

Unconventional Monetary Policy in the UK: A Modern Money Critique

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ABSTRACT

The ongoing Global Financial Crisis (GFC) has posed a growing challenge to the implementation of monetary stimulus measures in both sovereign (e.g. US, UK, Japan) and non-sovereign (eurozone) economies. With the policy rate close to the zero nominal bound, the UK has relied on quantitative easing, ostensibly to improve market liquidity and/or stimulate economic activity, despite being freed from the policy constraints of a non-sovereign economy. The evidence regarding the macroeconomic effects of quantitative easing is, however, largely inconclusive. Meanwhile, UK growth forecasts have been revised downwards but, at the time of writing, the government remains committed to its fiscal austerity programme. In this paper we explore the origins of quantitative easing, its underlying objectives, the theoretical arguments for its use and the empirical evidence concerning its impact. Our analysis focuses on the policies of the Bank of England since the advent of the GFC, and is informed by the principles of Modern Monetary Theory.

1. INTRODUCTION

The Global Financial Crisis (GFC) posed a fundamental challenge to orthodox macroeconomic stabilisation policies. While monetary authorities quickly responded to the liquidity shock following the collapse of some large US financial institutions, ongoing downward adjustment of official rates was constrained by the zero nominal bound. In addition, there was a ‘disconnection between official rates and market rates’ (Joyce *et al.* 2012, p. F276). Hence, the conventional channel for monetary policy was soon exhausted.

Since 2008, many central banks have devised and implemented an assortment of ‘unconventional’ monetary policies, ostensibly to strengthen market liquidity and stimulate economic growth. The IMF has supported the use of such measures (see Sharpe and Watts, 2012). Quantitative easing (QE) is arguably the most ‘conventional unconventional’ monetary policy (King, 2009), and has been identified with the Bank of Japan’s (BoJ) market inter-

ventions between 2001 and 2006. QE entailed the purchase of government securities, primarily from commercial banks, by crediting their reserve accounts held at the central bank. While the BoJ targeted specific balances of excess reserves, the objective was to keep prices from declining and to provide a basis for sustained economic growth.

Between March 2009 and July 2012 the Bank of England (BoE), via its Asset Purchase Facility (APF), was authorised to purchase assets valued at £375 billion, mainly consisting of medium- to long-term UK government debt or 'gilts'. These asset purchases followed the official Bank Rate being cut to 0.5 per cent in March 2009, which the Monetary Policy Committee (MPC) indicated was its lowest practical level.

Initially, QE was implemented to address the threat of deflation. There is now a growing body of empirical evidence regarding the effectiveness of QE in the UK, but the results remain largely inconclusive, since the efficacy of QE is particularly difficult to ascertain in the context of broad macroeconomic uncertainty, fiscal withdrawal and a deepening eurozone malaise. The economic reality is clear, however, with the UK experiencing a double dip recession in 2011-2012 and an unemployment rate of about eight per cent. The UK economy is suffering the weakest recovery from a crisis in recent history (IMF, 2013).

The objectives of this paper are twofold. First, we explore the origins of QE, its underlying objectives, how it has been implemented, and the ostensible theoretical and empirical arguments for its use. Second, by an evaluation of the available evidence, we assess whether QE has fulfilled its stated objective(s). Our analysis focuses on the policies of the BoE since the advent of the GFC, and is informed by the principles of Modern Monetary Theory (MMT).

Section 2 outlines the context, theory and implementation of unconventional monetary policy. The BoE's recent QE policies are then discussed, along with the available evidence. Section 4 critically assesses QE policies by drawing on the principles of MMT. Concluding remarks then follow.

2. UNCONVENTIONAL MONETARY POLICY: CONTEXT, THEORY AND IMPLEMENTATION

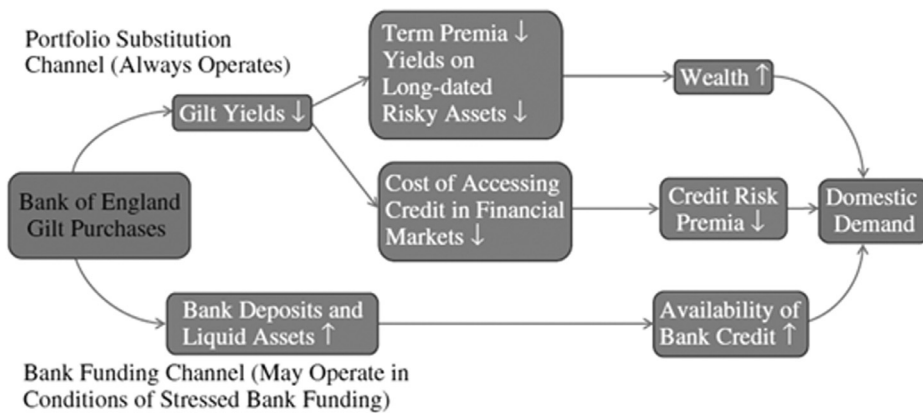
Unconventional monetary policy encompasses measures which cause a change in the size and/or composition of a central bank's balance sheet (Bernanke and Reinhart, 2004). These can be broadly classified, but not limited to: an explicit commitment to low policy interest rates; the provision of low-cost funds to financial institutions; the purchase of long-term government securities to reduce long-term interest rates; and, direct and specific interventions into credit markets (Klyuev *et al.* 2009).

Since the advent of the GFC, many central banks have devised and implemented unconventional monetary measures, given; (1) policy rates cannot be reduced below zero since agents can always hold (non-interest bearing) cash (i.e. the zero nominal bound); and, (2) solvency concerns surrounding

financial intermediation have disrupted the (standard) relationship between official and market rates (Joyce *et al.* 2012). The policy challenge became one of stimulating the economy so that conventional monetary policy, targeting price (and financial) stability, could be reinstated (Joyce *et al.* 2012). While there are no generally accepted ‘rules of engagement’, so that policies were sometimes ad hoc, unconventional monetary measures have ostensibly been geared to financial market stability, the facilitation of corporate financing and stimulating economic growth (Shiratsuka, 2010).

Asset purchases allegedly affect aggregate demand via a number of channels. First, purchases of long-term securities can reduce the long-end of the yield curve, causing investors to ‘rebalance’ their portfolios by purchasing assets with greater duration or higher credit risk. The resulting rise in asset prices eases credit conditions and generates capital gains for households, who are assumed to consume part of the increase in wealth (Joyce *et al.* 2012). This is the so called portfolio (re)balance channel (see Tobin, 1969; Brunner and Meltzer, 1973) and is illustrated by the upper half of Figure 1. Second, the central bank (explicitly) commits to a monetary stimulus allegedly reducing expected short- and long-term interest rates, while lowering uncertainty, increasing confidence and reducing risk premiums (Meaning and Zhu, 2011). This is the signalling channel.² Third, the bank funding/lending channel, the lower half of Figure 1, suggests that increased bank deposits and reserves created by asset purchases from non-bank institutions will increase the availability of bank credit, and so, banks may be more willing to lend (Benford *et al.* 2009; Joyce *et al.* 2012).

Figure 1. Transmission mechanisms of asset purchases



Source: Joyce *et al.* (2012)

The BoJ's unconventional monetary measures are an important precursor to recent policies.³ The Japanese economy had struggled to return to a stable growth path since the early 1990s. The BoJ expressed concern about the deflationary impact of weak demand. Also, 'Japanese financial institutions as a whole confronted severe credit constraints' (Shiratsuka, 2010, p. 88). In 2001, the economic conditions justified 'monetary easing as drastic as is unlikely to be taken under ordinary circumstances' (BoJ, 2001, no page numbers).

A zero-interest rate policy was implemented (1999-2000), with QE adopted subsequently (2001-2006). An explicit commitment to low (or zero) policy rates is alleged to anchor market expectations of inflation, and prevent a rise in real interest rates (Okina and Shiratsuka, 2004; Klyuev *et al.* 2009; Blinder, 2010).

QE involved an explicit target for bank reserves at the BoJ and consequently a decline in the overnight call (policy) rate. The BoJ also committed to increase its outright purchases of long-term government bonds (primarily from commercial banks), to inject liquidity which facilitated the other objectives. While purchases of long-term securities may signal an intention to reduce long-term interest rates (Klyuev *et al.* 2009; Blinder, 2010), the relatively small purchases of these securities and the 'banknote rule' indicate that this may not have been the BoJ's intention at this time (Shiratsuka, 2010).⁴ Furthermore, the liquidity injection

may not translate into larger amounts of credit provided to households and firms if banks are concerned about their capital adequacy, are in the process of reducing the size and the level of risk embedded in their balance sheets, and/or are risk adverse due to a weak economic backdrop in which to lend (Klyuev *et al.* 2009, p. 10).⁵

The BoJ's unconventional measures were to be abandoned when the consumer price index (CPI) stabilised or increased. This occurred on March 9, 2006. While the counterfactual is difficult to establish, empirical evidence suggests that the BoJ's policies had little effect on aggregate variables such as output and inflation (Borio and Disyatat, 2009; Shiratsuka, 2010; Wieland, 2010). Consequently, empirical studies have focused on financial variables and announcement effects.

In a survey of the literature, Ugai (2007, quoted in Blinder, 2010, pp. 18-19) concludes that the evidence 'confirms a clear effect' of the 'commitment' policy on short- and medium-term interest rates but offers only 'mixed' evidence that 'expansion of the monetary base and altering the composition of the BOJ's balance sheet' had much effect. Bernanke *et al.* (2004) found that the BoJ's policy reduced the yield curve by approximately 50 basis points (see also Oda and Ueda, 2007).

More recently, BoJ (2010) made an explicit commitment to reduce long-term interest rates via the provision of extraordinary amounts of long-term funds at extremely low interest rates (see also the ECB's LTROs; Meier, 2009).

However falling Treasury (risk-free) yields may not significantly affect 'private borrowing rates and credit market risk premiums as heightened risk aversion reduces the substitutability between government and private assets' (Klyuev *et al.* 2009, p. 10). This is perhaps why Bernanke (2009) distinguished between the unconventional measures of the BoJ and the US Federal Reserve (Fed), labelling the latter 'credit easing'.

Credit easing largely involves central bank interventions into specific segments of credit markets to extend credit or purchase securities, such as commercial paper, corporate bonds and asset-backed securities (Klyuev *et al.* 2009). The purchase of credit products may involve the simultaneous sale of government securities (compositional effect) and/or the increase in reserve balances (size effect). In any case, credit easing attempts to alleviate illiquid trading conditions, reduce liquidity premiums and encourage origination (Klyuev *et al.* 2009). Notwithstanding this, the distinction between quantitative and credit easing remains unclear.

In theory, given that 'private borrowing, lending, and spending decisions presumably depend on (risky) non-Treasury rates, reducing their spreads over (riskless) Treasuries will reduce the interest rates that matter for actual transactions *even if riskless rates are unchanged*' (Blinder, 2010, p. 4, emphasis in original). The effectiveness, however, will depend on the degree of substitutability between the assets being purchased.

In summary, unconventional monetary policies represent measures causing a change in the size and/or composition of the central bank's balance sheet. However low policy rates and unconventional measures are not necessarily separate policies, since the latter can cause the former via a size effect. Second, there are no universally-accepted definitions of quantitative easing and credit easing. QE involves a quantity change on a central bank's balance sheet. However, in this sense, QE and credit easing are not mutually exclusive. Finally, the unconventional policy mix is largely contextual and not necessarily doctrinal (Bernanke, 2009) so, in practice, central banks will tailor the overall policy package to their specific context, restrictions and shocks (Klyuev *et al.* 2009; Shiratsuka, 2010).

In the next section we outline and discuss the unconventional monetary policies of the BoE in the context of the GFC. To avoid definitional confusion, we adopt the BoE's terminology.

3. BANK OF ENGLAND AND THE CRISIS

3.1. Policy response

Economic activity in the UK has remained largely stagnant since the advent of the GFC. While fiscal stimulus measures were pursued temporarily, and sterling depreciated sharply following the Lehman Brothers collapse in September 2008, the BoE's Monetary Policy Committee (MPC) became increasingly con-

cerned with nominal spending, considering it too weak to meet the medium-term inflation target (Benford *et al.* 2009). Annual nominal GDP growth (to Q1 2009) had fallen by 2.4 per cent, its lowest level since records began in 1955 (Benford *et al.* 2009).

Consequently, the MPC decided that further monetary easing was required. Following cuts of three percentage points in the Bank Rate during Q4 2008 and a further 1½ percentage points in early 2009, the BoE then reduced the policy rate to 0.5 per cent in March 2009; the lowest rate since the BoE was formed in 1694 (Benford *et al.* 2009; Mitchell, 2009). The conventional monetary policy channel had now been exhausted.

The BoE turned to QE which involved the purchase of public and private sector assets using central bank money (i.e. creating reserves) (Benford *et al.* 2009). The Bank reaffirmed its commitment to price stability (i.e. an inflation rate of 2 per cent), while supporting the government's economic policies for growth and employment (Benford *et al.* 2009). The asset purchases were alleged to facilitate the achievement of these objectives. Asset purchases were conducted via the BoE's Asset Purchase Facility (APF) which was established as a subsidiary in January 2009. Both the APF and BoE were granted full indemnity by HM Treasury for any 'losses' incurred by the facility. Bean (2009, p. 3) summarises the mechanics of QE:

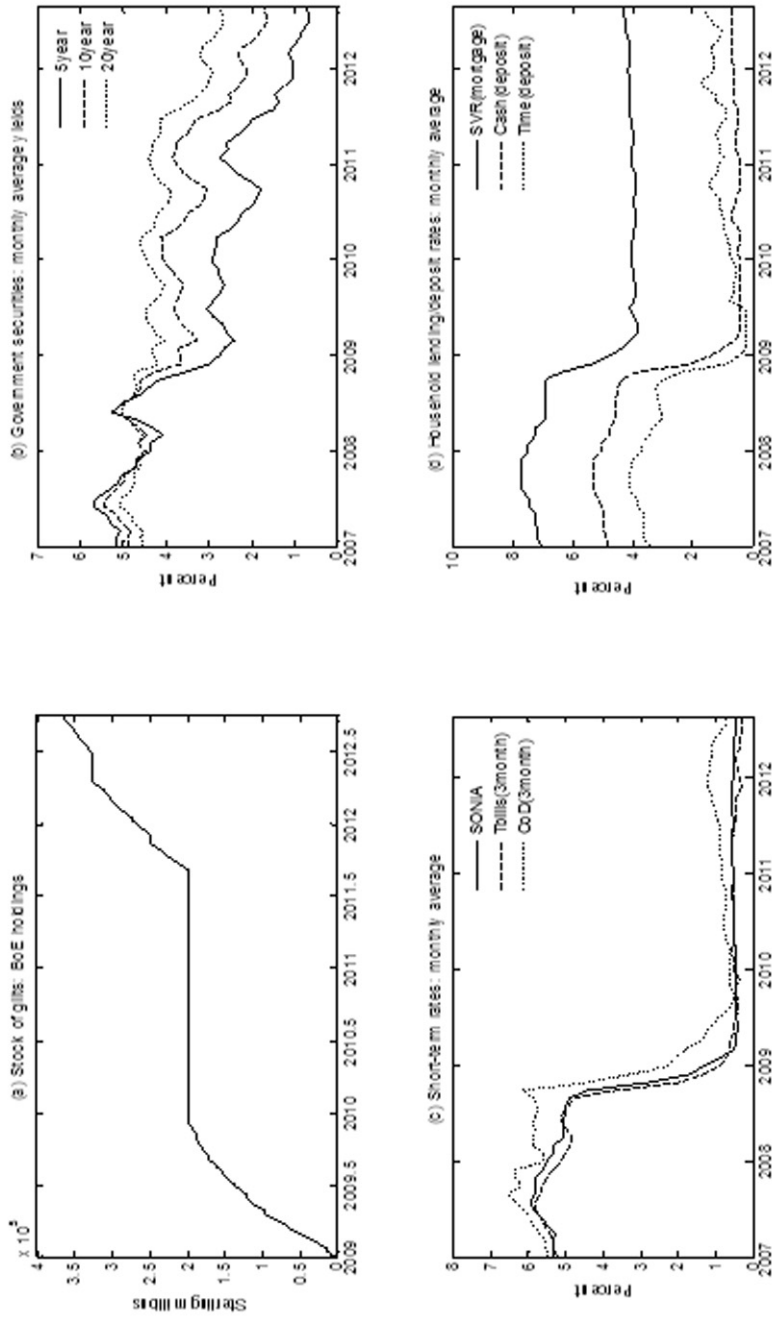
The Asset Purchase Facility buys assets funded by a loan from the Bank. In turn, the Bank funds that loan through additional reserve creation...When the Asset Purchase Facility buys a gilt from a pension fund, say, it can be thought of as paying with a cheque drawn on the Bank of England. The pension fund will then bank the cheque with its own commercial bank, so the latter now has a claim on the Bank of England — that is what reserves are.

Between March and November 2009 the MPC authorised the purchase of £200 billion of assets, primarily longer-term government bonds (gilts) (see Figure 2a). The first round of purchases represented nearly 30 per cent of the private sector's holdings of gilts and approximately 14 per cent of annual nominal GDP (Joyce *et al.* 2011a). A second round of purchases (£75 billion) began in October 2011, followed by £50 billion in February 2012 and a further £50 billion in July 2012. The BoE's gilt holdings from the APF are now worth £375 billion.

The APF also purchased private sector assets through the Corporate Bond Secondary Market Scheme, and Secured Commercial Paper Facility (BoE, 2012a). The purchases of high-quality commercial paper and corporate bonds, however, differed from the gilt purchases, since the operations were largely 'financed' by the issue of Treasury bills and the Debt Management Office's cash management facilities. Furthermore, '[t]he scale of these operations was much less than for the gilt purchases, consistent with the Bank act-

ing as a backstop purchaser/seller with the intention of improving market functioning' (Joyce *et al.* 2011a, p. 200).

Figure 2. UK financial market indicators



Drawing on the BoJ's earlier experience, the MPC had 'expected the additional monetary injection not to stimulate bank lending directly at the current juncture' (Bean, 2009, p. 4). Thus, APF's purchases were 'targeted at assets held primarily by the non-bank private sector' (Bean, 2009, p. 4). BoE (2012b) outlines the rationale:

The Bank of England electronically creates new money and uses it to purchase gilts from private investors such as pension funds and insurance companies. These investors typically do not want to hold on to this money, because it yields a low return. So they tend to use it to purchase other assets, such as corporate bonds and shares. That lowers longer-term borrowing costs and encourages the issuance of new equities and bonds.

Benford *et al.* (2009) provide a detailed account of the APF operations. While Bean (2009) and Benford *et al.* (2009) note that the MPC emphasises the portfolio (re)balance channel, the committee also appears reliant on 'well-established' monetarist relationships between narrow money, broad money and nominal demand (Meier, 2009).

Banks gain both new reserves and a corresponding new customer deposit when assets are purchased from non-banks. A higher level of liquid assets could encourage them to extend more new loans than they would otherwise have done... More bank lending to households and companies should help to support higher consumption and investment (Benford *et al.* 2009, p. 93).

The MPC also argues that the increased money supply could induce additional bank lending and, possibly, increase spending directly, for example, by raising inflation expectations' (Meier 2009, p. 24). Notwithstanding this, Benford *et al.* (2009, p. 98) maintain that, while the money multiplier (i.e. the ratio of broad money to central bank money) is 'not a direct causal relationship', '[i]n current conditions, the marginal impact on broad money of a change in reserves is likely to be much smaller than implied by the current ratio.' Furthermore, asset purchases are alleged to buttress other BoE initiatives to support the banking sector, 'to make the effect of higher reserves on lending (the bank lending channel) more powerful' (Benford *et al.* 2009, p. 98). Thus, the relevance of the money multiplier is not dismissed.

Interestingly, Meier (2009, pp. 24-25, emphasis added) notes:

[T]he liquidity injection of GBP 75 billion was calibrated so as to make up for a projected shortfall in nominal demand of about the same amount (5 per cent of GDP), based on an *assumed marginal money multiplier and money velocity of one*. The significant uncertainty surrounding the transmission of QE — explicitly acknowledged by the MPC — would seem to caution against relying too much on any such numerical assumptions. Indeed,

the MPC did not refer back to this quantitative rule of thumb when it increased the QE target to GBP 125 billion in May.

Benford *et al.* (2009, p. 91) argue rather vaguely that '[t]he expansion of broad money is a key part of the transmission mechanism for quantitative easing. It should ultimately lead to an increase in asset prices and spending and therefore bring inflation back to target.' This is a curious argument. First, the expansion of broad money is the outcome of a sequence of asset purchases (and higher asset prices) rather than its initiating cause. Second, the non-bank private sector has merely changed the composition of its asset holdings, so it is unclear why the increased stock of broad money, *ex post*, should promote higher spending more generally. Also, the purchase of gilts and/or private assets from the banks would be *expected* to raise asset prices.⁶ In the depressed economic climate, the BoE appeared reluctant to rely solely on these lower interest rates to stimulate spending via interest-sensitive components of investment and consumption. If the flood of reserves did not encourage banks to increase lending to the non-bank private sector, Benford *et al.* (2009, p. 93) argue that 'the extra reserves may contribute to a decline in the interest rate that banks pay to borrow from each other.'

Likewise, Meier (2009, p. 29) contends that '[t]o the extent that bank funding costs decline...banks might be induced to provide loans at lower interest rates...' However, since December 2010:

commercial banks are not required to disclose a [reserves] target to the BoE and all reserve balances attract the Bank Rate [i.e. a *floor* system] which is designed to establish a benchmark, short-term, risk-free rate [see Figure 2c]. Thus, there is no downward pressure on the market rate following the increase in reserves, above the level required for inter-bank transactions (Watts, 2012, p. 10).

In these circumstances, monetary management by the BoE is not required. The money multiplier will be further unpacked in Section 4. An orthodox perspective on the dangers of QE by the BoE is outlined by Meier (2009, pp. 19-20). He notes the possibility of reputational risk associated with 'squandering taxpayer money', even though the presence of strong 'capital cushions' or indemnity arrangements enables its balance sheet to withstand some financial loss. In addition, such loss making 'could weaken political support for its independence and erode the legitimacy of its policy mandate.' He expresses concern that unconventional operations place the BoE in roles normally assumed by the private sector or government. Further, while buying gilts avoids these risks, the purchases expose the BoE to the charge of capture by the fiscal authority, since these purchases alleviate interest rate pressures in the debt market, particularly in the presence of high deficits. Also, such large scale operations can give rise to policy conflicts over the appropriate extent

and timing of central bank purchases and sales. In short, Meier (2009) asserts that these unconventional monetary policies can promote market fears about fiscal dominance and the consequent loss of monetary policy discipline with respect to the pursuit of price stability.

Two comments are apposite. First, the motivation for ‘unconventional’ monetary policy in 2009 was the prospect of price deflation. Inflation has since recovered (see Figure 3d). Second, Meier (2009) fails both to recognise the role of the BoE as a currency ‘issuer’ as opposed to a currency ‘user’, and to outline what constitutes fiscal sustainability for a sovereign economy, where government has the full array of macroeconomic policy instruments at its disposal.

3.2. Empirical evidence

There is a growing body of empirical literature regarding the effectiveness of the BoE’s QE measures. These studies have focused largely on financial variables, revealing some support for the portfolio rebalancing channel, as asset prices have increased and consequently borrowing costs declined. Evidence of a change in spending is, however, more difficult to identify, particularly given the limited historical precedence for this type of policy (Joyce *et al.* 2012).

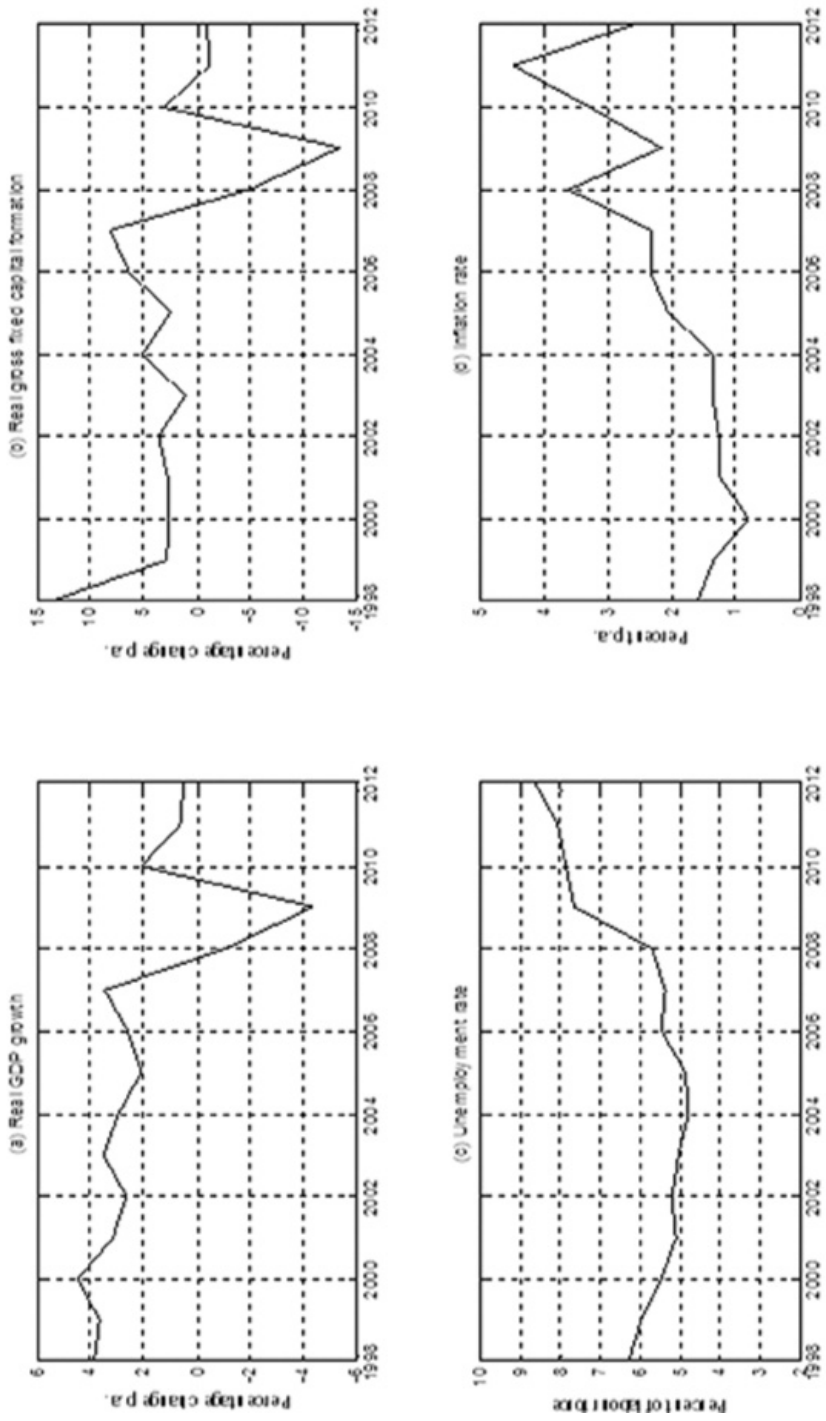
Announcement effects are estimated to have reduced gilt yields by 40–120 basis points (Meier, 2009; Joyce *et al.* 2011a, 2011b; Joyce and Tong, 2012). Christensen and Rudebusch (2012) decompose the announcement effects on gilt yields, suggesting that the decline had been driven principally by reductions in term premiums.⁷

Meaning and Zhu (2011) estimate a 56 basis point decline in BBB corporate bond yields, one day, and 98 basis points, two days, after the announcement of asset purchases. Furthermore, econometric estimates revealed the first round of asset purchases reduced gilt yields, with remaining maturity of 5 to 25 years, by 27 basis points, on average (see also Breedon *et al.* 2012).

Recent estimates of macroeconomic effects indicate that QE could have increased real GDP in the range of 1.5 to 2 per cent, and increased inflation by 0.75 to 1.5 percentage points (Joyce *et al.* 2011b; Bridges and Thomas, 2012; Kapetanios *et al.* 2012). In a counterfactual analysis, Pesaran and Smith (2012) estimate a temporary output growth increase of between 0.75 and 1 percentage point (see also Kapetanios *et al.* 2012).

It is, however, extremely difficult to isolate the impact of the BoE’s QE policy in the context of broad macroeconomic uncertainty, fiscal withdrawal and the deepening eurozone malaise. Consequently, empirical estimates are heavily qualified. Despite the BoE’s concerted, and ‘unconventional’, attempts to increase nominal demand growth since 2009, real economic growth in the UK remains stagnant and unemployment is high (see Figures 3a and 3c).

Figure 3: UK macroeconomic indicators



4. A MODERN MONEY CRITIQUE

Despite temporary fiscal stimulus measures during 2008 and 2009, UK policymakers have relied almost exclusively on (unconventional) monetary policy in response to the GFC, which brought about the worst economic downturn since the Great Depression (IMF, 2009). We now draw on the principles of Modern Monetary Theory to critically assess the BoE's QE measures, including the Bank's rationale for its asset purchases, in the context of fiscal austerity. We recognise, however, that central banks have limited capacity to stimulate economic activity.

Modern Monetary Theory (MMT) represents an 'accounting-consistent, operationally-sound theoretical approach to understanding the way fiat monetary systems work and how policy changes are likely to play out' (Mitchell, 2011). MMT makes the important distinction between a sovereign and non-sovereign economy, by drawing on the principles of Chartalism (see Minsky, 1986; Wray, 1998) and Functional Finance (Lerner, 1943; Forstater, 1999; Watts and Sharpe, 2013). According to Functional Finance, '[g]overnment should adjust its rates of expenditure and taxation such that total spending in the economy is neither more nor less than that which is sufficient to purchase the full employment level of output at current prices' (Lerner, 1943, p. 354).

From this perspective, the UK is a sovereign economy. The consolidated government sector (Treasury and central bank) is the sole 'issuer' of its own fiat non-convertible currency which is subject to a flexible exchange rate (Mitchell and Muysken, 2008; Kelton, 2011). Thus monetary policy is freed from the need to defend foreign exchange reserves, and the government does not face an *ex ante* or inter-temporal budget constraint (Sharpe and Watts, 2012; Watts and Sharpe, 2013). When HM Treasury spends, it credits the domestic bank accounts of firms that sell goods and services to the government, so the very act of spending leads to an increase in the stock of broad money. These *vertical* transactions between the government and the non-government sector increase reserve balances or *system liquidity*. Both government spending and the purchases of assets from the non-government sector by the central bank transfer fiat money to the non-government sector in the form of additional reserve balances. Conversely, taxes and sales of financial assets to the non-government sector reduce reserve balances. Thus, reserves are generally created when government expenditure exceeds taxes on a given day.

MMT incorporates the fundamental insight that net government spending within a sovereign economy actually increases bank reserves and places downward pressure on short-term interest rates, under a *corridor* system, because higher government expenditure increases system liquidity. Thus, competition is not intensifying to borrow a limited stock of *loanable* funds (Mitchell and Muysken, 2008). Conversely, if a budget surplus is realised a shortage of reserves typically occurs, which tends to increase the overnight (interbank) rate above the target rate. The BoE ensures that, collectively, com-

mercial banks can always acquire sufficient reserves balances to finance their interbank transactions. In the presence of a system shortage, open market operations are conducted by the BoE in the form of asset purchases from the non-government sector. Otherwise the integrity of the payments system is threatened.

The central bank within a sovereign economy does not sell assets to finance net government expenditure. Rather these sales, typically under repurchase agreement, represent an interest rate maintenance mechanism (Fullwiler, 2006; Mitchell and Muysken, 2008). However, in both the US and UK, the support rate paid on excess reserves equals the target rate (i.e. a *floor* system), so government debt does not need to be sold to maintain the target rate when the Treasury runs a deficit. Government securities within a sovereign economy, however, are popular in financial markets as they represent a risk-free interest-bearing asset which provides a benchmark for pricing risky financial securities, and facilitates the balancing of the risk structure of investment portfolios (Sharpe, 2013a).

MMT maintains that government spending within a sovereign economy is only constrained by the economy-wide availability of real goods and services, denominated in the national currency (Mitchell and Muysken, 2008). Sovereign economies are clearly distinct from eurozone (non-sovereign) economies which are 'users' of currency (euro). Eurozone economies have (voluntarily) given up their fiscal and monetary sovereignty and, consequently, now have limited policy options to respond to the ongoing crisis (Sharpe and Watts, 2012).

Despite temporary fiscal stimulus measures being adopted in 2008 and 2009, fiscal policy in the UK has been geared to fiscal austerity, a concept which has no resonance within a sovereign economy. The failure to understand the distinction between sovereign and non-sovereign economies in the context of QE is illustrated by Joyce et al. (2012, p. F286): 'Perhaps most concerning is whether central bank purchases of government bonds are helping to contribute to unsustainable levels of government debt.'⁸ On the other hand, a well-known advocate of MMT argues that '[t]he dominance of the neo-liberal ideology has led governments in most countries to have eschew the adoption of policies of direct job creation to reduce the rate of unemployment and to minimise these massive costs' (Mitchell, 2012a).

The UK government has rejected the use of stimulatory fiscal policy, despite its more predictable effect on economic activity. Instead, the government has perpetuated the usual neo-liberal claims, which sit comfortably with the Conservatives' policy agenda of small government (Juniper *et al.* 2013a). UK policymakers have frequently likened government budgets to household budgets, arguing that fiscal deficits increase future taxes which burden future generations, and also that deficits increase interest rates and/or are inflationary (Mitchell 2012a). The so called 'expansionary fiscal contractions' hypothesis, which promotes an extreme form of neo-liberal policy, has also been used to justify austerity measures. IMF (2012a) recently conceded that fiscal

multipliers are higher than previously claimed, which would have reinforced its skepticism about frontloading austerity measures. UK credit ratings have been downgraded by two major rating agencies, Moody's (February 2013) and Fitch (April 2013), thereby undermining the UK's AAA status, strengthening the Chancellor's objective of pursuing austerity measures, despite advice from the IMF.⁹

The UK economy remains in a parlous state, recording a double-dip recession in July 2012 (see Figure 3a; PwC, 2012a). Modest real GDP growth of 0.3 per cent in Q1 2013 averted a triple-dip recession. The unemployment rate has increased since 2004 (Figure 3c), and 'investment is still being held back by the overhang of uncertainty from the Eurozone crisis...' (PwC, 2012a, p. 6). Furthermore, household debt levels remain high (see below), which was an important feature of the pre-crisis period. Mainstream economist, Larry Summers, notes '[t]he cumulative output loss from this British downturn in its first five years exceeds even that experienced during the 1930s. Forecasts continue to be revised downwards, with a decade or more of Japan-style stagnation emerging as a real risk' (quoted in Mitchell, 2012a).

In assessing the operation of QE, the question to ask is why there is such a reliance on (unconventional) monetary policy when its real consequences are problematic, notwithstanding its capacity to manipulate the yield curve. This policy choice reflects, first, the dominance of monetary policy within the neo-liberal agenda, since the achievement of low and stable inflation is regarded as the most effective means for reducing the output gap (Blanchard et al. 2010; Sharpe and Watts, 2012). Second, fiscal stimulus measures were effectively ruled out, after being replaced by austerity measures which were designed to address the deficit 'blowout'.

As noted in Section 3, the objective of QE was to increase inflation via aggregate demand stimulus, because nominal spending was considered too weak to meet the medium-term inflation target (Benford *et al.* 2009). The BoE is particularly reliant on the portfolio rebalance channel, since bank deposits and gilts are not perfect substitutes because of either alleged 'preferred habitats' (see Modigliani and Sutch, 1966) or the pricing of duration risk (Joyce et al. 2012). In any case, the BoE (via the APF) buys a risk-free asset from the non-bank private sector, in exchange for another risk-free asset, a commercial bank deposit which is guaranteed. However, deposits typically pay lower interest than bonds (see Figures 2b and 2d) which reduces the interest-income of savers, who are then likely to reduce consumption expenditure (Mitchell, 2009).

In search of a higher return (given that these assets are imperfect substitutes), non-bank participants are expected to purchase commercial debt (paper or bonds), which is a risky asset. This reduces yields in commercial debt markets and allegedly encourages origination and investment. The 'search for yield' behaviour is also facilitated by the (limited) purchases of (risky) corporate debt by the BoE to ease funding conditions (Borio and Disyatat, 2009).

Gilt (benchmark) yields should also fall due to these purchases flattening the yield curves for government and corporate debt, assuming credit/liquidity risk premiums at the long-end of the yield curve remain at least unchanged or decline. The available evidence largely supports these outcomes. By targeting longer-term securities, the BoE hoped that aggregate demand would be stimulated with the lower cost of investment funds (Mitchell, 2009). Growth in real gross fixed capital formation, however, remains negative (Figure 3b) and business investment is subject to considerable uncertainty (PwC, 2012a, 2012b).

Borio and Disyatat (2009, p. 15, footnote 25) highlight the bizarre nature of asset purchases by a central bank:

...outright purchases of government bonds financed by the issuance of some form of central bank liability simply replace a claim on the government with a claim on the central bank in private sector portfolios, and simultaneously result in an increase in the central bank's claim on the government that is funded by borrowing from the private sector. It is as if the central bank borrowed from the private sector to lend to the government.

This perspective is reinforced by the BoE's transfer to HM Treasury in late 2012 of £35 billion in gilt interest payments acquired under QE. The Institute for Fiscal Studies has argued that the Chancellor must instruct the Office for Budget Responsibility to discount the sum when assessing whether HM Treasury is on track to meet its 'self-imposed' targets (see Emmerson and Tetlow, 2012). These transfers also strengthen the notion of central bank 'independence'. Meier (2009, p. 44) reinforces the conventional 'logic':

[T]he public's trust in the operational independence of the central bank ultimately rests on the sustainability of the public finances. While this is true under any circumstances, the notion gains particular salience at a time when the central bank conducts significant purchases in the (fast-growing) government bond market. This underscores the need for fiscal policy to resolutely dispel any doubts about sustainability.

So called 'independence', however, represents a political rather than operational issue. MMT rejects the notion of central bank independence, because day-to-day monetary management by the central bank requires close collaboration with the Treasury. Furthermore, MMT advocates emphasise the role and purpose of the consolidated government sector (Treasury and central bank) as the sole issuer of a fiat non-convertible currency and reject claims that debt agencies, such as the UK Debt Management Office, effectively limit the use of macroeconomic policy instruments (Lavoie, 2011; Juniper *et al.* 2013b).

Like 'debt monetisation' which reflects, in part, the institutional framework for conducting monetary policy (i.e. floor or corridor system) and the behavioural responses of the banks (Watts and Sharpe, 2013), QE is consid-

ered to be inflationary and has been implemented in both Japan and the UK with the explicit intention of increasing inflation. Despite this, claims that QE, via asset purchases from the non-bank private sector, increases the stock of broad money and hence inflation is just 'harking back to the old and flawed Monetarist doctrine based on the so-called Quantity Theory of Money. This theory has no application in a modern monetary economy' (Mitchell, 2009). The European Central Bank (ECB) Vice-President is clear:

Central bank reserves are held by banks and are not part of money held by the non-financial sector, hence not, *per se*, an inflationary type of liquidity. There is no acceptable theory linking in a necessary way the monetary base created by central banks to inflation. Nevertheless, it is argued by some that financial institutions would be free to instantly transform their loans from the central bank into credit to the non-financial sector. This fits into the *old theoretical* view about the credit multiplier according to which the sequence of money creation goes from the primary liquidity created by central banks to total money supply created by banks via their credit decisions (Constancio, 2011, p. 5, emphasis added).

Thus, any 'inflationary concerns associated with monetisation [QE] should be largely attributed to the impact on aggregate demand via a fiscal policy that is accommodated by the monetary authorities, who refrain from raising rates' (Borio and Disyatat, 2009, p. 21). However, even if QE did stimulate aggregate demand, given current excess productive capacity, firms will respond to increased demand via increased capacity utilisation.¹⁰ Hence demand-side inflation should not materialise until real productive capacity is exhausted (or significant bottlenecks exist) (Mitchell and Muysken, 2008).

Constancio (2011) also refers to the 'old' money multiplier theory which underpins the 'bank lending channel' outlined by Benford *et al.* (2009). The money multiplier is 'based on the erroneous belief that the banks need reserves before they can lend and that quantitative easing provides those reserves' (Mitchell, 2012b). This stems from the illusion that 'a bank is an institution that accepts deposits to build up reserves and then on-lends them at a margin to make money' (Mitchell, 2012b). MMT advocates reject the money multiplier since it has incorrectly reversed the causality. Loans create deposits which create reserves (Fullwiler, 2012).

Bernanke (2009) is also clear:

...the banking system has a large quantity of these [bank] reserves, but they are electronic entries at the Fed. They basically just sit there. They're not in circulation. They're not part of any broad measure of the money supply. They're part of what's called the monetary base.

If banks are short of reserves on any given day they can either borrow from each other in the interbank market or from the central bank through the

discount window, but the latter facility imposes a penalty (higher interest cost) (Mitchell, 2009; Borio and Disyatat, 2009).

[I]t is not deposits or reserve balances that constrain lending, but rather a banks own choice to lend given the perceived profitability of a loan-which can be affected by the ability to obtain deposits after the loan is made-and also given a perceived creditworthy borrower...and sufficient capital (Fullwiler, 2012).

However, UK consumers have revealed 'a growing reluctance to borrow, a deterioration in confidence about meeting repayments and an increase in those reliant on credit to pay for essential items' (PwC, 2012b, p. 5). 'Despite paying off an average of £355 in 2011, each household is still saddled with around £7,900 in unsecured debt, leaving UK consumers still among the most indebted in the world' (PwC, 2012b, p. 4). Consequently, there has been 'a sharp increase in the household saving rate to about 7½ percent...as households seek to reduce their high level of indebtedness' (IMF, 2012b, pp. 10-12).

Firms are also constrained. During Q3 2012, lenders reported that the demand for credit from small and large UK companies had fallen and default rates had increased (BoE, 2012c). This was attributed to a number of factors, including weak consumer spending and a lack of capital investment opportunities, 'as firms have remained cautious given the current economic environment and uncertainty relating to the euro area' (BoE, 2012c, p. 6). Capital investment as a share of GDP remains at a post-war low (IMF, 2013). Baker Tilly's (2012) small and medium enterprise (SME) distress monitor revealed that cash flows and profits were under serious threat. Specifically, 24 per cent of SMEs had insufficient funds to meet their short-term debt obligations. This is particularly problematic since SMEs account for more than 50 per cent of private sector employment in the UK (IMF, 2012b).

Drawing on available evidence and the principles of MMT, the pursuit of fiscal austerity by the Coalition government is likely to limit the impact of QE on domestic demand (see Figure 1) since; (1) neither households nor firms are likely to increase expenditure, given high levels of private debt and considerable uncertainty; (2) while declines in credit risk premiums reduce the cost of finance, it does not remove the uncertainty, particularly surrounding the eurozone crisis, which has been identified as an important barrier to investment among UK firms; and, (3) banks do not lend reserves, so that increasing the 'availability of bank credit' will not stimulate lending in the absence of credit worthy borrowers. The latter is synonymous with Keynes' reference to *pushing on a string*.

With UK fiscal policy being geared towards austerity and deficit reduction, policymakers (and the public) have sought solutions to the ongoing crisis from central bankers. While central banks can reduce interest rates, during a recession and heightened uncertainty, this is not a clear and effective

means of stimulating aggregate demand. Likewise, in the US, Richard Fisher, President and CEO of the Federal Reserve Bank of Dallas, notes that the return to economic growth ‘cannot be accomplished by the FOMC [Federal Open Market Committee] alone. Whatever [central bankers] do with monetary policy will be of limited utility, if not counterproductive, unless it is complemented by sensible fiscal policy that restores confidence and puts the American people back to work’ (Fisher, 2010).

Fiscal stimulus is now required to stimulate aggregate demand and employment in the UK. This would not threaten fiscal sustainability requirements nor intensify so called debt dynamics since the UK is a sovereign economy (Watts and Sharpe, 2013). As mentioned, IMF (2012a) now concedes that fiscal multipliers are higher than previously thought, in the range of 0.9 to 1.7. Mitchell (2012b) succinctly summarises the options policymakers face with regard to stimulatory measures:

Treasury fiscal operations which directly inject aggregate demand into the spending stream are likely to be more effective than asset swaps which lead to an increase in reserves but do nothing to improve the confidence of the households and firms. After all, quantitative easing does not lead to job offers as a matter of course. Fiscal policy can be expressed in terms of explicit job offers and you cannot get a more direct stimulus than that.

5. CONCLUSION

QE has been undertaken by the Bank of England since 2009 to stem deflationary pressures in the context of weak demand growth following the worst economic downturn since the Great Depression. Inflation has since recovered, but real GDP growth remains weak, and unemployment rates are stubbornly high. The preference for unconventional monetary measures over fiscal stimulus reflects the strength of the prevailing neo-liberal doctrine. However, UK policy rates remain at their lowest practical level and the evidence about the effectiveness of QE in influencing macroeconomic outcomes is unconvincing.

Nevertheless, at the time of writing, the UK government remains committed to its small government agenda, since fiscal policy is considered to be largely ineffective. This strengthens its commitment to fiscal austerity to reduce the debt to GDP ratio. In this vein, additional asset purchases have not been ruled out by BoE officials (see *Telegraph*, 2012).

QE is not the only option for UK policymakers. Advocates of Modern Monetary Theory argue that fiscal stimulus offers a proven transmission mechanism to stimulate aggregate demand growth in a sovereign economy, without promoting adverse debt and deficit dynamics (Watts and Sharpe, 2013). For the UK, a sovereign economy, the return to sustained growth faces *only* an ideological barrier.

Accepted for publication: 10th July 2013

ENDNOTES

1. Newcastle Business School and the Centre of Full Employment and Equity, University of Newcastle, University Drive, Callaghan, Australia, timothy.sharpe@newcastle.edu.au; martin.watts@newcastle.edu.au.
2. An example of the signalling channel is a long-term commitment to a low official (policy) rate. In mid-December 2012, the Federal Reserve committed itself to maintain the Federal Funds rate close to zero until the unemployment rate dropped below 6.5 per cent, subject to the persistence of a low inflation rate. As a consequence, interest rates were expected to remain low until at least mid-2015.
3. Another early form of unconventional monetary policy was 'Operation Twist' (1961-1965) which involved the simultaneous purchase of long-term, and sale of short-term, Treasury securities via open market operations conducted by the US Federal Reserve (Modigliani and Sutch, 1966). Short-term interest rates increased, which was designed to attract foreign capital and investment to stem a balance of payments crisis and gold reserve drain. The economic context subsequently changed with the abandonment of the Bretton Wood exchange rate system (1944-1971). The Fed now sets the policy rate which is typically geared to an inflation target. In 2011, the US implemented a similar 'Operation Twist' strategy, ostensibly to avoid raising inflationary expectations.
4. The 'banknote rule' requires that the outstanding amount of long-term government bonds held by the BoJ does not exceed the outstanding balance of banknotes issued.
5. This is further discussed in Section 4.
6. The BoE's (2012b) contribution to public education, 'Quantitative Easing Explained', appears designed to confuse with statements such as, '[t]he purpose of the purchases was and is to inject money directly into the economy in order to boost nominal demand.' The BoE apparently wishes to perpetuate the spectre of helicopters dropping cash into the UK economy, thereby directly injecting purchasing power to boost demand and counter deflation (see Friedman, 1969). However we are then reassured that asset purchases do not either 'involve printing more banknotes' or, following earlier bailouts, 'giving money to banks' (BoE, 2012b).
7. The effect of asset purchases on international capital flows may also be non-negligible. Most estimates have focused on the US, for example, Fratzscher *et al.* (2012) find that the Fed's interventions resulted in an international portfolio rebalance which was more significant than its domestic rebalance. Chen *et al.* (2011) reveal that announcement effects in the US had a significant impact on government bond yields, equity prices and exchange rates among many emerging Asian and Latin American economies (see also Akyüz, 2012; Suttle *et al.* 2012).
8. The findings of Reinhart and Rogoff (2010), that the median real per capita GDP growth rate in advanced economies falls when gross public debt reaches a critical threshold share of GDP, has increased the urgency for fiscal austerity. Some UK policymakers have embraced this argument. Herndon *et al.* (2013, pp. 2-3) tried to replicate Reinhart and Rogoff's (2010) empirical work and found that 'coding errors, selective exclusion of available data, and unconventional weighting of summary statistics lead to serious errors that inaccurately represent the relationship between public debt

and growth among 20 advanced economies in the post-war period.' Notwithstanding this, there are difficulties in isolating a one-way causal relationship between the level of debt and the growth rate, because causation also runs from slower growth to rising debt, so all empirical estimates should be treated cautiously (see Sharpe, 2013b).

9. Both Japan and the US have been subject to credit downgrades in recent years with minimal effect on their long-term bond rates. Furthermore, IMF (2012b, p. 38) concede that 'fiscal indicators such as deficit and debt levels appear to be weakly related to government bond yields for advanced economies with monetary independence' (e.g. Japan, US, UK).

10. OECD (2012) data reveal that UK output gaps have been negative since 2009.

REFERENCES

Akyüz Y (2012) 'The boom in capital flows to developing countries: will it go bust again?', *Ekonomitek*, 1(1), 63-96.

Baker Tilly (2012) 'SME distress monitor: a gradual healing?', Baker Tilly UK, Winter 2012-2013. Available at <http://www.bakertilly.co.uk/SiteCollectionDocuments/RR/Baker%20Tilly%20SME%20Distress%20Monitor%20-%20National.pdf>

Bean C (2009) 'Quantitative easing: an interim report', speech at the London Society of Chartered Accountants annual lunch, October. Available at <http://www.bankofengland.co.uk/publications/speeches/2009/speech405.pdf>

Benford J, Berry S, Nikolov K, Young C and Robson M (2009) 'Quantitative easing', *Bank of England Quarterly Bulletin*, Q2, 90-100.

Bernanke B S (2009) 'The crisis and the policy response', speech at the Stamp Lecture, London School of Economics, January. Available at <http://www.federalreserve.gov/newsevents/speech/berake20090113a.htm>

Bernanke B S and Reinhart V R (2004) 'Conducting monetary policy at very low short-term interest rates', *American Economic Review*, 94(2), 85-90.

Bernanke B S, Reinhart V R and Sack B P (2004) 'Monetary policy alternatives at the zero bound: an empirical assessment', *Brookings Papers on Economic Activity*, 2, 1-78.

Blanchard O, Dell'Ariccia G and Mauro P (2010) 'Rethinking macroeconomic policy', IMF Staff Position Note no. 3, Washington DC: International Monetary Fund.

Blinder A S (2010) 'Quantitative easing: entrance and exit strategies', CEPS Working Paper no. 204.

BoE (2012a) 'Asset purchase facility: quarterly report Q2', Bank of England. Available at <http://www.bankofengland.co.uk/publications/Documents/other/markets/apf/apfquarterlyreport1207.pdf>

BoE (2012b) 'Quantitative easing explained', Bank of England. Available at <http://www.bankofengland.co.uk/monetarypolicy/Pages/qe/default.aspx>

BoE (2012c) 'Credit conditions survey: survey results 2012 Q3', Bank of England. Available at <http://www.bankofengland.co.uk/publications/Documents/other/monetary/ccs/creditconditionssurvey120926.pdf>

BoJ (2001) 'New procedures for money market operations and monetary easing', Bank of Japan Media Release, March 19. Available at https://www.boj.or.jp/en/announcements/release_2001/k010319a.htm/

BoJ (2010) 'Statement on monetary policy', Bank of Japan Media Release, March 17. Available at http://www.boj.or.jp/en/announcements/release_2010/k100317.pdf

Borio C and Disyatat P (2009) 'Unconventional monetary policies: an appraisal', Bank for International Settlements Working Paper no. 292.

Breedon F, Chadha J S and Waters A (2012) 'The financial market impact of UK quantitative easing', *Bank for International Settlements Papers*, 65, 277-304.

Bridges J and Thomas R (2012) 'The impact of QE on the UK economy – some supportive monetarist arithmetic', Bank of England Working Paper no. 442.

Brunner K and Meltzer A H (1973) 'Mr Hicks and the "monetarists"', *Economica*, 40(157), 44-59.

Chen Q, Filardo A, He D and Zhu F (2011) 'International spillovers of central bank balance sheet policies', *Bank for International Settlements Papers*, 66, 230-274.

Christensen J and Rudebusch G D (2012) 'The response of interest rates to US and UK quantitative easing', *The Economic Journal*, 122, F385-F414.

Constancio V (2011) 'Challenges to monetary policy in 2012', speech at the 26th International Conference on Interest Rates, Frankfurt am Main, 8 December.

Emmerson C and Tetlow G (2012) 'Autumn statement 2012: more fiscal pain to come?', Institute for Fiscal Studies. Available at <http://www.ifs.org.uk/bns/bn136>

Fisher R W (2010) 'Remarks before the New York Association for Business Economics'. Available at <http://www.dallasfed.org/news/speeches/fisher/2010/fs101019.cfm>

Forstater M (1999) 'Functional finance and full employment: lessons from Lerner for today?', *Journal of Economic Issues*, 33(2), 475-482.

Fratzscher M, Lo Duca M and Straub R (2012) 'Quantitative easing, portfolio choice and international capital flows', mimeo, European Central Bank, February.

Friedman M (1969) *The Optimum Quantity of Money and Other Essays*, Chicago IL: Aldine Publishing Company.

Fullwiler S T (2006) 'Interest rates and fiscal sustainability', Wartburg College and the Center for Full Employment and Price Stability Working Paper no. 53.

Fullwiler S T (2012) 'Krugman's flashing neon sign', *New Economic Perspectives*, April 1. Available at <http://neweconomicperspectives.org/2012/04/krugmans-flashing-neon-sign.html>

Herndon T, Ash M and Pollin R (2013) 'Does high public debt consistently stifle eco-

conomic growth? A critique of Reinhart and Rogoff', Political Economy Research Institute Working Paper no. 322.

IMF (2009) *World Economic Outlook: Crisis and Recovery*, Washington DC: International Monetary Fund.

IMF (2012a) *World Economic Outlook: Coping with High Debt and Sluggish Growth*, Washington DC: International Monetary Fund.

IMF (2012b) 'United Kingdom: 2012 article IV consultation', IMF Country Report no. 190, Washington DC: International Monetary Fund.

IMF (2013) *World Economic Outlook: Hopes, Realities, Risks*, Washington DC: International Monetary Fund.

Joyce M, Miles D, Scott A and Vayanos D (2012) 'Quantitative easing and unconventional monetary policy – an introduction', *The Economic Journal*, 122, F271-F288.

Joyce M and Tong M (2012) 'QE and the gilt market: a disaggregated analysis', *The Economic Journal*, 122, F348-F384.

Joyce M, Tong M and Woods R (2011a) 'The United Kingdom's quantitative easing policy: design, operation and impact', *Bank of England Quarterly Bulletin*, Q3, 200-212.

Joyce M, Tong M and Woods R (2011b) 'The economic impact of QE: lessons from the UK', VOX. Available at <http://www.voxeu.org/article/qe-working-evidence-uk>

Juniper J, Sharpe T P and Watts M J (2013a) 'Full employment and the active state', presented at the Social Policy Association Conference, Sheffield, UK, July 6-8.

Juniper J, Sharpe T P and Watts M J (2013b) 'Why hasn't post-Keynesian economics embraced the principles of Modern Monetary Theory?', presented at the First World Keynes Conference, Izmir, Turkey, June 26-29.

Kapetanios G, Mumtaz H, Stevens I and Theodoridis K (2012) 'Assessing the economy-wide effects of quantitative easing', *The Economic Journal*, 122, F316-F347.

Kelton S (2011) 'Limitations of the government budget constraint: users vs. issuers of the currency', *Panoeconomicus*, 1, 57-66.

King M A (2009) 'The Governor's speech to the CBI dinner', East Midlands Conference Centre, Nottingham, January. Available at <http://www.bankofengland.co.uk/publications/Documents/speeches/2009/speech372.pdf>

Klyuev V, de Imus P and Srinivasan K (2009) 'Unconventional choices for unconventional times: credit and quantitative easing in advanced economies', IMF Staff Position Note no. 27.

Lavoie M (2011) 'The monetary and fiscal nexus of neo-chartalism: a friendly critical look', mimeo, University of Ottawa.

Lerner A (1943) 'Functional finance and the federal debt', *Social Research*, 10(1), 38-51.

- Meaning J and Zhu F (2011) 'The impact of recent central bank asset purchase programmes', *BIS Quarterly Review*, December, 73-83
- Meier A (2009) 'Panacea, curse, or non-event? Unconventional monetary policy in the United Kingdom'. IMF Working Paper no. 163.
- Minsky H P (1986) *Stabilizing an Unstable Economy*, New Haven CT: Yale U P.
- Mitchell W F (2009) 'Quantitative easing 101', Billy Blog, March 13. Available at <http://bilbo.economicoutlook.net/blog/?p=661>
- Mitchell W F (2011) 'MMT – an Accounting consistent, operationally-sound theoretical approach', Billy Blog, August 29. Available at <http://bilbo.economicoutlook.net/blog/?p=15842>
- Mitchell W F (2012a) 'When evidence strips one back to their ideological core', Billy Blog, September 20. Available at <http://bilbo.economicoutlook.net/blog/?p=21032>
- Mitchell W F (2012b) 'UE is needed rather than QE', Billy Blog, June 12. Available at <http://bilbo.economicoutlook.net/blog/?p=19828>
- Mitchell W F and Muysken J (2008) *Full Employment Abandoned: Shifting Sands and Policy Failures*, Cheltenham: Edward Elgar.
- Modigliani F and Sutch R (1966) 'Innovations in interest rate policy', *American Economic Review*, 56(1), 178-197.
- Oda N and Ueda K (2007) 'The effects of the Bank of Japan's zero interest rate commitment and quantitative monetary easing on the yield curve: a macro-finance approach', *Japanese Economic Review*, 58(3), 303-328.
- OECD (2012) 'Economic outlook: annex tables', *Economic Outlook*. Available at http://www.oecd.org/document/3/0,3343,en_2649_34573_2483901_1_1_1_1,00.html
- Okina K and Shiratsuka S (2004) 'Policy commitment and expectation formation: Japan's experience under zero interest rates', *North American Journal of Economics and Finance*, 15(1), 75-100.
- Pesaran M H and Smith R P (2012) 'Counterfactual analysis in macroeconometrics: an empirical investigation into the effects of quantitative easing', CESifo Working Paper no. 3879.
- PwC (2012a) 'UK economic outlook: July 2012', PricewaterhouseCoopers LLP. Available at http://www.pwc.com/im/en/assets/document/UK_Economic_Outlook_July_2012.pdf
- PwC (2012b) 'All change please: precious plastic', PricewaterhouseCoopers LLP. Available at <http://www.ukmediacentre.pwc.com>
- Reinhart C M and Rogoff K S (2010) 'Growth in a time of debt', Paper presented at the American Economic Association meeting, January.
- Sharpe T P (2013a) 'A modern money perspective on financial crowding-out', *Review of Political Economy*, (forthcoming).

Sharpe T P (2013b) 'Institutional arrangements and public debt threshold limits', *International Review of Applied Economics*, (forthcoming).

Sharpe T P and Watts M J (2012) 'Policy advice in crisis: how inter-governmental organisations have responded to the GFC', *Journal of Australian Political Economy*, 69, Winter, 103-133.

Shiratsuka S (2010) 'Size and composition of the central bank balance sheet: revisiting Japan's experience of the quantitative easing policy', *Monetary and Economic Studies*, 28, 79-106.

Suttle P, Huefner F, Koepke R and Tailor A (2012) 'Capital flows to emerging market economies', *Institute of International Finance*, Research Note. Available at <http://www.iif.com/download.php?id=tUva9R6G68s>

Telegraph (2012) 'BoE's Charlie Bean says door still open for more QE', Telegraph UK. Available at <http://www.telegraph.co.uk/finance/economics/9708984/BoEs-Charlie-Bean-says-door-still-open-for-more-QE.html>

Tobin J (1969) 'A general equilibrium approach to monetary theory', *Journal of Money, Credit and Banking*, 1(1), 15-29.

Ugai H (2007) 'Effects of the quantitative easing policy: a survey of empirical analyses', *Monetary and Economic Studies*, 25(1), 1-47.

Watts M J (2012) 'Debt management in the U.K. and Australia: breaking the nexus between fiscal and monetary policy?' mimeo, Centre of Full Employment and Equity.

Watts M J and Sharpe T P (2013) 'Institutional arrangements and the "immutable" laws of debt dynamics', *Journal of Post Keynesian Economics*, 36(1), 59-84.

Wieland V (2010) 'Quantitative easing: a rationale and some evidence from Japan', in Reichlin L and West K (eds) *NBER International Seminar on Macroeconomics*, University of Chicago Press.

Wray L R (1998) *Understanding Modern Money: The Key to Full Employment and Price Stability*, Cheltenham: Edward Elgar.