary build-up of risk in the central bank balance sheet (see pp. 3 - 6) and they are more certain in their effect on the quantity of money.**
- * **Normally an increase in the quantity of money raises the equilibrium level of nominal national income. But in his *The General Theory* (published in 1936) Keynes said that in a "liquidity trap" increases in the quantity of money would not boost national income.**
- * **Keynes' liquidity trap related to broad money. (See pp. 6-10.) The trap arose because increases in bank deposits (i.e., broad money) failed to push down long-term bond yields. (It could therefore be called "the broad liquidity trap". See p. 10.)**
- * **Professor Krugman of Princeton University has claimed that Japan is in a liquidity trap. With interest rates at zero, the conventional weapons of monetary policy are said to have been exhausted.**
- * **But Krugman has in fact invented three new liquidity traps (see pp. 12 - 15), all of which are different from Keynes' trap. Further, he has ignored the ability of debt market operations to rescue an economy, by mistakenly regarding the determination of the short-term interest rate as defining the limits of monetary policy. (See p. 16.)**

Debt management and deflation 2.

A new dilemma: is monetary policy impotent when interest rates have fallen to zero?

Last issue of *Monthly Economic Review* distinguished between money market operations and debt market operations

The analysis in the March 2003 issue of Lombard Street Research's *Monthly Economic Review* showed that the government can expand the quantity of money - without limit and at any time - by debt market operations. (*Debt market operations* were differentiated from *money market operations* on pp. 9 - 15 of the March *Review*. "The quantity of money" here is an all-inclusive measure [or so-called "broad" measure] which is dominated by bank deposits.) The traditional view among macroeconomists used to be that an increase in the quantity of money would boost the equilibrium level of national income. This view has been criticized in many ways and from many perspectives over the decades, but it remains a useful starting-point for thinking about the subject. The current issue of the *Monthly Economic Review* will have two tasks. First, it will further consider the advantages and disadvantages of debt market operations compared with money market operations, and, secondly, it will discuss the possibility that - because of one or a number of liquidity traps - increases in the quantity of money may fail to stimulate demand and output.

Distinction to be used in analysis of "the liquidity trap" - or traps

The concept of the liquidity trap was introduced to economic theory by Keynes in his 1936 classic, *The General Theory of Employment, Interest and Money*. It will be shown - by detailed exegesis - that Keynes' trap was "a broad liquidity trap", in which increases in *the quantity of money* (not increases in *the monetary base*) failed to lower the yield on long-dated bonds. It will also be shown that Professor Krugman - whose writings in 1998 and 1999 made strong claims that Japan suffered from a liquidity trap - was not in fact talking about Keynes' trap. Instead he invented (at least) three new and interesting liquidity traps. However, his failure to distinguish between the narrow and broad traps made him too pessimistic about the ability of Japanese policy-makers to escape from their macroeconomic *malaise*.

Some advantages of debt market operations

The government can conduct monetary policy, by-passing the central bank

There is an important extension of the ideas developed in the March *Review*. In principle, the government can completely by-pass the central bank and conduct monetary policy on its own. This is obvious from the hypothetical sequences of transactions which were called "debt market operations" in that *Review*. (11) The point has obvious relevance to the allocation of blame for policy failures. If the argument in this paper is correct, one reason for the inefficiency of Japanese policy in recent years has been to regard the Bank of Japan as omni-competent and all-powerful in monetary policy. In fact, responsibility for good and bad monetary policy decisions rests not with the Bank of Japan alone, but with the Bank of Japan and the Ministry of Finance together. Further, because the central bank is impotent in a narrow liquidity trap, the Ministry of Finance should have taken the initiative in easing monetary policy. In particular, it should have concentrated sales of new debt at the short end of the yield curve (where they would have been bought by the banks) and undertaken deliberate purchases of long-dated government bonds from non-banks. (12) Clearly, an advantage of debt market operations over money market operations is that they allow the monetary authorities to influence the quantity of money directly, rather than indirectly by expanding the monetary base and hoping that the commercial banks will want to increase their earning assets. In this sense debt market operations are more certain in effect than money market operations. But debt market operations have another merit, particularly given the rather fraught political debate about the banking industry in modern Japan. While expansionary debt market operations imply that long-dated debt is replaced by short-dated debt, they have little significance for the amount of risk in the public sector's balance sheet. By contrast, aggressive attempts by the central bank to stimulate the economy by money market operations can leave its balance sheet highly exposed to interest rate movements.

and preventing build-up of risk on central bank balance sheet

Bank of Japan's activism has led to large concentration of risk

These points are readily illustrated by Japanese experience. In the last few years the Bank of Japan – responding to international criticism – has bought government bonds on a massive scale and increased its balance sheet to a remarkable extent. At the end of 2002 its balance sheet was in fact equal to about a quarter of gross domestic product, a ratio far higher than in any other industrial country. The simultaneous expansion of its assets and liabilities has done little to help the economy, because of the commercial banks' more or less infinitely elastic demand for cash reserves. However, the result has been an alarming concentration of risk in the Bank of Japan's balance sheet. Today it holds over 80 trillion yen (almost \$600b.) of government securities, including substantial amounts with a residual maturity of over 10 years. According to some observers (such as Krugman), the restoration of low inflation would be a success because it would lower real interest rates and might provoke more investment. Unfortunately, bond yields would also rise. The capital value of bonds – including the bonds in the Bank of Japan's vast portfolio – would decline. (13) It is possible that the decline in the bonds' capital value would lead to losses large enough to wipe out the Bank of Japan's capital.

Would a central bank "insolvency" matter?

Would this matter? The Bank of Japan is government-owned, while the bonds are government liabilities. The incurral of heavy losses on government bond holdings by the Bank of Japan would be a transfer from one government account to another, a case of Peter robbing Peter to pay Peter, with no net effect on Japan's wealth. Most fundamentally, there would be no resource losses corresponding to the apparent accounting losses. These arguments are analytically correct. Indeed, it might make political sense for the government to offer the Bank of Japan an immediate indemnity on potential losses on its bond portfolio. (14) The trouble is that many members of Japan's political elite may not see it that way. Insofar as the Bank of Japan were condemned for the losses due to its excessive bond holdings, the stigma of inefficiency and waste would probably attach to the banking system as a whole. It would therefore be more difficult to organize capital injections from the state into insolvent commercial banks or to interest foreign banks and non-bank companies to invest much-needed new capital in the banking sector.

Debt market operations avoid this sort of problem

By contrast, when government buys in its own bonds with the help of debt market operations, they can be removed from the economy altogether by the cancellation of the debt. The tiresome – and essentially trivial – problem of central bank "insolvency" would not arise. Debt market operations avoid the opacity and complexity in the public sector's accounts when the central bank takes too much risk onto its balance sheet.

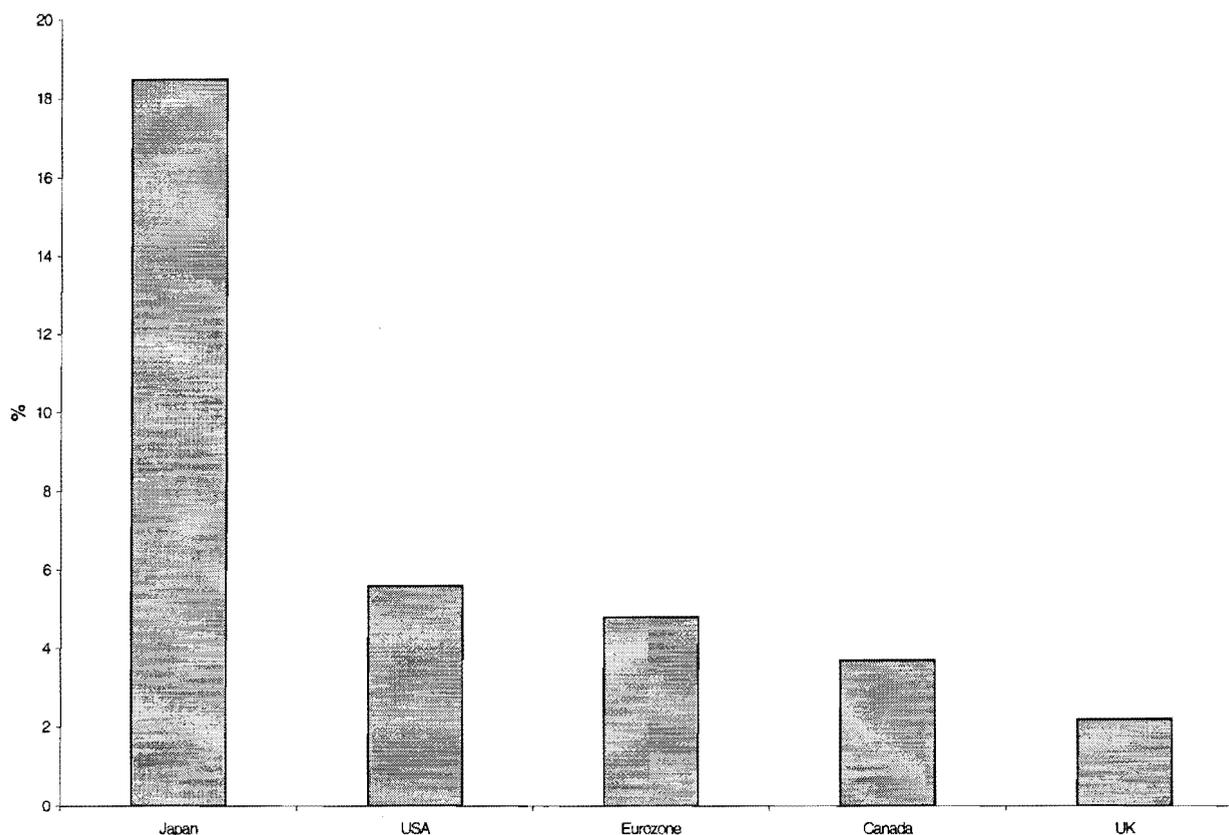
As noted in 1959 Radcliffe Report, debt management needs to be seen as an integral part of monetary policy

It should be clear from these remarks that close cooperation between the central bank and finance ministry is beneficial for monetary policy at all times. They need to prepare a joint strategy for money market operations and debt market operations, in order to influence the quantity of money and the long-term bond yield, as well as the monetary base and the short-term interest rate. This conclusion is not new. In the context of the UK's problems in managing the large debt it had incurred in the Second World War, the Radcliffe Report said in 1959, "Throughout our review of the problems of debt management we have been aware of the monetary repercussions of every action taken or proposed. It is not merely that monetary action and debt management interact so that they ought to be under one control: they are one and indivisible; debt management lies at the heart of monetary control, and it is essential that this unity should be adequately reflected in our institutional arrangements." (15) In his 1963 essay on 'The principles of debt management', Tobin asserted, "There is no neat way to distinguish monetary policy from debt management, the province of the Federal Reserve from that of the Treasury. Both agencies are engaged in debt management in the broadest sense, and both have powers to influence the whole spectrum of debt." He also emphasized the essential "indivisibility of the problem". Fiscal policy and debt management had monetary effects, whatever the institutional structure. (16)

Central bank balance sheet size and GDP

Is the Bank of Japan's balance sheet disproportionately large?

Chart shows ratio of central banks' domestic assets to GDP. Figures for Japan, the USA, Canada and the UK are taken from IMF's *IFS* publication. The "monetary authorities'" domestic assets at end-2001 are compared with GDP in the calendar year 2001. The figure for the Eurozone is obtained from the European Central Bank's *Monthly Bulletin*, where all claims on Eurozone residents, including those in foreign currency, at 28th December 2001 are compared with 2001 GDP.



Source: IMF and ECB

The Bank of Japan has received fierce and relentless international criticism over the last five years for its failure to conduct sufficiently expansionary open market operations. The critics overlook that the BOJ has increased its balance-sheet size enormously. As a result, the ratio of the BOJ's liabilities to GDP is higher than in any other leading industrial economy. (Note that the chart relates to end-2001. Further activity in 2002 took the ratio of BOJ liabilities to GDP to almost a quarter, virtually five times as high as in the USA and six times as high as in the Eurozone!) The economy's poor response to the massive injection of base money reflects banks' reluctance to increase their earning assets, largely because of their lack of capital, and non-banks' predilection for a very safe money asset (i.e., notes) as opposed to bank deposits. As in the USA in the 1930s, bank deposits might lose value if banks were to "go bust".

Setting of short rate only one part of policy

One way of denigrating debt market operations is to classify them with “unconventional” techniques of monetary policy. On the contrary, the epithet “unconventional” should be attached to the unfortunate modern habit of regarding the setting of short-term interest rates as the alpha and omega of monetary policy. (17)

Liquidity traps galore

Although debt market operations can defeat the narrow liquidity trap, they may not rescue the economy,

The discussion so far has demonstrated that, by debt management operations, the monetary authorities can expand the quantity of money without limit. Debt management operations conducted with the support of the finance ministry can increase the quantity of money, even if the central bank is in a narrow liquidity trap. Nevertheless, it remains possible that the economy will not respond positively to an increase in the quantity of money, as in Keynes’ liquidity trap. As contemporary economists – such as Krugman – continue to invoke this idea, it is necessary to go back to *The General Theory* and to check what Keynes actually said.

particularly if it suffers from Keynes’ liquidity trap

As pointed out by Leijonhufvud, the outcome of any macroeconomic theorizing depends on the type of economy assumed, notably the system of aggregation chosen. The standard “Keynesian macromodel” is said by Leijonhufvud to refer to five aggregates, consumer goods, capital goods, labour services, money and government debt (“bonds”). But a model could have three aggregates, or five, or a hundred and five. In his words, “a particular mode of aggregation is a rather mechanical task – merely a matter of stripping down the model to a manageable, simplified form”. (18) There are debates about the system of aggregation in *The General Theory*, but there should not be all that much disagreement about the definition of the liquidity trap. His emphases are so definite and repetitive as to make the underlying meaning clear enough, even if his use of words could have been more exact. The trouble arises in applying Keynes to the conditions of the early 21st century. Modern followers of Keynes – notably Krugman – sometimes have different systems of aggregation. As a result, they claim to be talking about liquidity trap originating in the 1930s when they are in fact talking about their own.

Definition of Keynes’ liquidity trap

Keynes’ liquidity trap arose when indefinitely large increases in the quantity of money were unable to raise the price of bonds (and so reduce bond yields). Because of the downward rigidity of bond yields, investment would not respond to monetary policy. Further, since national income was a multiple of investment, increases in the quantity of money could not increase national income. These simple statements are the correct definition of Keynes’ liquidity trap. But a little exegesis is needed to pin down more precisely the meaning of the two phrases, “the quantity of money” and “the price of bonds”.

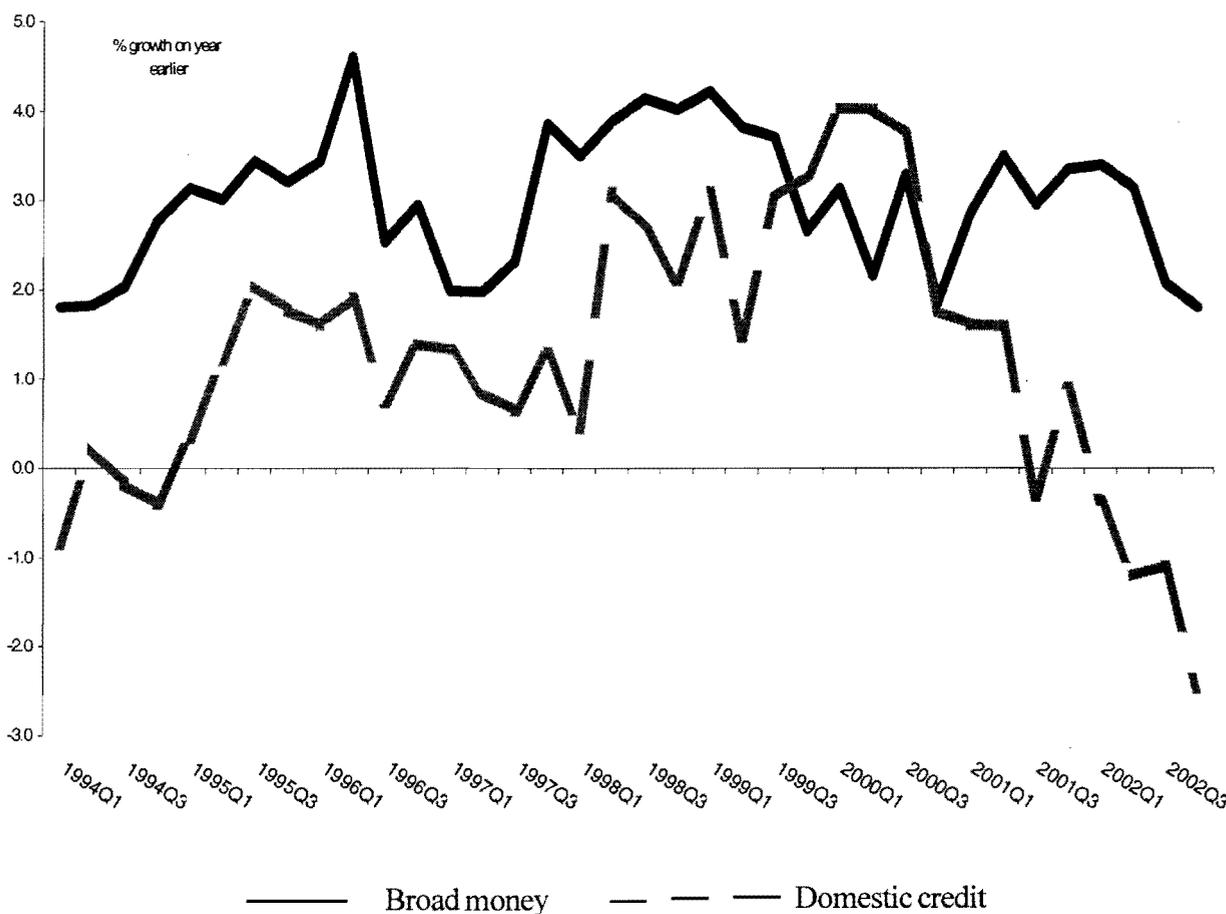
The quantity of money in this trap was a broadly-defined aggregate, including bank deposits

The quantity of money may be taken first. Keynes – who had been introduced to the old controversy between the Currency and Banking Schools at an early stage in his career as an economist – was well aware of the potential ambiguity of the phrase. (19) In the 1920s he and D. H. Robertson had collaborated on a book on *The Banking System and the Price Level*, with the aim of seeing how the emergence of a modern banking system would affect the business cycle. Keynes’ own *Treatise on Money* had noted on p. 5 that, “[W]e thus have side by side State money or money proper and bank money.” (20) Keynes’ theorizing was, almost exclusively, about bank money, the kind of money that had become dominant by the early 20th century. In a footnote to Chapter 13 of *The General Theory* Keynes acknowledged that, “we can draw the line between ‘money’ and ‘debts’ at whatever point is most convenient for handling a particular problem”. Nevertheless, “It is often convenient in practice to include in *money* time-deposits with banks and, occasionally, even such instruments as (e.g.) treasury bills. As a rule, I shall, as in my *Treatise on Money*, assume that money is co-extensive with bank deposits”. (21) In other words, Keynes’ concept of money was a broad one *which even included time-deposits*. The purpose of this definition was inherent in the “particular problem” that Keynes was handling and will follow be explained shortly.

Japan's monetary situation 1.

Collapse in domestic credit expansion since 2000

Chart shows % annual change in "broad money" and the stock of domestic credit in Japan. Broad money here is the sum of "money", "quasi-money" and CDs in International Monetary Fund's *International Financial Statistics* publication. (It behaves in much the same way as the "M2 plus CDs" measure of money calculated by the Bank of Japan.) The stock of domestic credit is credit extended by the banking system, including the Bank of Japan, to private and public sectors. Data are quarterly.



Source: IMF

This frightening chart is a major indictment of Japanese policy-making in recent years, even if the allocation of blame is complex. When banks extend new credit to any domestic entity, they create new deposit liabilities. These deposits are (usually) money. As money and nominal GDP are related over the medium and long runs, banks' credit extension to both private agents *and the public sector* is an essential influence on the continued growth of national income and expenditure. Domestic credit growth remained positive in Japan for most of the 1990s, if at only 1% or 2% a year. (Money growth was normally higher than this because the weakness of demand and the shortage of liquidity pulled in money balances from abroad.) But in late 2000 domestic credit expansion slowed down and since mid-2001 the stock of domestic credit has been contracting. If Japan were not able to attract money from abroad by means of a payments surplus, the quantity of money would now be falling.

The key asset in *The General Theory* was a long-dated bond,

What about “the price of bonds”? There are two operative words, “price” and “bonds”, and both need amplification. Keynes meant by “bonds” liabilities of the government or companies with a fixed nominal redemption value and a fixed coupon or interest payment. (The best example of the sort of bond he had in mind was one issued by the British government, also known as a gilt-edged security.) He was not very precise about the length of the period to redemption, which varied at different stages of his discussion. But Keynes undoubtedly thought that long-dated debt was more macroeconomically significant than short-dated debt. This was the clear message of an extended discussion about the formation of bond prices in Chapter 15 of *The General Theory*.

**with investors
balancing holdings of
bank deposits against
holdings of bonds**

In Keynes’ words, “it is by playing on the speculative-motive [to hold money balances] that monetary management (or, in the absence of management) chance changes in the quantity of money) is brought to bear on the economic system”. The lesson of experience had been that, “the aggregate demand for money to satisfy the speculative-motive usually shows a continuous response to gradual changes in the rate of interest, i.e., there is a continuous curve relating changes in the demand for money to satisfy the speculative motive and changes in the rate of interest as given by changes in the prices of bonds and debts of various maturities”. This long and technical sentence was followed by the dramatic pronouncement that, if there were no such continuous curve, “‘open market operations’ would be impracticable”. The reason was that “in normal circumstances the banking system is in fact able to purchase (or sell) bonds in exchange for cash by bidding the price of bonds up (or down) in the market by a modest amount; and the larger the quantity of cash which they seek to create (or cancel) by purchasing (or selling) bonds and debts, the greater must be the fall (or rise) in the rate of interest”. (22)

**Keynes’ occasionally
imprecise use of words**

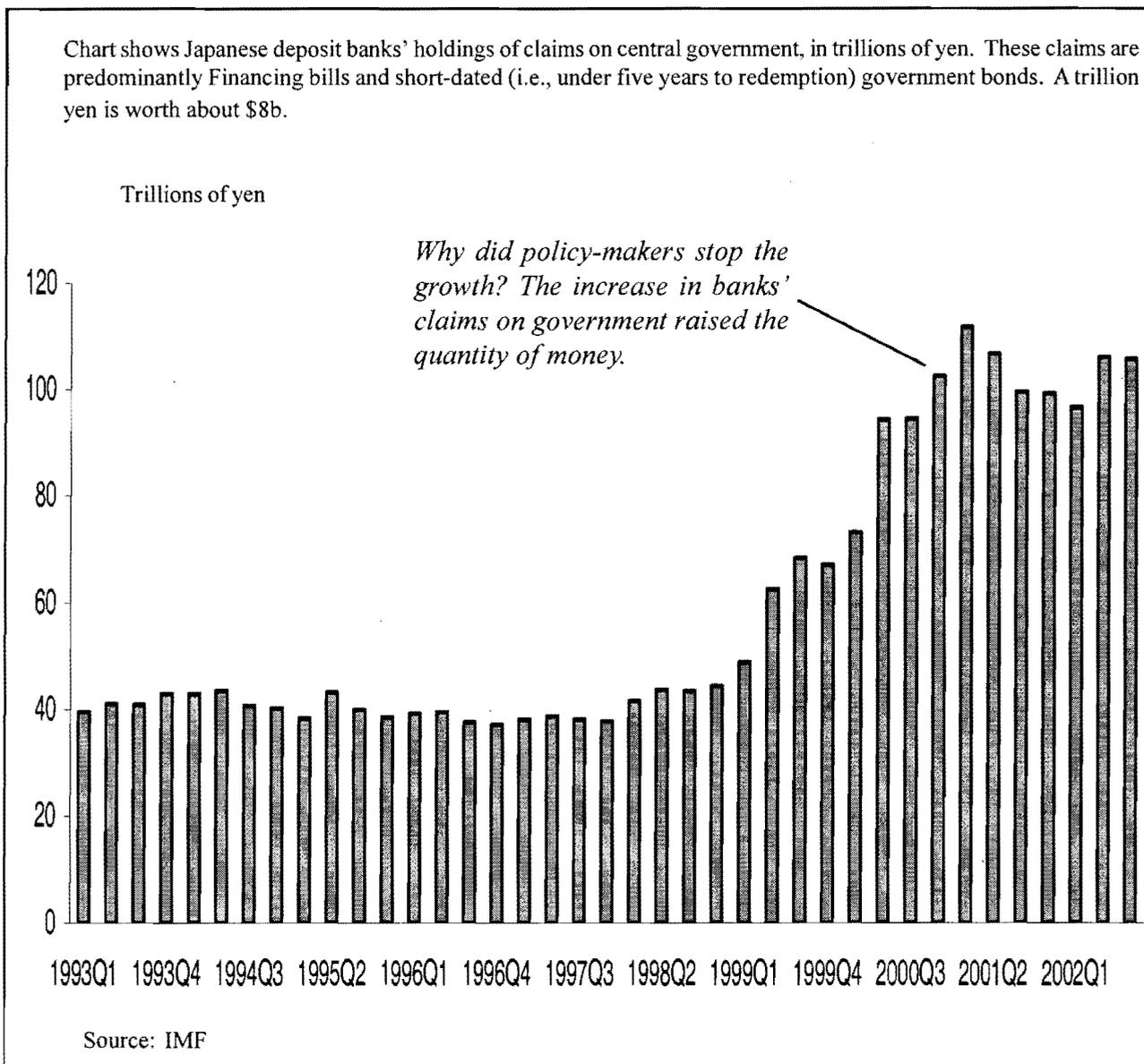
Keynes’ use of the phrase “the banking system” here is troublesome, as it is ambiguous. Did he mean the central banking system or the commercial banking system? (23) (An argument could be made that – if Keynes meant “the central banking system” – his work contained both the narrow and broad liquidity traps, even if he did not make a clear distinction between them.) At any rate, Keynes did spell out his views about the relative importance of the different types of bonds being bought and sold in open market operations. “Where... (as in the United States, 1933 – 34) open-market operations have been limited to the purchase of very short-dated securities, the effect may, of course, be mainly confined to the very short-term rate of interest and have but little reaction on the much more important long-term rates of interest.”

**The strategic role of
long-dated bond in *The
General Theory*
confirmed in
Chapter 19**

To summarize, “bonds” in Keynes were bonds of any maturity and “the rate of interest” might be one of a large number of “rates of interest” corresponding to bonds’ residual maturity. But the vital interest rate was the long-term rate of interest which fluctuated with the price of long-dated bonds. The conclusion is reinforced by references to monetary policy in Chapter 19 of *The General Theory*, ostensibly about ‘Changes in Money-Wage’. The chapter showed that reductions in money wages might not lead to more employment, if they were accompanied by offsetting contractions in labour’s spending power. So, “...wage reductions, as a method of securing full employment, are also subject to the same limitations as the method of increasing the quantity of money”. An adverse change in business expectations might “limit the efficacy of increases in the quantity of money as a means of increasing investment”, while “a moderate increase in the quantity of money may exert an inadequate influence over the long-term rate of interest”. Keynes accepted that, “A change in the quantity of money... is already within the power of most governments by open-market policy or analogous measures.” But, “there is no ground for the belief that a flexible wage policy is capable of maintaining a state of continuous full employment... any more than for the belief that an open-market policy is capable, unaided, of achieving this result”. (24) So Chapter 19 had the same message as Chapter 15. It was the long-term rate of interest which mattered, while changes in the quantity of money could be effected by the government through open market operations. The trouble was that increases in the quantity of money might not always lead to reductions in the long-term rate of interest.

Japan's monetary situation 2.

So near to the right answer



As explained on p. 7, domestic credit expansion has two main components - bank credit to the private sector and bank credit to the public sector. The stock of bank credit to the private sector, which boomed in Japan in the first 45 years after the Second World War, has been declining since early 1999. In order to sustain the growth of bank assets (and so of broad money), it is therefore essential that the banks increase their claims on the public sector. The chart shows that this benign process was under way in the two-and-a-half years to early 2001. But then – inexplicably – it stopped. Comparison of this chart with that on p. 7 shows that the start of the slide in domestic credit expansion coincided with the ending of heavy government borrowing from the banking system. In fact, the stock of Japan's banks' claims on the government was lower at the end of last year at the start of 2001. Expansionary debt market operations are needed to ensure that banks' claims on the public sector start growing again.

So Keynes had a broad liquidity trap

So – in the special circumstances that bothered Keynes – *stimulatory open market operations are ineffective, because the non-bank private sector is in a liquidity trap. This liquidity trap arises with the quantity of money (i.e., the bank deposits held by the non-bank private sector), not with banks' cash reserves or the monetary base. Because it relates to a broad concept of monetary assets, it might be termed "the broad liquidity trap". When this trap holds, the price of long-dated bonds does not decline when the quantity of money is increased. So the long-term rate of interest cannot be reduced by monetary policy.*

and the definition of the trap explains why Keynes focussed on broad money

Two final points conclude this section. First, the explanation for Keynes' adoption of a broad measure of money should now be evident. Keynes was concerned with the decisions taken by private sector agents to balance their holdings of money against their holdings of bonds. He therefore had to have an all-inclusive measure of money, as the nearest alternative asset would be a non-money asset (i.e., a bond). If he had focused instead on a narrow measure of money, he could have made no definite statement about the relationship with bond prices. The nearest alternative to a narrow money balance is a money balance in a broader measure of money. (The nearest alternative to coin is a bank-note; the nearest alternative to a bank-note is a sight deposit or a current account [in UK parlance]; the nearest alternative to a sight deposit is a time deposit or deposit account. Switches between notes and coin, or between notes and current accounts, or between sight and time deposits, could be termed "money transfers". Such money transfers have by themselves no effect on bond prices or indeed on anything relevant to macroeconomic outcomes. (25))

Keynes did advocate operations in long-dated government bonds,

Secondly, Keynes of course knew that central banks tended to concentrate their operations at the short end. But one very consistent theme in all his writing was that he wanted monetary policy to affect the long rate. Logically, he advocated that monetary operations should be at all points on the yield curve. Towards the end of *The Treatise on Money* the proposal was for a "monetary policy à outrance". (*The Treatise* was published in 1930, after the crash on Wall Street. Concern about the deterioration in world economic activity had already made the design of stimulatory monetary policy a live topic.) Monetary policy à outrance was to include the purchase of debt of all maturities, as well as money market operations to lower the very short-term interest rate. (26) In *The General Theory* he said, "Perhaps a complex offer by the central bank to buy and sell at stated prices gilt-edged bonds of all maturities, in place of the single bank rate for short-term bills, is the most important practical improvement which can be made in the technique of monetary management." (27)

but he failed to specify whether such operations should be conducted by the government or the central bank

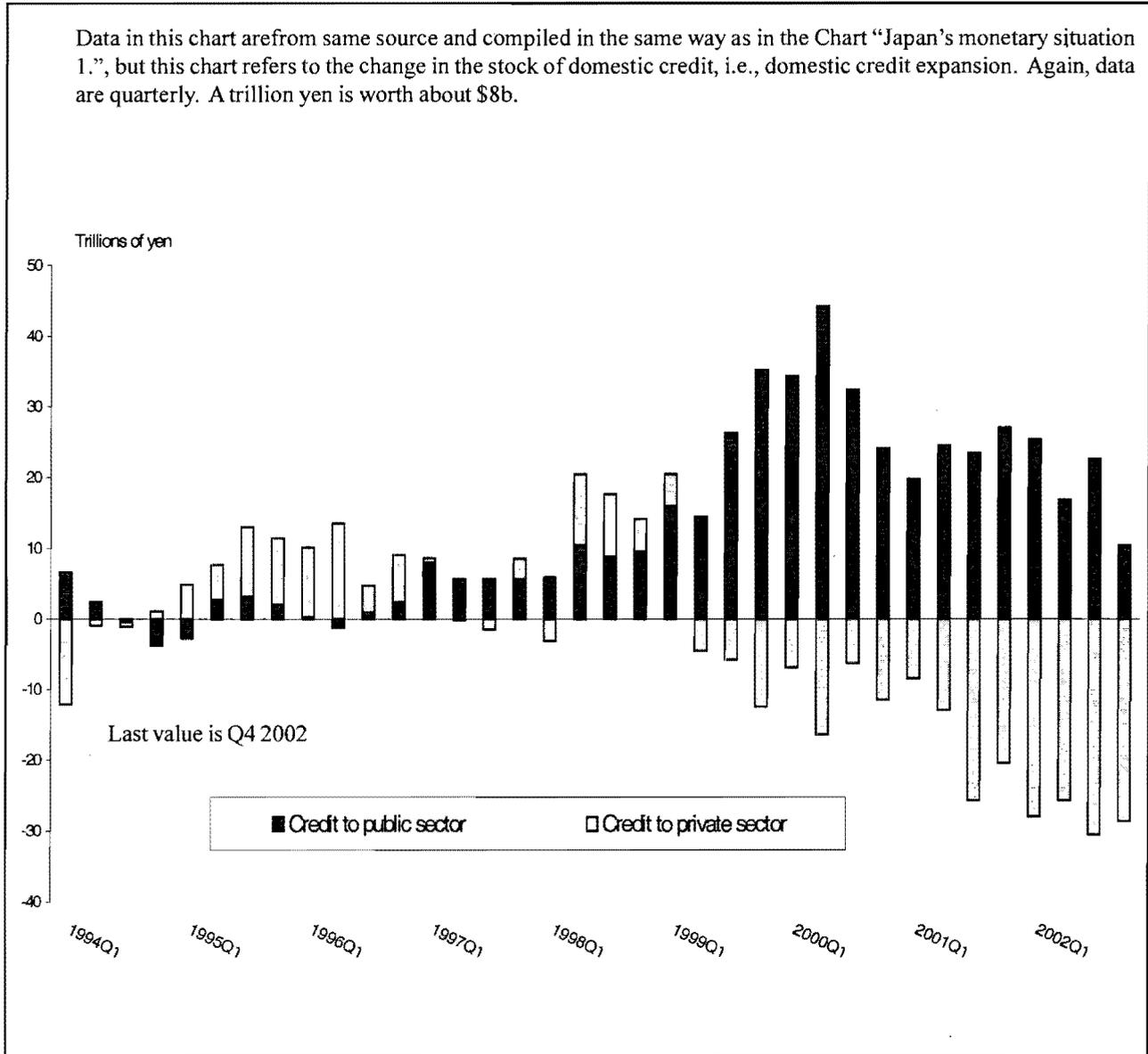
Unfortunately, the argument in *The General Theory* was abstract. It was not very sensitive to the institutional structure of a modern economy. In Chapter 15 – the *locus classicus* of Keynes' liquidity trap – he referred to "the banking system" and "the monetary authority", but he did not differentiate between "the government", "the central bank" and "the commercial banks", as has been done in this paper. He complained that the type of monetary policy he favoured was unpopular with "the monetary authority" which was not "as a rule, an equally willing dealer in debts of all maturities". He objected to the concentration of open market operations on the short end and to the practice of leaving "the price of long-term debts to be influenced by belated and imperfect reactions from the price of short-term debts". In his view, "there is no reason why they need be so". (28)

Central bank was - and is - constrained by possible losses on long-dated bonds

But was Keynes being naïve? There was a simple and rather obvious reason why *the central bank* would not conduct operations at the long end. As explained earlier, any central bank has to worry about the losses and profits of its operations, and holding long-dated paper is liable to generate large losses and profits. (Note that in the 1930s the Bank of England was still privately-owned. It could not have tolerated the profit swings implied by the sort of operations Keynes had in mind.) But – as has been explained here – *the government* need suffer from no such inhibitions. If Keynes had seen that the government, the central bank and the commercial banks have different roles and different constraints on their behaviour, he might have made the distinction between money market operations and debt market operations, and the related

Japan's monetary situation 3.

Banks cannot find worthwhile earnings assets



In Japan banks have been reducing their loans to the private sector since early 1999. This decline stems from three inter-related problems, the banks' own lack of capital (which causes them to shed assets), the slide in asset values since 1990 (especially in land values) which has eroded loan collateral, and the weakness of company and personal balance sheets (which discourages banks from lending to "bad risks"). The problems are so deep-seated that full repayment of all private sector loans is now very unlikely and - with proper accounting - the entire Japanese banking system may be insolvent. But it would be catastrophic for banks rapidly to write off capital and shrink their assets, because the result would be negative domestic credit expansion (see p. 7) and a contracting quantity of money. As in the USA in the early 1930s, that process - if taken to extremes - would lead to deflation and altogether unnecessary destruction of jobs and businesses.

distinction between a narrow liquidity trap and a broad liquidity trap. Surprisingly, macroeconomic theory has failed to bring the subject into good order since he wrote in the 1930s.

In his 1998 and 1999 papers Krugman genuflected to Keynes and Hicks

Krugman's observations on Japan and the liquidity trap pay homage to the great works of the 1930s, notably to the IS/LM model proposed by Hicks as a distillation of *The General Theory*. However, a careful reading of Krugman's extensive and widely-quoted writings on these matters raises questions about the ancestry of his ideas and, in particular, about the legitimacy of his appeal to the classics. So far it has been shown that Keynes' liquidity trap involved two aggregates, money (broadly-defined to include all bank deposits) and bonds, and that its main concern was the relationship between the quantity of money and the long-term bond yield. The next step is to identify the rationale of the liquidity trap. Why did Keynes propose that, under certain conditions, an increase in the quantity of money might not reduce the long-term bond yield?

The rationale for Keynes' liquidity trap to be sought in uncertainty about bond yields

The key remarks on the matter appeared in Chapters 13 and 15 of *The General Theory*. Chapter 13 tried to answer the question why someone should hold money for any purpose other than the transactions and precautionary motives. After all, by holding bonds rather than money someone obtains an income, the rate of interest, which "is the reward for parting with liquidity for a specified period". (29) Keynes found the necessary condition for such speculative money holding in "the existence of *uncertainty* as to the future rate of interest". If the rates of interest ruling in future could be foreseen with certainty, "it must always be more advantageous to purchase a debt than to hold cash as a store of wealth". However, if the future rates of interest were uncertain, the outcome could be quite different. It needs to be remembered that the price of bonds moves inversely with their yields. So, if interest rates and bond yields rise, a capital loss is suffered, with the loss being higher the more long-dated is the bond. Keynes warned that, for an investor thinking of acquiring a bond with a life of n years, "...if a need for liquid cash may conceivably arise before the expiry of n years, there is a risk of loss being incurred in purchasing a long-term debt and subsequently turning it into cash, as compared with holding cash".

When investors expect next move in rates to be upwards, they let their cash holdings expand without limit

Chapter 15 covered somewhat different ground from Chapter 13, but on the question of the motive for speculative money-holding it merely reiterated what was said in Chapter 13. "...[U]ncertainty as to the future course of the rate of interest is the sole intelligible explanation" of the speculative demand for money. (30) Keynes' conclusion was that, when there were enough investors who expected the next move in interest rates to be upwards, they would hold at least part of their wealth in the form of money rather than bonds. They would do this even they would be foregoing income in the immediate future. In the extreme – when bond yields had fallen so low that the only sensible expectation was a future rise in the bond yield (i.e., the only sensible expectation was a capital loss) – investors would keep idle any extra money balances that might be injected into their portfolios. The economy would be in a liquidity trap. Open market operations – even debt market operations of the kind described in this paper – could not rescue it. In short, Keynes' liquidity trap was the result of an unhappy relationship between the quantity of money and the long-term yield on bonds, where – once this yield had fallen to a low level – expectations about its future behaviour (i.e., for capital losses on the bonds) caused people to accumulate money balances without limit. Beneath a certain interest rate the demand for money became infinitely interest-elastic.

Was this also Krugman's trap in his numerous writings in 1998 and 1999?

How, then, does Krugman see the liquidity trap? In particular, does the infinite interest-elasticity of the demand for money in his work have the same explanation as that proposed by Keynes in *The General Theory*? A problem in answering these questions is the multiplicity of Krugman's writings. He has two official websites, one created while he was at the Massachusetts Institute of Technology and the second more recent website established since his move to Princeton. (31) (There is also an unofficial website devoted to Krugman, set up by an admirer.) The MIT

website has 20 pieces on Japan, 12 of which are “models” and eight “diatribes”. The Princeton website has 10 pieces directly relating to Japan, seven categorised as “models” and three as “diatribes”. Virtually all of the 30 pieces were published in 1998 and 1999. It is not clear which is the Authorised Version. The MIT website includes a long and relatively early paper from May 1998 entitled ‘Japan’s trap’. Krugman’s book on *The Return of Depression Economics*, published in 1999, had a chapter on Japan, but did not refer to any of his models and diatribes apart from the May 1998 paper. (32) So this one seems to deserve special attention.

Krugman’s first trap turned on uncertainty,

Krugman has been critical of the Bank of Japan for its commitment to long-run price stability. In the May 1998 paper this commitment had perverse effects. In his words, “when the central bank increases the current money supply”, the commitment to long-run stability implies that this increase will be retracted at a later stage. So – paradoxically – a monetary injection *now* lowers “the expected rate of money growth...and the expected rate of inflation” (i.e., the inflation prevailing *in the future*). But a lowering of the expected rate of inflation implies an increase in the real interest rate. Moreover, in the extreme the expected rate of inflation may become an expected rate of deflation. Of course, once expectations of deflation are embedded in the system, real interest rates are positive even with a zero nominal interest rate. Indeed, with interest rates at zero and bonds paying no interest, and with the central bank committed to long-run price stability, holding bonds has no advantage over holding money. (They both give a positive real return equal to the expected rate of deflation.) If the central bank expands the quantity of money, it piles up uselessly in bank accounts and has no stimulatory effect on the economy. “[S]ince the nominal interest rate cannot go negative, any increase in money beyond the level that drives the rate to zero will simply be substituted for bonds, with no effect on spending. And therefore no open-market operation, no matter how large, can get the economy to full employment. In short, the economy is in a classic liquidity trap.” (33)

but it was uncertainty about the price level of goods and services, not about bond yields

This may be a liquidity trap, but is it “a classic liquidity trap”? And is it Keynes’ liquidity trap? The answer has to be “no”. It has been shown that Keynes’ trap turned on *expectations about bond yields*. Although Krugman’s discussion was conceptually rich (and perhaps as a result not easy to follow), one point about the proposed trap was clear. It relied on *expectations about the price level of goods and services*. More precisely, it worked because price deflation led to a positive real interest rate on financial assets, and so made the holding of such assets attractive relative to the purchase of goods and services. Krugman’s first liquidity trap may have thrown new light on Japan’s current dilemma and added insights to the theoretical debate, but it is not “a classic liquidity trap”. It is a new trap that he has invented.

Krugman’s second trap appealed to uncertainty about returns on tangible capital assets

Later the May 1998 paper introduces another idea. “Moving outside the formal model, the prospects for a liquidity trap also depend on investment demand. Here demography...comes into play: the prospective decline in the labor force reduces the expected return on investments.” A few sentences later the suggestion is made more definite. “[W]hile it is quite easy to make the case that Japan really is in a liquidity trap, it is much harder to give a convincing explanation of why. Demography seems to be the leading candidate...” This notion is again thought-provoking. If the quantity of money were increased, economic agents would let the money accumulate in idle balances, and they would not build more factories and office blocks, purchase new capital equipment, and so on. In jargon, the demand price for tangible capital assets would not increase. The reason would be *adverse expectations about returns on these tangible capital assets, stemming from a bleak demographic situation*. (34) Like the first Krugman trap, this one looks plausible and may be a major part of the Japanese problem. But does it have anything to do with Keynes’ trap, which – to repeat – arose because of *expectations about bond yields*? The answer once more has to be “no”. Although *The General Theory* did make some remarks about demographics and the connection with asset returns, they are not integrated into the discussion of the liquidity trap. This is not to reject the possibility that the interest-elasticity of the demand for money might become infinite because of poor prospective returns on tangible capital assets. But the trap is not Keynes’; it is another of Krugman’s inventions.

There is one more trap in Krugman's work. In an influential paper published in 1999 Meltzer said that the Bank of Japan had not exhausted the scope for monetary policy action because it could have been far more aggressive in purchasing foreign exchange and so driving down the yen's exchange rate. (35) A fall in the exchange rate should lead to the return of inflation and, hence, to the benign effects on expected real asset returns required to stimulate the economy. A related, but more general argument is that – as long as investments expected to provide a healthy positive return exist somewhere in the world – a nation with low-return (or zero- or negative-return) assets ought still not to be in a liquidity trap. Instead of letting wealth accumulate in ever-larger bank deposits in the local currency, people would want to convert their local currency into foreign currency and so acquire the means to purchase the positive-return assets in other countries. In the process the exchange rate should fall, again leading to the return of inflation.

and Krugman's final trap arose from uncertainty about exchange rates

Krugman's objection was that exchange rate expectations may be perverse. Suppose that a central bank – such as the Bank of Japan – is a doughty inflation fighter committed to a strong currency. Domestic demand is weak and does not respond to an easing of monetary policy, even with interest rates at zero. Total demand might still be boosted to a full-employment level if foreign demand (i.e., a current account surplus, with exports above imports) could fill the gap. But a weak exchange rate is needed to promote buoyant exports and to generate a current account surplus. The trouble – according to Krugman – stems from a central bank pledged to long-run price stability. Because the financial markets know about the central bank's pledge, currency depreciation *now or in the near future* generates expectations of an offsetting appreciation *in future*. If the central bank were to purchase large quantities of foreign currency to drive down the exchange rate, it would pay for them by creating extra local currency deposits. Unfortunately, expectations of a bounce-back in the exchange rate would cause the extra money balances to accumulate endlessly, as in other liquidity traps, with no effect on the economy. According to Krugman in a November 1998 website paper, the culprit was "expectations that the real exchange rate" would "revert to its 'normal' level", since these would "limit the extent of real depreciation, even at a zero ... rate [of interest]". (36)

The essence of this final Krugman liquidity trap is that the demand for local-currency money becomes infinitely elastic with respect to the exchange rate (not the interest rate), because of *expectations about the exchange rate*. If the demand for money were at the same time infinitely elastic with respect to the interest rate, intervention on the foreign exchanges – like domestic open market operations – could not rescue the economy. The open economy, like the closed economy, can be caught in a liquidity trap. This again is an interesting idea which enriches the debate about monetary policy. But – as with the two previous traps – it is not found in *The General Theory* or any other of Keynes' writings. In fact, *The General Theory* is almost exclusively about a closed economy. There are some passages about how adhesion to the gold standard might constrain reductions in interest rates, but there is nothing whatever about the effect of exchange rate expectations on the demand to hold local-currency money. This third trap is yet another of Krugman's inventions.

A recapitulation of earlier ideas in this paper

Earlier this paper proposed a simplified economy with a government, a central bank, a commercial banking system and a non-bank private sector, and two types of monetary asset, banks' cash reserves with the central bank (the monetary base) and non-banks' deposits with the commercial banks (the quantity of money). It then established a distinction between money market operations, which could directly change the monetary base (but only indirectly and with some uncertainty the quantity of money), and debt market operations, which could directly change the quantity of money. With this distinction in mind, it further identified two kinds of situation in which monetary policy might become ineffective – a narrow liquidity trap (where injections of extra monetary base failed to stimulate the economy, even with a zero interest rate in the money market) and a broad liquidity trap (where injections of money failed to lower long-run bonds yields and so to stimulate the economy). It showed, by quotations from *The General Theory*, that the trap which really bothered Keynes was the broad liquidity trap.

Krugman had three traps, but they were all different from Keynes' trap

A review of Krugman's writings in 1998 and 1999 has shown that he had (at least) three liquidity traps which – despite his description of them as “classic” – were different from the liquidity trap in *The General Theory* and in Hicks' celebrated paper on the IS/LM model. Whereas Keynes' trap stemmed from malignant expectations *about the yield on long-dated bonds*, Krugman's traps were due to malignant expectations *about the price behaviour of other aggregates*. His first was *about the price level of goods and services*, his second *about the rate of return on tangible capital assets* and his third *about the exchange rate between local and foreign currency*.

Can a wide variety of liquidity traps be spawned, depending on the aggregative structure of the assumed economy?

To say that Krugman's traps are different from Keynes' trap is not to deny their relevance to Japan's current problems or the contribution that their further analysis might make to macroeconomic theory. But have modern macroeconomists made too much of a fuss about “the” liquidity trap? The definition of “a liquidity trap” depends on the system of aggregation assumed in the economy under discussion. A vast number of liquidity traps can be devised between money and another aggregate, where the source of the problem is that expectations about the aggregate's price (in terms of money) cause agents to have an infinitely elastic demand for money. A narrow liquidity trap can be distinguished from Keynes' broad liquidity trap when the monetary base is differentiated from the quantity of money and, as a result, the banking system's demand for earning assets is differentiated from non-bank private sector agents' demand for long-dated bonds. The narrow liquidity trap becomes possible, in other words, when the system of aggregation is extended from an economy with money and bonds, to an economy with monetary base assets, bank deposits and bonds. Krugman's traps are different from either the broad or the narrow liquidity trap because he has brought more aggregates into his economy. In his first trap the aggregates concerned are money (or perhaps “financial assets” encompassing both money and very low-interest short-dated bonds) on the one hand, and goods and services on the other; in the second trap the aggregates are money and tangible physical assets; and in the final trap the aggregates are local currency and foreign currency money. Additional traps would be possible were the economy to take on yet more aggregates.

Key feature of such traps is perversity of price expectations

In short, the number of liquidity traps can be multiplied by assuming an ever-greater variety of economies with different systems of aggregation. When the point has been grasped, another thought soon follows. What was so revolutionary about the liquidity trap in *The General Theory*? Keynes' title – emphasizing the comprehensiveness of his new theory and belittling the narrowness of “the classical school” (as he called it) – was a brilliant piece of intellectual marketing. But his liquidity trap highlights only one potential failure of a modern capitalist economy. Dozens of other traps, with the same basic structure (i.e., an infinitely elastic demand for money, in a context where agents are balancing their wealth between money and another aggregate), can be concocted. All that economists have to do is to add more aggregates against which agents have to balance their money holdings and propose sufficient perversity in the aggregates' price expectations. (37)

Liquidity traps and modern policy-making

Liquidity trap idea still important to policy-making

The ability of modern economists to multiply liquidity traps, and to identify a wide variety of other potential causes of depression and deflation, does not mean that the liquidity trap idea is unimportant for policy-making. However, Keynes did not believe – at the time he was writing – that any economy had suffered from a liquidity trap. He was quite explicit about this point. Chapter 15 of *The General Theory* noted “the possibility” that liquidity preference “may become virtually absolute in the sense that everyone prefers cash to holding a debt which yields so low a rate of interest”. But he noted, “whilst this limiting case might become practically important in future, I know of no example of it hitherto”. (38)

But Keynes denied that any country had suffered from his trap, which emphasizes the boldness of Krugman's claims

That is why Krugman's claims about modern Japan in the late 1990s – that it genuinely did suffer from a liquidity trap – were so challenging. But Krugman's analysis was flawed and his critique misdirected. His analysis was flawed, in that he seemed not to understand that his traps were original intellectual constructs different from those proposed by Keynes and Hicks in the 1930s. His critique was misdirected because – despite the proliferation of traps in his work – he did not make the vital distinction between the narrow and broad liquidity traps. Like many other foreign commentators, he therefore pinned the blame for the weakness of demand on the Bank of Japan, and said relatively little about the Ministry of Finance or the Japanese government.

However, if Krugman had appreciated the difference between money market and debt market operations, he would have seen that Japan had not run out of options in the late 1990s - and it still has not today

This paper has argued that monetary policy consists of both money market operations (which fix the quantity of the monetary base and short-term interest rate) and debt market operations (which have a direct effect on the quantity of money and affect long-term bond yields, as well as other asset prices). When defined widely in this way, monetary policy in Japan was not exhausted in 1998 and 1999, at the time of Krugman's pieces, and it has not been exhausted subsequently. It is true that the use of money market operations to reduce the short-term interest rate has gone as far as it can. The short-term rate is zero and cannot go negative. As Japan is in a narrow liquidity trap, its central bank can usefully do nothing more. But the Japanese authorities have not tried debt market operations. The Ministry of Finance continues, very mistakenly, to sell vast quantities of long-dated government bonds to non-banks. The ministry should instead be concentrating new issues at the short end, where they ought to be attractive to the banks; it might even consider outright purchases of long-dated government bonds financed by overdraft borrowing from the banks or the Bank of Japan. *Crucially, these operations need to be in the government's name, and to be undertaken jointly by the Bank of Japan and the Ministry of Finance.* By such operations the quantity of money can be increased to any figure that they choose. Japan may or may not be in a broad liquidity trap. It is possible that a 20 or 30 per cent increase in broad money would have no effect on bond prices, the price level of goods and services, the demand price of tangible physical assets and the yen exchange rate. Until aggressively expansionary debt market operations are implemented to achieve a money supply jump on this scale, no one – including Professor Krugman - can know.

Bernanke right to say that monetary policy consists of much more than money markets operations to set short-term rate

The distinction between the narrow and broad liquidity traps also helps inform the discussion of Bernanke's remarks about deflation risks in the USA. In his remarks last November to the National Economists Club Bernanke was right that monetary policy consists of more than money market operations to determine the short-term interest rate. However, he was wrong to believe that the Federal Reserve can enforce a stimulatory monetary policy by itself in all circumstances. This paper has shown that, in the narrow liquidity trap, the central bank acting alone cannot increase the quantity of money, and that the monetary authorities – meaning both the Fed and the Treasury – must work together to revitalize demand. A more detailed review of Bernanke's proposals may be helpful, to see what precise role he envisaged for the Treasury. He was in fact refreshingly radical and open-minded about the potential range of the Federal Reserve's operations. Specifically, he outlined four types of special Federal Reserve operation.

Bernanke proposed four further types of operation

The first was the pre-commitment of future money market rates. In Bernanke's words, by promising to keep the "overnight rate" at zero for some specified period (perhaps running into months or quarters), the Fed might "induce a decline in longer-term rates". Secondly, the Fed might purchase securities further down the yield curve. Ceilings might be announced "for yields on longer-dated Treasury debt" (such as two-year paper), with the Fed enforcing the ceilings "by committing to make unlimited purchases of securities up to two years from maturity at prices consistent with targeted yields". If necessary, it could take the policy out to "still longer maturities, say three to six years". Thirdly, although in principle the Fed was restricted by its mandate from buying private sector assets, it might achieve much the same effect by purchasing "agency debt" (such as mortgage-backed securities issued by the General National Mortgage Association) or by making long-term loans (up to 180 days) to the banks, taking

commercial paper as security. Finally, it could operate in the foreign exchange market, selling dollars and buying foreign government debt. (40)

All these four types of open market operation would boost asset prices more directly than conventional money market operations,

All these special operations would help to raise the prices of certain assets in more direct and certain ways than would be possible with conventional money market operations at the very short end. But that raises an obvious question? Why, if they are so effective when administered in significant doses in emergencies, are they not administered in smaller doses all the time? Why does the Fed – like most other central banks – normally restrict itself to safe assets at the short end? Part of the answer is that the Federal Reserve is a bank, even if a very unusual sort of bank, and it does have to report profits and losses. (41) If the Federal Reserve were to hold large amounts of six-year government bonds and agency securities, it might incur heavy losses if the prices of these securities were to fall. Bernanke's support for operations a long way down the curve were reminiscent of suggestions made by Keynes in the 1930s. Indeed, it is not taking too many historical liberties to say that Bernanke might want the USA to adopt in the early 21st century the monetary policy *à outrance* recommended by *The Treatise on Money* in 1930, if deflation were to become a serious menace. But Bernanke's proposals suffer from the same weakness as Keynes', that central banks are not "as a rule an equally willing dealer in debts of all maturities" because they face a budget constraint.

but i. they might lead to losses for the Fed, and ii. they would be politically controversial

The same drawback would apply to central bank acquisition of claims on the private sector and foreign exchange. But there is a further problem. Central bank purchases of both securities issued by the private sector and large amounts of foreign exchange are highly political acts. Domestically, the Fed would no doubt limit itself to purchases of highly-rated corporate bonds, but companies whose bonds were not purchased might complain of favouritism. On the external front, Bernanke himself noted that heavy foreign exchange operations would have implications for foreign policy and could not be unconstrained. The Federal Reserve would need to coordinate its activities not just with the Treasury, but with the State Department.

Bernanke did refer, obliquely, to "debt market operations" (as they have been termed here),

Bernanke frequently acknowledged the need for the Fed to cooperate with the US government, but his comments would have been more precise if he had made a sharp and clear distinction between money market and debt market operations. His remarks did in fact contain an implicit reference to debt market operations. In the section on 'Fiscal policy', he recognised that – even without tax cuts or public expenditure increases – the government "could acquire existing real or financial assets". He continued, "If the treasury issued debt to purchase private assets and the Fed then purchased an equal amount of Treasury debt with newly created money, the whole operation would be the economic equivalent of direct open-market operations in private assets".

but he did not see that such operations are best conducted in the government's outstanding debt, not in other assets

The suggestion here corresponds to the second category of debt market operations outlined above, where the government borrows from the central bank. However, in this paper the funds raised by the borrowing are used to buy back existing long-dated government bonds from non-banks, not privately-issued securities and certainly not "existing real assets".(41) Buy-backs of existing government bonds would be far less politically controversial than the asset purchases discussed by Bernanke, while the monetary effect would be the same. Moreover, by claiming that a debt market operation on these lines would be "the economic equivalent of direct open-market operations in private assets", Bernanke went too far. As shown earlier, a debt market operation where the government makes the purchase in its own name does not lead to a permanent expansion in the central bank's balance sheet. In the final situation (see Figure 3.4) the composition of the government's debt has changed, the commercial banking system has more short-term debt on the assets side of its balance sheet and owes more deposits to the non-bank private sector on the liabilities side, and the non-bank private sector has less long-term government debt. But the central bank's balance sheet is identical at the beginning and the end of the operations. (Compare Figures 3.1 and 3.4 in the March *Review*.) By contrast, if the central bank were to buy private-sector assets in "a direct open-market

operation”, it would both expand its own balance sheet and take on more risk relative to its capital.

Japan’s failings largely political and technical in nature

Towards the end of his remarks Bernanke adverted to the Japanese situation. His verdict was that Japan suffered from “political constraints” on the appropriate actions rather than “a lack of policy instruments”. “In the resulting political deadlock, strong policy actions are discouraged, and cooperation among policymakers is difficult to achieve.” The analysis in this paper supports the view that the trouble in Japan has been institutional and political rather than economic in character, but it tightens the critique of Japanese policy-making. To repeat, the Bank of Japan has been expected to reflate the economy single-handedly by money market operations, when the correct response would have been for the Bank of Japan and the Ministry of Finance to collaborate on expansionary debt market operations. The same observation would apply if the USA were to slide into a narrow liquidity trap. The Fed and the Treasury would have to work together, with expansionary debt market operations supplementing money market operations to cut interest rates to zero.

Conclusion

Bernanke’s appeal to the presses both compelling

Economists have been puzzled by policy-makers’ inability to revive demand in Japan. Bernanke’s appeal to “the printing presses” is compelling. We know both that governments can print money and that economic agents have a finite demand for real money balances. We therefore believe that, by printing enough money, policy-makers can engineer whatever inflation rate they choose. The problem of controlling inflation has seemed, for most of the nearly seven decades since the publication of *The General Theory*, technically difficult and politically painful. But no one thought there might be a problem in generating inflation. That seemed extremely easy: just print enough money.

and correct, but it is the government (not the central bank) that must act

And it is easy. The sentence “the government can print money without limit” is correct, but the key word is *government*. There seems to be a serious policy problem in Japan, and potentially elsewhere, only because the task of creating legal-tender money – the key monetary base asset – has been delegated to a central bank. A central bank is distinct from the government, even if it is government-owned and subject to specific legislation. Because it is a bank, it has assets and liabilities, and it also has to report profits and losses. Its ability to incur accounting losses is therefore constrained and so also is the range of assets it may acquire. (Note that the accounting losses may have only a tenuous connection with resource costs to society.) Further, because it is a unique kind of institution (which serves only the government and the banking system, and perhaps some foreign governments), it has no business relationship with non-bank private sector agents. Crucially, it does not take deposits from non-banks.

The phenomenon termed “the narrow liquidity trap” attributable to institutional structure of modern economy

These institutional features of a central bank – the limitations on the range of assets it can sensibly purchase and on its incurral of deposit liabilities to non-banks – are the explanation for the phenomenon termed here “the narrow liquidity trap”. Japan is the most prominent example of this trap and, with good management in other countries, it may prove to be the only one. As it happens, the Bank of Japan has been extraordinarily flexible in the range of assets that it will purchase and it runs a serious risk of reporting losses in excess of its capital when the Japanese economy recovers. However, the vast expansion of its liabilities to the banking system has not led to an increase in the quantity of money (on the broad definitions), because the banks’ demand for cash reserves has been – for all practical purposes – infinitely elastic. This infinite elasticity of the demand for this monetary base asset has stemmed from both the banks’ shortage of capital and the unattractiveness of possible earning assets to them.

But the government can purchase any asset and it can print without limit. One answer to the Japanese *malaise* would be for the government to pass legislation giving the Ministry of Finance the right to print legal-tender notes and then to print massive quantities of yen notes.

In Japan the right to print notes could be transferred from BOJ to MOF

The US Federal government in the American civil war with the issue of “greenbacks” and the British government in the First World War with the issue of “Bradburys” demonstrated not only that constitutional niceties can be overruled in emergencies, but also that uninhibited expansion of inconvertible paper money is inflationary. In the extreme the Japanese government today could follow those examples. Without doubt the result would be inflation.

But that would be politically - and even constitutionally - dangerous

But constitutional niceties matter. One reason that legislatures around the world have delegated the issue of legal-tender money to central banks is that they are likely to be more reluctant to over-issue than politicians. If the Ministry of Finance were given the power to issue bank notes in 2003, the political problem might be to take it away in 2005 and 2006 after a colossal inflationary boom. Fortunately, there is a means of expanding the quantity of money without a constitutional outrage. That is for *the government* (repeat: *the government*) to borrow from “the banking system” (either the central bank or the commercial banks) on a large scale and to purchase assets from the non-bank private sector. Contrary to some of the more daring passages in Bernanke’s remarks last November, the government does not need to engage in politically contentious purchases of securities issued by the private sector. It need only buy back its own long-dated debt. (Such purchases – in conjunction with increased issues of short-dated bonds – have the desired monetary effects because commercial banks do not hold large quantities of long-dated bonds. The purchases will therefore be predominantly from non-banks and will increase their bank deposits.)

So it would be far better for the government to borrow heavily from the banks, with expansionary debt market operations

In summary, the key to solving a deflation arising from a narrow liquidity trap is for *the government* to conduct expansionary debt market operations. Just as there is no constraint on the size of the note issue when the finance ministry seizes the right to issue legal tender (as it often does in wartime), so there is no constraint on the size of the monetary injection (i.e., the increase in bank deposits) that can be engineered by debt market operations. A huge monetary injection (of, say, 20 or 30 per cent of broad money) might still fail if the economy suffered from a broad liquidity trap, of the kind proposed by Keynes in the 1930s. But no economy has yet been in a broad liquidity trap. (In Japan at present broad money growth is very low. It needs to be raised sharply to test for the presence of a Keynes’ trap and to resolve the squabbles between different schools of macroeconomists, as well as for the good of the Japanese people.)

Debates stem from fundamental confusions in macroeconomic theory

The purpose of this paper has been to clarify some fundamental issues in macroeconomic policy-making. There is much unnecessary confusion about the respective roles of fiscal policy, debt management and monetary policy. Some well-respected macroeconomists say that debt management is not part of monetary policy; they claim that, no matter how it is conducted, it cannot alter macroeconomic outcomes. Other equally well-respected macroeconomists regard debt management as an integral part of monetary policy and believe that it can alter macroeconomic outcomes profoundly. The confusion stems partly from a failure to define the categories in theoretical models. This paper has shown how “the liquidity trap”, supposedly a unique theoretical construct which revolutionised monetary economics, can be bent like a piece of intellectual plasticine by changing the system of aggregation in an assumed hypothetical economy.

and these have their ultimate source in Keynes’ imprecisions in *The General Theory*

But all the conclusions of macroeconomic theory depend on the components of the models under discussion. It was unfortunate that in *The General Theory* Keynes used two imprecise phrases “the monetary authority” and “the banking system”. He took “the monetary authority” to be the agent in open market operations, and failed to differentiate between the government and the central bank; and he regarded “the banking system” as the set of organizations which issued “the quantity of money”, instead of differentiating between “the central bank” and “the commercial banks”, and between “the monetary base” and “deposits held by the non-bank private sector”. These weaknesses of *The General Theory* are the more curious when contrasted with by the detailed discussion of institutions in *The Treatise on Money*. It is high time that

monetary economists set about developing theories in which the monetary base and the quantity of bank deposits have their own supply and demand functions, and that they stop talking about the “the supply of *money*” and “the demand for *money*”. Monetary base assets and bank deposits have very different characteristics, and – when used without qualification – the word “money” has multiple meanings. A more careful use of words may lead to a better understanding of how monetary policy and debt management interact, and how policy-makers in other industrial nations can best inoculate themselves against the deflationary disease now afflicting Japan.

Footnotes

- (11) In the 19th century economics students were warned about the inflationary perils of inconvertible paper currency by the story of the *assignats* in revolutionary France, told in chapter XIII of book III of John Stuart Mill's *Principles of Political Economy*. But other examples of the inflationary results of excessive note issue are legion. In the American Civil War the Federal government passed an Act stating that notes uncovered by gold or silver were to be legal tender on 25th February, 1862. The subsequent over-issue of "greenbacks" led to inflation. In the First World War the British government took the same power by an Act of 6th August, 1914. Again, the subsequent over-issue of "Bradburys" led to inflation. The likely results of the government assuming responsibility for note issue are discussed in the 'Conclusions' to the paper.
- (12) This policy was advocated by Tim Congdon in an article on 'What is to be done about Japan's financial crisis?', pp. 67-72, in the May 2002 issue of *Central Banking* (London: Central Banking Publications).
- (13) Krugman has favoured deliberate inflation in Japan, in order to reduce the real return on financial assets and so to encourage demand for goods and services. (Krugman *Return*, pp. 78 – 9.)
- (14) The realization that aggressive purchases of long-dated bonds by the central bank might lead to heavy losses is not new. As Leijonhufvud remarked, a central bank following Keynes' principles "will have to engage in quite large operations, buying and selling low, in order to vanquish first the bears and then the bulls. Consequently, it will take large losses." (Leijonhufvud p. 349) Keynes mentioned in *The Treatise on Money* that a central bank acting in the way he recommended would have losses, but did not develop the point.
- (15) Radcliffe Report, para 603, p. 224 August 1959 HMSO etc.
- (16) Tobin *Essays in Economics – volume 1*, p. 383
- (17) For an example of a detailed prescription of a policy approach on these lines, see Lars E. O. Svensson 'Monetary policy and real stabilization' *National Bureau of Economic Research Working Paper Series*, working paper 9486 (Cambridge, Mass.: NBER, February 2003). Monetary policy is taken to have only one instrument, which Svensson calls "the instrument rate" set by the central bank. This is said to be "the short nominal interest rate", which is linked to other interest rates because of market expectations. "Thus, the lowering of the instrument rate normally affects the short and longer real interest rates, which will affect economic activity." (p. 2) A number of effects follow, such as that of interest rates on the exchange rate and so on economic activity. But there is no role for money. The notion that changes in national income may be a response to agents' attempts to equilibrate the demand for and supply of money is simply not noticed, let alone discussed. Monetary policy is 100 per cent about money market operations and the setting of the very short-term interest rate. By assumption, there is no room for debt market operations. This view of the subject is widely held in modern central banking circles and goes a long way to explain the policy inertia in Japan. See also Professor Goodhart's 2002 Wincott Lecture on 'The constitutional position of the central bank', pp. 91-109, in Milton Friedman and Charles Goodhart *Money, Inflation and the Constitutional Position of the Central Bank* (London: Institute of Economic Affairs, 2003). In the lecture Goodhart discussed the case for an independent (i.e., non-political) agency for fiscal policy, analogous to the independent central bank responsible for monetary policy. But he said nothing about the location of responsibility for debt management, which traditionally in the UK was a job for the central bank. (It has now been given to the Debt Management Office, which has little expertise or interest in monetary policy issues.)
- (18) Axel Leijonhufvud, *On Keynesian Economics and the Economics of Keynes* (New York, London and Toronto: Oxford University Press, 1968), p. 142.

- (19) See, for example, Keynes' review of Hawtrey's *Currency and Credit* in 1920 and his exchange with Cannan in 1924. The pieces appear on pp. 411 – 14 and pp. 415 – 19 of Elizabeth Johnson and Donald Moggridge (eds.) *The Collected Writings of John Maynard Keynes* vol. XI *Economic Articles and Correspondence: Academic* (London and Basingstoke: Macmillan, 1983).
- (20) Johnson and Moggridge (eds.) *Collected Writings of Keynes* vol. V *A Treatise on Money: 1. The Pure Theory of Money*, 1971, originally published in 1930, p. 5.
- (21) Johnson and Moggridge (eds.) *Collected Writings of Keynes* vol. VII *The General Theory*, 1973, originally published in 1936, p. 167.
- (22) The quotations are from pp. 198 – 9 of Johnson and Moggridge *Collected Writings of Keynes* vol VII *The General Theory*. The sentence is quite difficult, but its meaning is clear. If the banking system were not prepared to change its holdings of bonds at all in response to a change in the price, its cash reserves could not be altered by the monetary authorities and open market operations would be impracticable.
- (23) If Keynes meant “the central bank” when he used the phrase “the banking system”, then he did have a narrow liquidity trap in *The General Theory*. Keynes' use of words was unclear. He may have thought more exact phraseology was unnecessary because the central bank could be taken as representative of the whole banking system. If the ratio of the monetary base to bank deposits were stable, this attitude would indeed have been fairly harmless. In Chapter 25 of *A Treatise on Money* Keynes reviewed the data on banks' cash reserve ratios in the UK, the USA and elsewhere. His general conclusion was that the ratios changed, but not very much, and that the central bank ought therefore be able to control the level of “bank money”, even if such money were a liability of the commercial banks rather than the central bank. In the Great Depression in the USA – as in modern Japan – the ratio of base money to the quantity of money rose sharply. So the behaviour of the central bank's balance sheet was different from that the commercial banks' balance sheet and Keynes' assumption was not harmless.
- (24) The quotations here are from pp. 266 – 8 of the Johnson and Moggridge edition of *The General Theory*.
- (25) For a discussion of money transfers in a wider argument that broad money, not narrow money, has a causal role in portfolio management and expenditure decisions, see Tim Congdon ‘Broad money vs. narrow money’, pp. 13 – 27, *The Review of Policy Issues*, vol. 1, no. 5, autumn 1995 (Sheffield: Policy Research Centre, Sheffield Science Park).
- (26) Johnson and Moggridge (eds.) *Collected Writings of Keynes* vol. VI *A Treatise on Money: 2. The Applied Theory of Money*, p. 347. Monetary policy *a outrance* was defined as, in addition to “a very low level of the short-term rate of interest”, the purchase of “long-dated securities either against an expansion of central bank money or against the sale of short-dated securities”. If the purchase of the long-dated securities were “against an expansion of central bank money”, the transactions would be a money market operation, according to the distinction introduced in this paper; if the purchase were “against the sale of short-dated securities” *by the government*, it would be a debt management operation. But Keynes did not add the phrase “by the government”. Conceivably, short-dated securities could be issued – in his day or now – *by the central bank*, in which case the transactions would again be a money market operation.
- (27) Johnson and Moggridge (eds.) *Collected Writings* vol. VII *The General Theory*, p. 206.

- (28) The quotation is again from p. 206 of the Johnson and Moggridge edition of *The General Theory*.
- (29) The quotations in this paragraph are from pp. 167–9 of the Johnson and Moggridge edition of *The General Theory*.
- (30) Johnson and Moggridge (eds.) *Collected Writings* vol. VII *The General Theory*, p. 201.
- (31) Krugman's website addresses are web.mit.edu/krugman/www/ and www.wws.princeton.edu/ispkrugman/.
- (32) Krugman, *Return of Depression Economics*, p. 78.
- (33) The quotation is from section three of the May 1998 paper in Krugman's MIT website. Krugman's comments were surprising in two respects. First, he envisaged "zero-interest bonds". But it is obvious that no such bonds have been, or ever would be, issued. Further, the value of a bond with an interest coupon of any kind, even a very low interest coupon, would rise towards infinity as the yield approached zero and deliver massive capital gains. Secondly, the whole point about the liquidity trap is that, as the quantity of money increases, no substitution into bonds occurs. What Krugman must have meant is that, as the quantity of money increases, wealth-holders restrict their investment purchases to very short-dated securities, such as Treasury bills, the yield of which falls to negligible levels. There is some justification for this in Keynes' suggestion (on p. 167 of *The General Theory*) that Treasury bills might sometimes be included in measures of "money". (They could certainly be included in measures of "liquidity".)
- (34) See section five of the May 1998 paper.
- (35) See Allan Meltzer 'The transmission mechanism', Carnegie-Mellon University and American Enterprise Institute, *mimeo*. The paper was published in *The World Economy* and is available on the web at www.gsia.cmu.edu/afs/andrew/gsia/meltzer/transmission.pdf.
- (36) Krugman's argument was developed under the section "The open economy" in a November 1998 paper in the MIT website on 'Japan: still trapped'. The idea was also mentioned on pp. 80–81 of Krugman's book, *The Return of Depression Economics*, but in the book he buttressed the argument by referring to the build-up of income on Japan's foreign assets.
- (37) In his essay on 'Principles of debt management' Tobin complained that Keynes had not included equities in his economy. The essay was concerned about the relationship between debt management and bond yields, and then between bond and equity yields, in the belief that equity yields had an effect on investment. Tobin believed that stimulatory debt management – such as purchases of long-dated bonds by the government – would lower equity yields, and so boost corporate investment and demand. Again, the conclusions reached by an economic analysis depended on the structure of aggregation.
- (38) The quotation is from p. 207 of the Johnson and Moggridge edition of *The General Theory*.
- (39) See the section on "Curing deflation" in Bernanke's 'Remarks' of 21st November, 2002.
- (40) The Federal Reserve is owned by its member banks, not by the US government. It is nevertheless obliged to return profits above operating expenses to the US Treasury. The possibility of losses on securities held by the Fed did exercise those responsible for its creation in 1913, although this has been more or less forgotten subsequently.

- (41) The author does not want to deny the potential efficiency of government transactions in real assets as a policy instrument. (In fact, in evidence to the Treasury Committee of the House of Commons in early 2000 he suggested that one kind of open market operation would be for the government to offer everyone £1,000 for their scruffiest pair of shoes. The evidence was reprinted as the research paper in the February 2000 issue of Lombard Street Research's *Monthly Economic Review*.) The trouble with purchases of real assets is twofold. First, they lead to profits and losses, and so are liable to be politically controversial. Secondly, the transactions are bound to affect some groups favourably and others unfavourably, again causing controversy. Note that massive purchases of gold and silver *by the US government* (not the Federal Reserve) in 1933 and 1934 were crucial to the USA's recovery from the Great Depression. In line with the terminology of this paper, they might be described as stimulatory *real-asset market operations*.