



BANK OF ENGLAND

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Andrew Tyrie
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Dear Andrew

At the Treasury Committee's hearing with members of the Monetary Policy Committee on 26 February, the possibility of negative (official) interest rates was raised by Paul Tucker. During the meeting, you asked Mr Tucker to supply further material regarding this issue. In his response to you, dated 12 March, Mr Tucker promised that, as the Deputy Governor responsible for Monetary Policy and on behalf of the MPC, I would supply your Committee with a short paper in fulfilment of that request. That paper is attached.

Following the amendments to the Monetary Policy Remit announced by the Chancellor of the Exchequer on 20 March, you subsequently wrote to Mr Tucker asking whether negative interest rates remained a tool under consideration under the terms of the new Remit. The paper also answers that question.

Best regards,

Charlie.

Note on Negative Interest Rates for Treasury Committee

Context

1. The global financial crisis of 2007-8 resulted in both a sharp increase in uncertainty and a substantial downward revision in the medium-term outlook for economic growth, both here and in many other advanced economies. That prompted both a sharp rise in private sector saving and a collapse in investment spending. The weakness of the recovery, together with the problems in the euro area, has meant a continuation of that highly uncertain economic environment, and spending by household and businesses remains depressed. That has been aggravated by the problems in the banking sector, which have further inhibited spending. The consequence of this has been a sharp fall in the 'warranted real interest rate' – that is, the real interest rate consistent with the full employment of resources – though there is necessarily considerable uncertainty exactly where this is at the current juncture and it will differ across households and businesses¹.

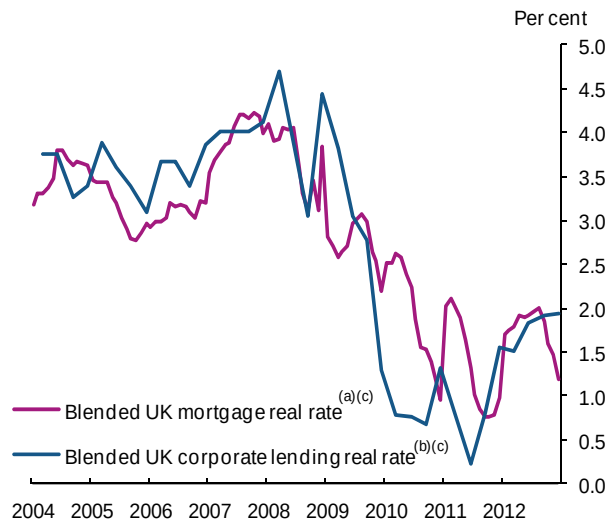
2. The response of central banks in the first instance was to cut official nominal interest rates. In the United Kingdom, the Monetary Policy Committee cut Bank Rate sharply, from 5% in the summer of 2008 to 0.5% by early 2009; market participants currently expect Bank Rate to remain at that level until 2016. But CPI inflation has been above the 2% target for much of the period since the financial crisis began and in our latest *Inflation Report*, published yesterday, the Committee judged that inflation was more likely than not to continue to exceed the target until early 2015. The *real* level of Bank Rate – Bank Rate less the expected rate of CPI inflation – has therefore been below zero since late 2008 and is likely to remain so for some time to come.

3. Central banks have also engaged in asset purchases, financed by the issuance of central bank reserves ('quantitative easing'), in order to depress longer-term interest rates further so as to boost spending. In the MPC's case, it has so far purchased some £375bn of gilts, equivalent to a quarter of annual GDP. That has had the effect of lowering long-term

¹ Strictly speaking there are several real interest rates, each of which corresponds to a different interest rate and/or a different price index. Which is most relevant depends on the question being asked. For example, for a householder with a mortgage, the most relevant real interest rate would probably be the mortgage rate less the rate of consumer price inflation, while for a company the most relevant real interest rate might be its cost of finance less the rate of inflation of its output price. In normal times, these various real interest rates usually move together. Since the start of the financial crisis, however, they have moved disparately as deposit and borrowing rates have diverged; disparate movements have also arisen as a result of large movements in commodity prices, the exchange rate and VAT, which have led to different inflation rates for different price indices.

interest rates by reducing both term premia and market expectations for the future path of official policy rates². Finally, some central banks have also engaged in ‘credit easing’ policies, designed to expand the supply of bank credit. The recently extended Bank/HM Treasury Funding for Lending Scheme, which aims to reduce bank funding costs and the real borrowing rates faced by many households and companies, falls into this category.

Chart 1: Indicative real rates on new UK lending



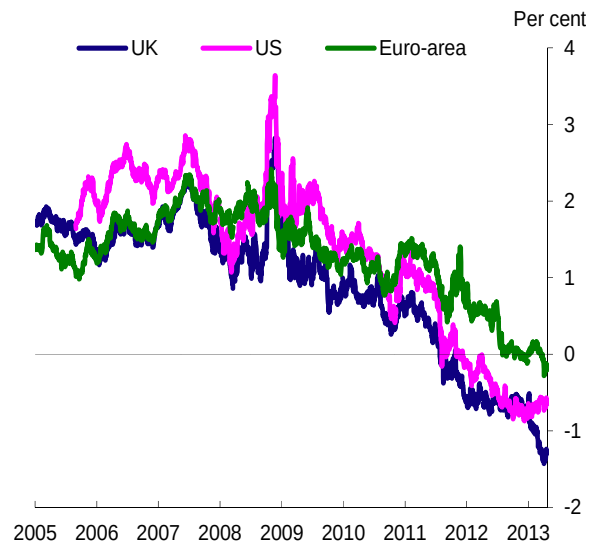
Sources: Bank of America Merrill Lynch, Bank of England, Bloomberg, Consensus Economics, Council of Mortgage Lenders (CML), British Bankers' Association, De Montfort University and Bank calculations.

(a) The mortgage rate is a weighted average of quoted mortgage rates using 90% LTV two-year fixed rate mortgages and 70% LTV tracker, two and five-year fixed-rate mortgages. Deflated using year-ahead Consensus expectations for consumer price inflation.

(b) The corporate lending rate is a weighted average of UK investment grade company bond yields (adjusted for any embedded option features such as convertibility into equity), SME lending rates and CRE lending rates. Deflated using year-ahead Consensus expectations for output price inflation.

(c) Lending maturities are likely to differ from the year-ahead expectation used as the deflator so the chart should be treated as merely indicative.

Chart 2: 10-year spot sovereign real interest rates^(a)



(a) Real euro-area rates are estimated using yields on French and German nominal sovereign bonds and euro-area inflation swap rates.

4. These actions have led to a substantial fall in real interest rates (Charts 1 and 2); that supported aggregate demand. Even so, there appears to remain considerable spare capacity in the economy. At its most recent meeting, the Monetary Policy Committee judged that the present degree of stimulus was consistent with the gradual erosion of that spare capacity and with the return of inflation to the 2% target in the medium term. But if spare capacity were to persist for materially longer than currently anticipated, it would

² See Joyce *et al.* (2011), ‘The United Kingdom’s quantitative easing policy: design, operation and impact’, *Bank of England Quarterly Bulletin*, Vol. 51, No. 3, pages 200-212.

increase the likelihood that inflation would fall below the 2% target in the medium term. In that case, a further reduction in real interest rates could be desirable.

5. Further falls in real interest rates could in principle be achieved in several ways. First, the MPC could lower Bank Rate further, possibly even below zero, or alter the way in which it remunerates reserves to reduce the marginal interest rate paid on them (see below). Second, the MPC could indicate that it was committed to holding Bank Rate lower in the future than market participants currently expect. This would be an example of the kind of ‘forward guidance’ that has been adopted by the US Federal Open Market Committee; in the new remit for the MPC, the Chancellor has asked the MPC to investigate whether such an option might also be appropriate here. Third, the MPC could extend its asset purchase programme, thereby putting further downward pressure on longer-term yields. Fourth, further targeted actions to improve the supply of credit could be undertaken. The recently announced extension of the Funding for Lending Scheme was made with this in mind. The rest of this note focuses on the first of these options.

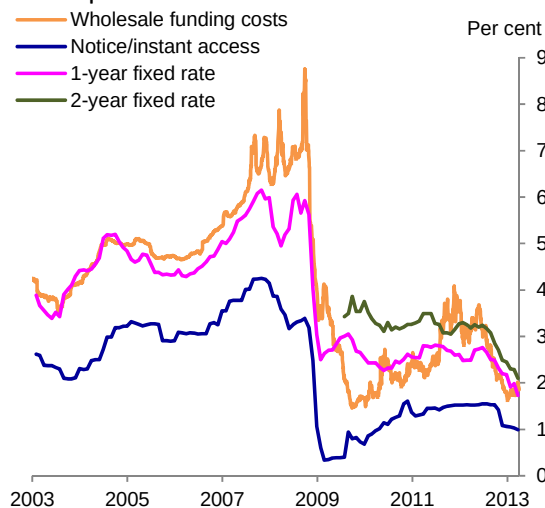
The limits to lowering Bank Rate

6. Bank Rate is the rate of interest the Bank pays on the reserves that the commercial banks hold at the Bank of England. These reserves, which can be converted into cash on demand, represent the basic settlement asset within the banking system. The level of Bank Rate – set by the Monetary Policy Committee – then represents the fulcrum around which the general level of short-term interest rates in the wholesale money markets is determined. Wholesale interest rates in turn influence the retail lending and deposit rates faced by UK households and businesses. Banks and building societies will, however, make commercial judgements that influence the degree of pass-through from changes in Bank Rate into retail interest rates. As a result, a given decline in Bank Rate may not be matched by an equivalent change in retail interest rates. Whether that is the case or not will depend on financial conditions at the time.

7. In principle, the Monetary Policy Committee has always been able to set Bank Rate at any level, including a rate below zero. In that case, the commercial banks would pay the Bank for holding reserves, rather than the other way round. There are no significant technical or operational obstacles that would prevent the Bank from implementing a negative level of Bank Rate. Such a charge on reserves would encourage banks to substitute out of them into alternative assets, though the banking system as a whole could not get rid

of the reserves – other than by converting them into cash – as the total quantity is primarily determined by the MPC's asset purchase decisions. But any attempt by banks to substitute out of reserves into other assets, including loans, would lead to downward pressure on the interest rates on those assets. Eventually, the whole constellation of interest rates would shift down, such that banks were content to hold the existing quantity of reserves. This is exactly the mechanism that operates when Bank Rate is reduced in normal times; there is nothing special about going into negative territory.

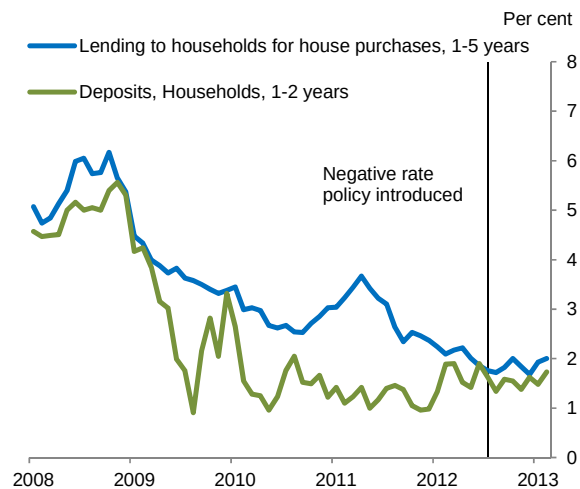
Chart 3: Wholesale funding costs and household retail deposit rates^(a)



Sources: Bank of England, Bloomberg, British Bankers' Association, Markit Group Limited and Bank calculations.

(a) Wholesale funding costs are the sum of three-month Libor plus an average of the five-year CDS premia of the major UK lenders.

Chart 4: Danish household effective deposit and lending rates



Source: European Central Bank.

8. It does not follow that a negative setting for Bank Rate would immediately be reflected in negative levels for retail interest rates, and deposit rates in particular. Chart 3 shows that, in the past, deposit rates have tended broadly to move in line with wholesale funding costs, which lie above Bank Rate. Deposit rates on current and savings accounts presently average around 1.5%, though of course many current accounts pay next to nothing and around half also impose some sort of charge for operating the account. Further reductions in savings rates, or a more widespread imposition of charges on retail current accounts, would likely meet with considerable customer resistance. For this reason, even if Bank Rate were negative, banks might well prefer to accept a reduction in their profits rather than further reduce deposit rates or increase the charges for such accounts. That is especially likely if the period of negative Bank Rate was thought likely to be short-lived. The experience in Denmark – where the Danish National Bank introduced negative remuneration on excess reserves in July 2012 – points to there being little change in

household borrowing and deposit rates (Chart 4). That in turn would reduce the impact of the policy easing on aggregate demand.

9. If, however, the period of negative Bank Rate was likely to be long-lived, it might lead to more substantial changes in behaviour. First, banks might decide to convert their reserves into cash to avoid the charge. To do so might require some further investment in secure storage capacity and an expansion in the market for insuring securely stored bank notes. This would not be worth doing for a short period, but the necessary investment could become worthwhile if the period were longer. Second, banks might be more inclined to introduce or raise charges for running current accounts if Bank Rate were significantly negative for a long period. In turn, that could mean that customers might prefer to hold cash rather than leave it with their bank so as to avoid the associated charges; such an increase in cash holdings by the public might well increase security risks. More significantly, if a substantial volume of funds left the banking system it could undermine the system's ability to deliver the basic banking functions of maturity transformation and secure payments transfer.

10. So, while a temporary reduction in Bank Rate to significantly below zero might be feasible, it would probably not be possible to hold Bank Rate below minus $\frac{1}{2}$ per cent (or thereabouts) for more than a year or two without provoking such a movement into cash, unless the convertibility of bank reserves into cash were to be restricted in some way. Such a move would represent a major change in the operation of the monetary system. It would mean, for instance, that the Bank of England would be the only bank that would no longer redeem sight deposits on demand.

The macroeconomic impact of a further reduction in Bank Rate or the rate paid on marginal reserves

11. As noted above, changes in Bank Rate induce corresponding changes in wholesale market interest rates. Depending on the expected duration of the change in Bank Rate, that in turn feeds through to the prices of a range of assets – including bonds, equities and the exchange rate – as well as the retail interest rates set by both banks and building societies. Those changes in asset prices and market interest rates then influence private spending decisions and the level of demand in the economy, enabling the MPC to meet the Chancellor's remit.

12. With Bank Rate already close to zero, the transmission to the real economy of any further cut in Bank Rate is likely to be more muted than normal. The MPC has on several occasions discussed lowering Bank Rate below 0.5%, but members were concerned that doing so could prove counterproductive by constraining the ability of some banks and building societies to extend new credit³. As noted above, lenders are typically reluctant to reduce deposit rates below zero. But the rates charged on many of their outstanding loans are contractually linked to the level of Bank Rate or LIBOR (which typically moves in tandem with Bank Rate). Unless these falls in contractually-linked loan rates are offset by falls in other funding costs, a reduction in Bank Rate will therefore lead to a compression in banks' net interest margins and a reduction in profitability. That, in turn, will constrain those institutions' ability to rebuild capital and to extend new loans. So far, the Committee has judged that an expansion of the asset purchase programme provides a more certain and effective route to increasing aggregate demand than a further reduction in Bank Rate, though it keeps the position under review.

13. It would be possible to reduce this adverse impact on bank profitability, and hence resilience, by altering the way in which reserves are remunerated. In particular, only a fraction of banks' reserves could be remunerated at Bank Rate, with reserves beyond a certain level being remunerated at a lower rate (which could be below zero). As it is the latter rate that represents the marginal return on reserves, it is this lower rate that would probably influence wholesale interest rates, including LIBOR. Consequently loan rates that are linked to Bank Rate would not fall, although those linked to LIBOR would. In this way, the general level of interest rates could be lowered without imposing as large a squeeze on banks' profitability, mitigating some of the adverse effects on the supply of credit.

14. Such an arrangement might seem natural in an environment where the central bank stipulates that banks hold a minimum of reserves related to the size of their deposits on their balance sheet ('required reserves'). The European Central Bank, the Danish National Bank⁴ and the US Federal Reserve operate such systems. Typically, however, banks hold additional reserves beyond that level ('excess reserves'), and it would be straightforward to remunerate these at a different rate. Indeed, that is typically the norm in such systems. In

³ See, for example, the Minutes of the June 2012 MPC meeting (available at www.bankofengland.co.uk/publications/minutes/Documents/mpc/pdf/2012/mpc1206.pdf).

⁴ There are no reserve requirements in Denmark, but there is an upper limit on banks' current accounts at the central bank, with excess deposits held in Certificates of Deposit, which can pay a negative interest rate, so the effect is similar.

the Danish example referred to above, it was just these excess holdings that were remunerated at a negative rate.

15. We do not operate such a system, however, in the United Kingdom. Before the crisis, the banks decided the average level of reserves they wished to hold over the period between MPC meetings, with the Bank making sure that the required quantity of reserves was supplied. And since the MPC began asset purchases financed by the issuance of reserves, the quantity of reserves in the system has been determined as a by-product of the MPC's asset purchase decision. As a consequence, there is no natural division between 'required' and 'excess' reserves: the greater the portion remunerated at the lower rate, the greater would be the likelihood of market interest rates coalescing at that level, but the greater the impairment of banks' profitability too. Moreover, as private financial contracts have generally been drawn up on the assumption of a single official reference rate, introducing a second key rate could introduce some legal uncertainty regarding which reference rate was appropriate. Nevertheless, once those issues have been resolved and all the necessary technical preparations completed, such a scheme could be introduced if desired.

Implications for policy

16. At its most recent meeting on 8-9 May, the Monetary Policy Committee voted to hold Bank Rate at 0.5% and the stock of assets purchased at £375bn. Based on this policy stance, its latest *Inflation Report* projections, published yesterday, suggested that inflation would fall back to the target by early 2015, with the risks surrounding that projection broadly balanced.

17. The Committee believes that there are no technical obstacles to reducing Bank Rate, including to below zero in which case banks would pay for holding reserves at the Bank of England. There are, however, limitations to the extent to which the rate of interest on reserves could be held below zero without inducing significant substitution into cash. Lowering Bank Rate from its present level could also have adverse consequences on bank profitability and the supply of credit, thus moderating the impact on aggregate demand; this effect might be attenuated to some degree by introducing a scheme with graduated remuneration of reserves. At the present juncture, the Committee believes that further asset purchases and targeted policies to restore the functioning of the monetary transmission mechanism, such as the Funding for Lending Scheme, represent more reliable tools for stimulating aggregate demand than does a further reduction in Bank Rate. But a

reduction in Bank Rate, including to below zero, remains an option which the Monetary Policy Committee will keep under review lest circumstances change in the future.