

New Evidence on the Effectiveness of 'Quantitative Easing' in Japan

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Abstract. A policy called 'Quantitative Easing' was adopted by the Bank of England in March 2009; policies by central banks in several further countries have introduced similar policies. This paper re-considers the policy in Japan, the country of its origin, by (a) analyzing the channels through which such a policy is seen to work by the literature; (b) reconsidering the policy concept and its origin, including implications for alternative transmission channels; (c) analyzing the actual implementation of monetary policy by the Bank of Japan; and (d) presenting new empirical evidence on the effectiveness of different interpretations of 'quantitative easing' in the Japanese case. It is found that the policy introduced by the Bank of Japan in March 2001 and maintained until March 2006 makes little empirical difference, while 'quantitative easing' in the original sense of the word (namely an expansion in credit creation) is likely to be successful. Suggestions are made as to how this can be achieved. The final section concludes and draws general policy implications.

Keywords: general-to-specific methodology, monetary policy, operating tools, quantitative easing

JEL Classification: E41, E52, E58

1 Introduction

A monetary policy called 'quantitative easing' was first officially adopted by the Japanese central bank, early in the new millennium. It officially ended in 2006. A policy of the same name was adopted by the Bank of England in March 2009 in the aftermath of the 2008 financial crisis. At about the same time, the US central bank adopted a policy referred to as 'credit easing' by Fed chairman Bernanke (Bernanke, 2009) and distinguished by him in his verbal description from Japanese-style 'quantitative easing'. Meanwhile, the Japanese government called upon the Bank of Japan in November 2009 to resume its policy of quantitative easing. However, Bank of Japan governor Shirakawa declined, arguing that such a policy was not effective.²

¹ The authors would like to thank many colleagues who have commented on parts of this paper, but in particular Nimish Arora for his excellent research support. Werner is the corresponding author, who would like to thank the source of all wisdom (Jeremiah, 33:3).

² See, for instance, Financial Times, Lex column, 'Bank of Japan', 1 December 2009.

Thus, while the concept of ‘quantitative easing’ may have become a successful Japanese export, it seems currently less popular in its home country.

Since the announcement of the adoption of ‘quantitative easing’ by the Bank of England and related policies by other central banks, there has been much debate about their role, transmission mechanism and effectiveness. It is the purpose of this paper to reconsider the Japanese case of ‘quantitative easing’ (short QE below) by addressing gaps in the literature and implementing a different methodology from previous papers, in order to glean lessons for the application of this or related policies in post-banking crisis circumstances in other countries.

The remainder of this introduction is dedicated to an analytical review of the literature on QE, especially on the Japanese case. The latter seeks to identify the main gaps in the literature concerning monetary policy implementation in Japan. It is found that the literature has so far not carefully examined the questions of what the goal of monetary policy has been, and which tools have in practice (as opposed to in theory) been employed by central banks. Further, the literature is dominated by theories depending on sweeping assumptions about markets, information and the role of expectations, while being short on theories that make fewer assumptions and are more in line with the real world. It is also found that the origin and implications of the concept of QE have not been examined. The paper attempts to fill some of these gaps and starts in section 2 with a brief exploration of the definition and origin of QE. This provides further indication of a suitable research strategy and methodology that might help fill some of the current gaps in the literature. Section 3 applies this empirical research methodology by conducting time series analysis of the monetary transmission mechanism and employing the general-to-specific econometric model selection methodology. Section 4 concludes and highlights some potential implications for QE in other countries. It is found that QE in its original sense may well be highly effective, while QE in the sense employed by the Bank of Japan was correctly predicted (by those who first used the term ‘quantitative easing’ in this context) to remain without much impact. Suggestions are made as to how ‘true QE’ could be implemented.

1.1 The literature on QE in Japan

The conduct of monetary policy when interest rates approach zero has attracted significant attention by economists. A number of influential writers have tackled the issue from a theoretical perspective. While this literature was inspired by the Japanese experience, it remains confined to a theoretical general equilibrium model, without empirical input or direct attempts to model the Japanese case. This includes Krugman (1998), Fujiki, Okina and Shiratsuka (2001), Woodford (2003), Svensson (2003), Eggertsson and Woodford (2003) and Benhabib, Schmitt-Grohé, and Uribe (2003). Fujiki, Okina and Shiratsuka defined QE as a policy to purchase long-term government bonds and increase bank reserves held with the central bank. They conclude that QE will not have any effect, when adopted under conditions of a zero interest rate policy, because it does not affect the general equilibrium level of interest

or the amount of bank lending. In the words of Eggertsson and Woodford (2003): “‘quantitative easing’ implies no change in interest-rate policy should neither stimulate real activity nor halt deflation; and this is equally true regardless of the kind of assets purchased by the central bank.” This literature tends to share the assumptions of complete and efficient financial markets, whereby no agents face any constraints to their ability to borrow against future income. All of these papers assume rational expectations and general equilibrium. Instead of featuring an explicit or mechanistic monetary transmission mechanism, they rely on the role of (unobservable) expectations and their impact on interest rates, which in turn are considered the most important component of monetary transmission. Interestingly, Fujiki et al. (2001), employees of the Bank of Japan, published their paper denying the effectiveness of QE in February 2001, shortly before QE was said to have been introduced by the Bank of Japan.

Others have adopted a more pragmatic approach by not assuming frictionless markets, but instead discussed the tools and policy options available to central banks as nominal interest rates approach zero. This literature includes Blinder (2000), Bernanke (2002), Clouse et al. (2004), and Bernanke and Reinhart (2004). Their relevance depends on the empirical evidence. There is, indeed, a substantial body of empirical works on the Japanese experience, which covers several years of data useable for hypothesis testing. As focus in this paper rests on empirical evidence, the key papers within this body of literature are briefly surveyed here:

Bank of Japan staff Kimura et al. (2002) and Shirakawa (2002) define QE as the policy adopted by the Bank of Japan in March 2001. They find that, one year after its adoption, QE was not effective. (They also argue that no monetary policy whatsoever would be effective under zero interest rates). Model assumptions include rational expectations. The proposed transmission mechanism includes an ‘asset supply channel’ and a ‘monetary base channel’. The goal of central bank policy is described as including the stimulation of the economy (nominal GDP), with the implied intermediary goal of stimulating bank lending.

Bernanke, Reinhart and Sack (2004), define QE as an increase of the size of the central bank’s balance sheet, and distinguish it from changes in the composition of the latter (by increasing the holdings of long-term government bonds). Rational expectations are assumed. Their empirical work measures effectiveness by the success in lowering long-term interest rates and finds some positive results for the US, based on a simulation model, and more negative results in the case of Japan.

Okina and Shiratsuka (2004), also Bank of Japan employees, define QE as the ‘abundant provision of funds’ by the central bank. They also assume that monetary policy effectiveness can primarily be measured in its success to influence (short-term and) long-term interest rates and that the transmission mechanism is via the formation of expectations due to a commitment to such a policy. Their empirical work analyses yield curves, spot and forward rates. They conclude that QE could not dispel deflationary expectations, as long-term yields remained low (‘indicating financial-

market expectations that deflation will persist’).³ Bank of Japan (BoJ) staff Oda and Ueda (2005) also focus on the impact of QE on long-term interest rates. They find that QE has reduced medium- to long-term interest rates. They find no significant ‘portfolio balancing’ effect of asset purchases. Meanwhile, Kimura and Small (2006), hailing from the BoJ and the Fed, respectively, find some positive, though mixed results of ‘portfolio rebalancing’ due to BoJ asset purchases, which reduced risk premiums on assets such as government bonds, while they argue it may have increased risk premiums on equities and low-grade bonds.

Meanwhile, Kobayashi, Spiegel and Yamori (2006) adopt a different methodology. They argue that “one of the primary motivations offered by the Bank of Japan for its quantitative easing program... was to maintain credit extension by the troubled financial sector”. Hence they examine bank equity values and find that excess returns were larger when the Bank of Japan increased its long-term government bond purchases, and that the markets perceived this policy to help weaker banks disproportionately. In this sense, they find QE to have had some effect – even if not fulfilling its ‘primary motivation’. Ugai (2006, BoJ) surveys empirical studies and concludes that findings are mixed, with the largest effect of QE found in form of their impact on expected future short-term interest rates. Fukuda (2008) argues that the BoJ’s QE policy was “useful in improving macroeconomic performance such as average stock prices“, through the liquidity provision and lender-of-last-resort function.

1.2 Gaps in the literature and contribution of this paper

From the above overview of relevant literature, several features emerge. Firstly, the Bank of Japan and its staff appear somewhat more negative on the role and potential effectiveness of QE than non-BoJ researchers. It is also surprising that as late as in February 2001, one month before the adoption of the alleged starting-date of QE (March 2001), BoJ staff argued that such a policy would not have any effect. This obviously raises the question why the Bank of Japan chose to adopt it (and not possible alternatives). We will return to this question and its implications shortly.

Analytically, the various papers on QE share a number of significant common features:

- (a) The functioning of the economy: The literature is based on models of financial markets and the economy that make several result-critical assumptions which identify a stylised economy largely at odds with empirical reality, namely one without any friction or financial constraints, rational expectations and perfect information, driven by expectations and without a mechanical monetary transmission mechanism. There is no attempt

³ They discount the possibility that expectations are less important than supply-demand considerations that would tend to push up bond prices due to central bank bond purchases. By contrast, the Bank of England has argued that low bond yields are a reflection of successful QE, as they have helped to lower long-term interest rates, which is expected to stimulate the economy (see, for instance, Miles, 2009).

at verifying empirically that the highlighted monetary policy instruments are in a stable relationship with an overall target variable (such as nominal GDP).

- (b) The goal of central bank policy: The papers assert or imply a policy objective that the Bank of Japan is said to follow. The imputed goals of the Bank of Japan range from price stability to the stimulation of economic activity, nominal GDP growth and even stock prices. No author thought it necessary to discuss the topic further, let alone offer any empirical evidence to support assumptions about central bank policy.
- (c) The intermediary targets and operating tools of central bank policy implementation: The papers have adopted the methodology of uncritically accepting the stated targets and tools of monetary policy implementation and their relative importance, compared to other (actual or potential) targets and tools of monetary policy implementation.
- (d) The original meaning of QE: The literature fails to engage with the question of the origin of the concept of QE at the Bank of Japan, which may well yield some insights into the thinking of the central bank that first adopted it.

All four issues can be considered weaknesses:

- (a) The functioning of the economy:

The approach to assume market perfections may be less than useful in attempting to tackle the events observed in countries prior to the introduction of QE, namely banking crises (Bernanke et al., 2004, Miles, 2009). In such models, banks often do not feature (sometimes there is not even a monetary system), and if they do, they are not distinguished from non-bank financial intermediaries. However, both Japan in the 1990s and the US and UK more recently, have experienced financial crises centring on failures in the banking system. There is considerable empirical evidence that banks are 'special' (e.g. Fama, 1985, Ashcraft, 2005), yet the literature on QE fails to incorporate banks in models that afford them special features not offered by non-bank financial intermediaries. The reliance on expectations as the sole transmission mechanism also raises a number of analytical problems.⁴ It precludes the possibility of a direct, more mechanical mechanism for monetary policy to affect the economy, as is frequently called for (e.g. Bernanke et al., 2004, Miles, 2009, Werner, 1997).⁵ In summary, there is a gap in the literature on QE concerning less idealised and more realistic models of the economy that include financial friction and constraints,

⁴ This strand of literature suffers from and at times concedes the time inconsistency problem identified by Kydland and Prescott (1977), which renders monetary policy ineffective.

⁵ Bernanke et al. (2004) have pointed out, the assumptions of frictionless financial markets and complete separation of monetary and fiscal policies which characterise this literature "to be sure, are rather strong. If these assumptions do not hold, we may have some basis for believing that quantitative easing will be effective." (p. 18). While remaining "agnostic about the precise mechanisms by which quantitative easing may have its effect" Bernanke et al. point to "the undeniable fact that, historically, money growth and inflation have tended to be strongly associated. It follows, according to this argument, that money creation will raise prices independent of its effects on the term structure" (p. 18).

imperfect information and a plausible model of why banks are 'special'. Finally, empirical tests should be conducted concerning the actual relationship of monetary policy instruments and final targets (such as nominal GDP).

(b) The goal of central bank policy:

Research on the Bank of Japan and other central banks has delivered some evidence that monetary authorities may pursue a more complex set of goals and objectives than that assumed in the above literature. Authors such as Acheson and Chant (1972, 1973a, 1973b), Friedman (1982) and Forder (2002) have argued that central banks are bureaucracies that follow their own dynamics and goals and may often act as interested parties placing a higher priority on goals other than the officially stated ones of price stability or economic stimulation. Concerning the Bank of Japan, Bernanke (2000) complained that "in recent years BoJ officials have – to a far greater degree than is justified – hidden behind minor institutional or technical difficulties in order to avoid taking action." Three months before tightening monetary policy, BoJ governor Hayami stated in May 2000: "When the economy recovers, as is now happening, it might well be the case that efforts for structural reform might be neglected due to a sense of security" (Hayami, 2000, p. 8). Economist (and now Bank of England MPC member) Adam Posen concluded at the time (Posen, 2000): "Between a process of elimination, and careful reading of the statements of BoJ policy board members, I am led to the conclusion that a desire by the BoJ to promote structural change in the economy is a primary motivation for the Bank's passive-aggressive acceptance of deflation" (p. 22). He argued that this was an example of a "broadly held view at the bank" (of Japan), whereby "it is clear that 'creative destruction', invoked and praised repeatedly in Hayami's speeches, is the motivating ideology" (p. 206). The Financial Times wrote in 2001 that "Hayami is convinced that Japan needs to undergo radical corporate restructuring and banking reforms before it can recover – and that he has a duty to promote this.... Mr Hayami fears that if he loosens policy too quickly, it would remove the pressure for reform" (Tett, 2001). Among other BoJ staff, Mr Okina (1999, p.181), a frequent author on QE, has explained the disadvantages of an economic recovery: "Couldn't the current low interest rate policy cause some harm? The answer is yes. . . . Low interest rates as a pain reliever may induce a further delay in the progress of structural adjustment. When the economy recovers, nonperforming loans could become collectable, excess inventories could be sold, and excess equipment could become operational." According to him, such a state of affairs—a recovery—was to be avoided. Werner (2003) analyses less well-known statements by Bank of Japan leaders and conducts empirical research on its policy implementation. It is found that there is little evidence that the policy goal of the Bank of Japan was demand stimulation or price stability (in the sense of wishing to fight deflation). Instead, there is some evidence pointing towards the pursuit of a political agenda, which may have involved prolonging the recession.

Should such findings prove to be true, this would influence the assessment of whether its policy tools have been successful: 'success' depends on the definition of the goal. As a result, there is a gap in the literature concerning research on the effectiveness of QE (and other monetary policy tools) that does not merely assert or impute specific

goals of the decision-makers at central banks, but either sets out to empirically investigate discernable goals, or adopts an agnostic view that is not coloured by assumptions.

(c) The intermediary targets and operating tools of central bank policy implementation:

Central banks have argued that secrecy about their true actions is an important aspect of their work (Goodfriend, 1986). A number of researchers have argued that it may not be appropriate to merely accept a central bank's description of its monetary policy implementation, as such a description may be coloured in order to convey a particular message. Friedman (1982) and Forder (2002) have made this case for other central banks. In the case of the Bank of Japan empirical evidence suggests that the central bank has in the past misled researchers and the general public concerning its monetary policy targets, tools and operational details. Horiuchi (1993) has shown how the Bank of Japan's official adoption of a 'monetarist' monetary targeting framework for monetary policy implementation in 1978 was "a political tactic" that "should be regarded as the [central] bankers' ploy to guard their own autonomy in the face of such political pressures" (p. 114). Instead of adopting a monetarist policy framework, as officially claimed, the Japanese central bank was practicing 'informal guidance' of bank credit through its so-called 'window guidance' procedure of imposing credit growth allocation quotas (both quantitatively and qualitatively) on the banking system (of the type today implemented by the Chinese central bank). Werner (2002) established that despite repeated claims by the Bank of Japan that such credit controls had been abolished in 1982, they continued to operate, and were the main tool of monetary policy implementation, throughout the 1980s, until at least 1991. Again, there is a dearth of literature on QE that either remains agnostic about the true operating tools of central banks or conducts empirical research into establishing what they are.

(d) The original meaning of QE:

Research on the historical origin of the term 'quantitative easing' may yield insights into its role; no such research has been conducted.

The above issues create a new challenge for the empirical researcher: we would like to know whether monetary policy was effective in Japan, but we cannot be sure at the outset which monetary policy instrument has been the main instrument actually employed by the central bank, and what the objective of its policy has really been.

This paper aims to fill these gaps in the literature. First it will present a brief analysis of the historical origin of the expression QE. Secondly, in this paper an empirical methodology is adopted that does not require a significant number of heroic assumptions concerning the functioning of markets or the role of banks. Thirdly, in this paper an agnostic stance is adopted concerning both the goal of central bank monetary policy and the main monetary policy tool chosen by the central bank. Instead, an empirical methodology is adopted that aims at identifying the main policy

tools. To do this, a horse race between alternative potential monetary policy instruments is conducted by testing their explanatory power in accounting for movements in a target variable that the public and/or the government would be most interested: nominal GDP.⁶ Secondly, we can use the empirical model thus derived to test whether there are any structural breaks at the end of March 2001, and during the March 2001 to mid-2006 period (especially in the relationship between call rates and reserves), as would be expected if a significant change in the monetary policy instrument did in fact take place at that time.

Without priors on the goal or implementation tool of monetary policy, an empirical methodology would be appropriate which can conduct a 'horse race' between different potential monetary policy tools or intermediary targets: empirical data should be able to tell us which monetary policy tool central banks could actually use, since not all potential monetary policy tools are likely to have the same impact on potential target variables. To address this issue, in this paper a macroeconomic modelling approach is adopted, based on the general-to-specific empirical methodology. This enables us to identify which of the possible central bank instruments could possibly have been the focus of monetary policy implementation. It is against this empirical background that any particular policy, including the policy of QE, must be judged.

2.1 The definition of QE today

The first non-Japanese central bank to adopt QE defines it as follows:

"... interest rates cannot fall below zero. So if they are almost at zero and there is still a significant risk of very low inflation, the Bank can increase the quantity of money – in other words, inject money directly into the economy. This process is sometimes known as 'quantitative easing'. ... the Bank buys assets from private sector institutions... and credits the seller's bank account. So the seller has more money in their bank account, while their bank holds a corresponding claim against the Bank of England (known as reserves)." (Bank of England, 2009).

The Bank of Canada offers the following concise definition (Bank of Canada, 2009):

Quantitative easing is the purchase by a central bank of financial assets through creation of central bank reserves. As a result, the price of the purchased assets (which can include government securities or private assets) rises and the yield on the assets falls. The expansion of reserves available to commercial banks also encourages them to increase the supply of credit to households and businesses.

In economic terminology, quantitative easing uses 'unsterilized' funding; in other words, the reserves of the central bank are increased to finance asset purchases.⁷

⁶ On the desirability of nominal GDP targeting, see, for instance, McCallum (1999, 1997)

⁷ The Bank of England (2009) defines QE as follows: "When the interest rates are almost at zero and there is still a significant risk of very low inflation, the Bank can increase the quantity of money – in other words, inject money directly into the economy. This process is sometimes known as quantitative easing."

Meanwhile, and by contrast, the Bank of Canada (2009) defines ‘credit easing’ as follows:

Credit easing is the targeted purchase by a central bank of private sector assets in certain credit markets which are important to the functioning of the financial system. The goal of credit easing is to reduce risk premiums and improve liquidity and trading activity in specific markets so that credit will flow and demand in the economy will expand.

Credit easing can be done on a ‘sterilized’ basis; in other words, there is no need to increase central bank reserves in order to undertake credit easing. If undertaken on an unsterilized basis, this amounts to combining credit easing with quantitative easing.

2.2 The original definition of QE and its implications

How did the first central bank to adopt QE define it? It is by no means straightforward to answer this question or even pinpoint the first official use of the expression. QE is a literal translation of the Japanese term *‘ryōteki kinyū kanwa’* (量的金融緩和, ‘quantitative monetary easing’). The literature universally cites the policy statement publicized on 19 March 2001 concerning new operating procedures (Bank of Japan, 2001b) as the beginning of QE. Indeed, Bank of Japan publications dating mainly from 2002 and especially 2003 and onwards (such as Bank of Japan 2002a) claim that the Bank of Japan adopted a policy with this name on 19 March 2001.

However, perusal of this publication (cited in full in Box 1 below) indicates that, surprisingly, no reference at all is made to the concept of ‘quantitative easing’ or even a similar variant, neither in the Japanese original, nor the English translation. Even the words ‘quantitative’ do not appear. Yet, Bank of Japan staff later claimed that on this day the central bank announced to implement “quantitative easing” and “to finally discard the orthodox operating framework and adopt a new framework under which it set the outstanding balance of current accounts at the Bank, instead of the uncollateralized overnight call rate, as the main operating target” (Kimura, 2002, p. 4).

It turns out that the claim that this policy constitutes ‘quantitative easing’, and hence that QE was first implemented on 19 March 2001, was only made much later, retrospectively. Out of 29 speeches given by Bank of Japan board members during the course of the year 2001, only 11 mention the expression QE at all, and mostly only once, without any claim that the policy started in March 2001. The majority of speeches – almost all of which are about monetary policy – fail to make any reference to QE. Bank of Japan governor Hayami refused to make any reference to QE whatsoever during 2001, and much of 2002, in his speeches. Speeches by other members of the Bank of Japan leadership in 2002 gradually – and only ex post – hardened the subsequent official Bank of Japan stance that the policy adopted by the Bank of Japan on 19 March 2001 was in fact ‘quantitative easing’.

On 9 December 2002, in a speech, governor Hayami stated for the first time that the Bank of Japan adopted a “so-called quantitative easing framework in March 2001”, although he only uses the expression once (Bank of Japan, 2002b). Initially, governor Fukui (appointed in February 2003) was equally reluctant to use the expression QE.

This changed however in June 2003, when he stated that “The current framework we are adopting is called quantitative easing and was introduced on March 19, 2001” (Bank of Japan, 2003). Mr Fukui uses the expression QE 26 times in this speech, hitherto the highest use on record by a wide margin by a senior central banker. This represents a turning point in the use of this label by the Bank of Japan. Thus it may be argued that QE was only fully recognized as an important monetary policy concept by the central bank that made first use of it in 2003, two years after its alleged, and backdated start.

Why the Bank of Japan’s initial reluctance to use the expression, but subsequent enthusiastic embrace of it? This finding is perhaps less surprising if one realizes that the Bank of Japan had for many years, and at least until February 2001, claimed that a policy called “quantitative easing ... is not effective (p. 98)” and rejected its use for monetary policy outright (Bank of Japan, 2001a). It turns out that the Bank of Japan was not the inventor of the expression ‘quantitative easing’. Who then coined it, and what are the economic concepts associated with it? It is found that this expression had been used since the mid-1990s by critics of the Bank of Japan and its monetary policy.

After the beginning of the Japanese recession in the early 1990s, the expression was first used by the then chief economist of Jardine Fleming Securities (Asia) Ltd. in his client presentations and speeches in Tokyo in 1994. Using a macroeconomic model not reliant on frictionless markets and general equilibrium but assuming quantity rationing and credit constraints and incorporating a credit-creating banking sector, Werner had earlier warned of the likely collapse of the Japanese banking system and a major economic slump (Werner, 1991, 1992, 1994). In 1994 and subsequent years, Werner made recommendations about how to stimulate the economy and end the recession (e.g. Werner, 1995, 1996). Based on his model (published in Werner, 1997), a new type of monetary policy was recommended that would neither utilise price tools (interest rate reductions, which were in his views not likely to help, even though interest rates were still above 4% at the time), nor traditional quantities (bank reserves or money supply aggregates, which in his view were also likely to have little effect as intermediary target). Instead, he recommended that the central bank directly target the quantity of credit creation by the banking system. This could be expanded through a number of measures, which will be discussed in the last section of this paper. In order to emphasise the quantitative nature of this policy tool, while explicitly differentiating it from traditional monetarist (bank reserves or money supply) policy, Werner coined a new expression, namely ‘quantitative easing’ (see, for instance, Werner, 1995).

As can be seen from Box 1, the Bank of Japan’s monetary policy implemented between 19 March 2001 and 2006 mainly consisted of a significant expansion in bank reserves, which were quantified by explicit targets. This was supplemented by other, much vaguer policies. It is curious that the Bank of Japan chose to use the expression QE (significantly after the fact) to describe standard monetarist bank reserve targeting and expanded open market operations, especially since for such standard procedures a plethora of widely-known expressions already existed (‘money supply expansion’,

'bank reserve expansion', 'high powered money expansion', 'base money expansion', 'monetary base expansion', 'M0 expansion', etc.).

Box 1: The Bank of Japan's Announcement of New Procedures of 19 Mar 01

New Procedures for Money Market Operations and Monetary Easing

March 19, 2001, Bank of Japan (For immediate release)

1. Japan's economic recovery has recently come to a pause after it slowed in late 2000 under the influence of a sharp downturn of the global economy. Prices have been showing weak developments and there is concern about increase in downward pressures on prices stemming from weak demand.
2. In retrospect, both monetary and fiscal policies have taken considerably strong actions during the past decade in Japan. Whereas fiscal policy has repeatedly implemented expansionary measures, the Bank of Japan has adopted a policy of maintaining interest rates at levels unprecedentedly low during the history of central banking at home and abroad, thereby providing ample liquidity. All this notwithstanding, Japan's economy has failed to return to a sustainable growth path, and is now faced again with a threat of deterioration.
3. In light of this, the Bank has come to a conclusion that the economic conditions warrant monetary easing as drastic as is unlikely to be taken under ordinary circumstances. Accordingly, the Bank decided at its Monetary Policy Meeting of today to take the following policy actions.
 - a) Change in the operating target for money market operations
The main operating target for money market operations be changed from the current uncollateralized overnight call rate to the outstanding balance of the current accounts at the Bank of Japan. Under the new procedures, the Bank provides ample liquidity, and the uncollateralized overnight call rate will be determined in the market at a certain level below the ceiling set by the Lombard-type lending facility.
 - b) CPI guideline for the duration of the new procedures
The new procedures for money market operations continue to be in place until the consumer price index (excluding perishables, on a nationwide statistics) registers stably zero percent or an increase year on year.
 - c) Increase in the current-account balance at the Bank of Japan and declines in interest rates
For the time being, the balance outstanding at the Bank's current accounts be increased to around 5 trillion yen, or 1 trillion yen increase from the average outstanding of 4 trillion yen in February 2001 (see Attachment). As a consequence, it is anticipated that the uncollateralized overnight call rate will significantly decline from the current target level of 0.15 percent and stay close to zero percent under normal circumstances.
 - d) Increase in outright purchase of long-term government bonds
The Bank will increase the amount of its outright purchase of long-term government bonds from the current 400 billion yen per month, in case it considers that increase to be necessary for providing liquidity smoothly. The outright purchase is, on the other hand, subject to the limitation that the outstanding amount of long-term government bonds effectively held by the Bank, i.e., after taking account of the government bond sales under gensaki repurchase agreements, be kept below the outstanding balance of banknotes issued.
4. The Bank of Japan has decided to implement these policy measures with firm determination with a view to preventing prices from declining continuously as well as preparing a basis for sustainable economic growth.
5. In order to make this monetary easing fully effective in restoring Japan's economy on a sustainable growth path, progress in structural reforms with respect to the financial system, e.g., resolution of the non-performing asset problem, as well as in the area of economy and industry is essential. Structural reform may be accompanied by painful adjustments. Without such adjustments, however, neither improvement in productivity nor sustainable economic growth can be obtained. The Bank of Japan strongly hopes that decisive actions be taken to address fundamental problems both with a clear support of the nation for structural reform and under a strong leadership of the government of Japan.

Attachment

March 19, 2001 Bank of Japan

At the Monetary Policy Meeting held today, the Bank of Japan decided, by majority vote, to change the guideline for money market operations for the inter-meeting period into the following:
The Bank of Japan will conduct money market operations, aiming the outstanding balance of the current accounts at the Bank at around 5 trillion yen.
Should there be a risk of financial market instability, e.g., a rapid surge in liquidity demand, the Bank will provide ampler liquidity irrespective of the guideline above.

(Reference)

Meeting hours : 9:01 a.m. to 5:27 p.m.

Members present :

Masaru Hayami (Chairman, Governor)

Sakuya Fujiwara (Deputy Governor)

Yutaka Yamaguchi (Deputy Governor)

Susumu Taketomi

Toshio Miki

Nobuyuki Nakahara

Eiko Shinotsuka

Kazuo Ueda

Teizo Taya

(Others present)

From Ministry of Finance: Seiichiro Murakami, Senior Vice Minister (from 9:01 a.m.)

From Cabinet Office: Kazumasa Iwata, Director General for Economic Assessment and Policy Analysis (9:01 a.m. to 12:12 p.m.); Takanori Sakai, Senior Vice Minister (from 1:01 p.m.)

Mr. Fujiwara was absent from 9:27 a.m. to 10:55 a.m. due to his attendance at a Diet meeting.

In summary, since the introduction of the expression in 1994, until February 2001, the Bank of Japan argued, in opposition to its critics, that a policy of ‘quantitative easing’ would not work. When it announced that it would increase the banks’ reserves considerably on 19 March 2001, it did not consider this policy to be identical with ‘quantitative easing’, since it did not use this expression to describe it. This state of affairs continued for most of 2001.

Given that already half a dozen of names exist to describe this policy it is not obvious why the Bank of Japan would wish to use a new, less well-known expression to describe this old, traditional monetarist policy. Further, it is even less obvious why it would choose an expression that had been coined and was associated with critics of the Bank of Japan and that the central bank had publicly denounced as unworkable for several years. Yet, from 2002 onwards, the Bank of Japan claimed retrospectively that the policy adopted on 19 March 2001 was, in fact, ‘quantitative easing’, backdating the beginning of this policy to a time when it was not in fact referred to as such. This is a puzzling phenomenon that requires an explanation. Unfortunately, the literature on QE has so far not made any reference to it, let alone offered any answers.

Suffice here to note that the adoption of the relatively little-known expression QE by the Bank of Japan could hardly have been designed to clarify, inform and increase transparency, as the use of existing and established expressions to describe existing and well-established policy tools, would serve this purpose better. Furthermore, the expression QE had been specifically coined in order to describe a new policy that was distinct from both interest rate and monetarist money supply policy, both of which Werner (1995) predicted would not be effective.

A number of hypotheses can be formulated for the Bank of Japan’s choice of terminology and timing. Clearly, further research is required concerning this topic. Here, two obvious hypotheses will merely be mentioned. Firstly, the expression QE may have been adopted for political reasons, for instance to suggest that the central bank was in fact listening to its critics and adopting suitable policies recommended by them – irrespective of whether this was actually the case or not. The first use of QE by a central bank may thus have simply been due to PR reasons, without a more substantial rationale. Secondly, it may be that the Bank of Japan, aware that traditional reserve targeting alone would be insufficient to achieve a recovery in nominal GDP, may have wished to ‘prove’ that QE as demanded by critics does not work. Thirdly, the policy adopted by the Bank of Japan in 2001 may have served, as other policies did in the past, to detract from the true monetary policy tools or intermediary targets actually employed by the Bank of Japan (an issue to be examined shortly below). It is to an empirical examination of the question which monetary policy tools can be shown to have been more relevant that we must now turn.

3 Empirical work

Whether the Bank of Japan did in fact “discard the orthodox operating framework” (Kimura, 2002) in 2001 or not is an empirical question that can be investigated. Meanwhile, research into the question whether QE was effective must recognize that the Bank of Japan, when it adopted a policy that was later given this name, may not necessarily have aimed at stimulating demand or fighting deflation. Nor is it clear that the particular tools emphasized by the Bank of Japan in its 19 March 2001 public announcement were the only operational policy tools or intermediate instruments used by the central bank.

3.1 Methodology

Given the above concerns, it would appear more useful to step back from specific announcements by central banks (‘what they say’) and instead examine which of a potential list of policy tools can empirically be shown to have been more relevant (‘what they do’).

We thus propose to compare a list of potential central bank tools and instruments (including different interpretations of what could be meant with ‘quantitative easing’) with a generally accepted final target variable for monetary policy. What should this target be? While central banks, reflecting the experience of the 1970s, prefer to discuss the risks of inflation, it is, as seen above, difficult to establish without doubt what their true aims may be. However, no such doubts exist when it comes to the aims of their constituents, the governments and general public: their main interest is nominal GDP growth. Unusually for macroeconomics, significant numbers of macroeconomists from various persuasions agree that a nominal GDP growth target more readily reflects the objectives of governments and economic agents (Tobin, 1980, Bean, 1983, Meade, 1984, Gordon, 1985, Hall, 1985, Taylor, 1985, McCallum, 1987, 1997, 1999, Frankel, 1995). This has become particularly acute in an era of declining inflationary pressures and rising fears about deflation: the Bank of Japan, for instance, may well be fighting a 1970s war against inflation, but the government has long recognized that it is interested in boosting nominal GDP.

We will thus attempt to establish empirically which policy tools and instruments are, given the past historical relationships, more likely to be useful in influencing nominal GDP growth. An attractive empirical methodology for this purpose is the general-to-specific model selection methodology (the ‘London School of Economics methodology’, a.k.a. as the ‘Hendry method’), which allows all competing monetary policy tools, intermediary instruments and differing interpretations of ‘quantitative easing’ to be equally represented in the first general model, whose features and statistical characteristics can also be tested (see, for instance, Campos, Ericsson and Hendry, 2005). Then, an objective sequential procedure of downward reduction to the parsimonious form is adopted, which amounts to a horse-race between the contenders and enables us to assess the relative performance of the competing policy models.

Differing scenarios could emerge from this process: from an undecided, balanced outcome that fails to eliminate any of the variables to the elimination of all policy tools and instruments bar one. In the latter case, strong evidence would exist in favour of one particular monetary policy transmission channel. Theoretical discussions about the usefulness of a particular tool may turn out to be futile if this tool is not significant as an explanatory variable of the target variables. This empirical benchmark can then be compared with particular actions taken by central banks in order to assess their likely relevance or effectiveness. The findings would, in the latter case, have clear implications for the design of effective monetary policy in general, and effective 'quantitative easing' policy in particular.

The following list of potential central bank policy instruments or intermediary targets have been cited in the literature on the Japanese experience since the 1990s:

- (a) Price tool: interest rates. In Japan, the central bank originally emphasized the official discount rate (ODR) in its operations as the most representative price tool. However, since the mid-1980s the role of the overnight uncollateralized call rate was increased purposely with the aim to replace the ODR (Fukui, 1986). For our purposes we are in particular interested in the events starting in the 1980s. The difference between the two is likely to be insufficiently large to warrant the inclusion of both. The variable more likely to reflect the policy interest rate among the two during our observation period is thus the **call rate**.
- (b) Quantity tool I: traditionally, monetarist theory emphasized 'high powered money' (aka M0, base money, monetary base), which consists of two components: notes and coins in circulation and banks' reserves held in their accounts with the central bank. There are theoretical reasons for considering notes and coins in circulation less a tool of active monetary policy, as the endogenous component is likely to be large or dominant (see Okina, 1993; Goodhart, 1989). The more relevant variable is thus likely to be **bank reserves**, which is also consistent with both the literature on QE and the Bank of Japan's announcement of 19 March 2001.
- (c) Quantity tool II: it has been argued by the literature that the central bank's balance sheet may be considered a tool of quantitative monetary policy (e.g. Bernanke et al., 2004). Specifically, both literature and the Bank of Japan's announcement of 19 March 2001 emphasise the role of purchases of long-term assets, mainly government bonds, by the central bank. More recently, the Federal Reserve has purchased a wide variety of assets, which has resulted in a dramatic expansion in its balance sheet. This policy tool can most simply be quantified by considering the growth of **central bank assets** on the one hand, in addition to:
- (d) 'Quality tool': the role of the composition of the central bank's balance sheet (what Buiter calls 'qualitative easing'). While a more complex analysis of the impact of various aspects of the composition of the central bank balance sheet on the target variables may be of interest in the future, here the basic **ratio of long-term central bank assets to total assets** is tested. These are defined to include both government bonds and direct loans to legal entities.

- (e) Intermediate target I: the money supply. In Japan the most widely watched traditional broad money supply aggregate is **M2+CD**, which is also used in this paper.
- (f) Intermediate target II: broad bank credit to the real economy. There is a substantial body of literature, including the so-called ‘credit view’ that considers bank lending important (including the bank lending view, credit rationing models and the balance sheet channel view; see Bernanke and Gertler, 1995). A further innovation in this paper is the use of a more refined credit aggregate, namely **bank credit to the real economy** (all sectors except those closely associated with non-GDP, financial transactions) which has been shown to be superior theoretically and empirically in accounting for nominal GDP (Werner, 1997, 2005).

The personae dramatis of the econometric analysis can thus be summarized in Table 2, including their abbreviations in the econometric model.

Table 2: Variables in the Empirical Model

Policy instrument or intermediary target	Relevant variable in Japan	Abbreviation in econometric model
interest rates	ODR or o/n u/c call rate	call
bank reserves	Reserves	Res
Asset purchases	Bank of Japan B/S	Total Assets
‘qualitative easing’/balance sheet composition	Ratio of long-term assets of central bank B/S	LTAR
Money supply	M2+CD	M2+CD
Bank credit to the ‘real economy’	Bank credit to all sectors except real estate, financial institutions and construction	Cr

The second stage of our empirical research will test whether there evidence can be found that in 2001 and/or 2006 significant changes happened. This can be done via the inclusion of dummy variables and structural break tests.

3.2. Empirical Findings

After stationarity tests have confirmed that all variables (except interest rates) are I(1) processes, year-on-year growth rates are calculated (except for interest rates) and the general model with nominal GDP as dependent variable formulated. As discussed, the independent variables are the call rate (call), the bank reserves (Res), the proportion of long-term assets on the central bank's balance sheet (BoJLTAR), BoJ total assets (BoJTA), the traditional money supply measure M2+CD and the measure of broad credit used for GDP transactions (Cr). The general model is shown below in Table 3 (Eq 1). Tests of the error normality properties of the model found no problems.

Table 3 The General Model

EQ (294)	Modelling YoYNGDP by OLS				
The estimation sample is: 1984 (1) to 2008 (1)					
	Coefficient	Std.Error	t-value	t-prob	Part.R ²
YoYNGDP_1	0.550700	0.1273	4.33	0.000	0.2319
YoYNGDP_2	0.0414786	0.1431	0.290	0.773	0.0014
YoYNGDP_3	0.106657	0.1375	0.776	0.441	0.0096
YoYNGDP_4	-0.212991	0.1145	-1.86	0.068	0.0528
Constant	1.25370	2.686	0.467	0.642	0.0035
Call	0.304339	0.3581	0.850	0.399	0.0115
Call_1	0.0690669	0.5046	0.137	0.892	0.0003
Call_2	0.0823537	0.4865	0.169	0.866	0.0005
Call_3	-0.457302	0.4726	-0.968	0.337	0.0149
Call_4	0.147538	0.3131	0.471	0.639	0.0036
YoYRes	-0.00482798	0.00596	-0.810	0.421	0.0105
YoYRes_1	-0.00456327	0.007507	-0.608	0.546	0.0059
YoYRes_2	0.0152022	0.007690	1.98	0.053	0.0593
YoYRes_3	-0.00464491	0.007835	-0.593	0.555	0.0056
YoYRes_4	-6.96581e-005	0.00559	-0.0125	0.990	0.0000
BOJLTAR	0.292561	3.005	0.0974	0.923	0.0002
BOJLTAR_1	-0.356588	2.943	-0.121	0.904	0.0002
BOJLTAR_2	1.18909	2.922	0.407	0.685	0.0027
BOJLTAR_3	1.31038	2.801	0.468	0.642	0.0035
BOJLTAR_4	-3.66124	2.863	-1.28	0.206	0.0257
YoY BoJTA	-0.0149838	0.01597	-0.939	0.352	0.0140
YoY BoJTA_1	0.0146504	0.01631	0.898	0.373	0.0128
YoY BoJTA_2	0.0147589	0.01617	0.913	0.365	0.0133
YoY BoJTA_3	-0.0305062	0.01581	-1.93	0.058	0.0567
YoY BoJTA_4	0.00829787	0.01604	0.517	0.607	0.0043
YoYM2+CD	-0.254060	0.2179	-1.17	0.248	0.0215
YoYM2+CD_1	0.515606	0.3743	1.38	0.173	0.0297
YoYM2+CD_2	-0.376703	0.4118	-0.915	0.364	0.0133
YoYM2+CD_3	0.123713	0.3970	0.312	0.756	0.0016
YoYM2+CD_4	0.0342873	0.2346	0.146	0.884	0.0003
YoYCr	0.511693	0.1646	3.11	0.003	0.1348
YoYCr_1	-0.239732	0.1875	1.28	0.206	0.0257
YoYCr_2	-0.249947	0.1994	-1.25	0.215	0.0247
YoYCr_3	0.301781	0.1743	1.73	0.088	0.0461
YoYCr_4	-0.0745332	0.1874	-0.398	0.692	0.0025

sigma	1.20633	RSS	90.2244824
R ²	0.911775	F(34,62) =	18.85 [0.000]**
log-likelihood	-134.125	DW	2.03
no. of obs.	97	no. of parameters	35
mean(YoYNGDP)	2.53633	var(YoYNGDP)	10.5429
AR 1-5 test:	F(5,57) =	2.0781	[0.0814]
ARCH 1-4 test:	F(4,54) =	0.39342	[0.8125]
Normality test:	Chi ² (2) =	3.6188	[0.1638]
hetero test:	Chi ² (68) =	69.545	[0.4252]
RESET test:	F(1,61) =	0.013157	[0.9091]

Next, the ‘gets’ methodology is applied and this general model is reduced to its parsimonious form by sequentially dropping the most insignificant coefficient and then re-estimating the new model after each single variable omission, until all coefficients are significant at the 5% level. Additionally, the downward reduction is checked for validity using F-tests and linear restriction tests (the progress report in PcGive). As a cut-off for the validity of reduction progress, the 1% level was chosen. The result is the following parsimonious form (Table 4):

Table 4 The parsimonious model

EQ(326)		Modelling YoYNGDP by OLS			
The estimation sample is: 1984 (1) to 2008 (1)					
	Coefficient	Std.Error	t-value	t-prob	Part.R ²
YoYNGDP_1	0.620707	0.07803	7.95	0.000	0.4075
YoYNGDP_4	-0.113130	0.06514	-1.74	0.086	0.0317
Constant	0.517173	0.1819	2.84	0.005	0.0808
YoYRes_2	0.00688439	0.002782	2.48	0.015	0.0624
YoYCr	0.364538	0.05785	6.30	0.000	0.3015
sigma	1.19896	RSS	132.250598		
R ²	0.870681	F(4,92) =	154.9 [0.000]**		
log-likelihood	-152.671	DW	2.16		
no. of obs.	97	no. of parameters	5		
mean(YoYNGDP)	2.53633	var(YoYNGDP)	10.5429		
AR 1-5 test:	F(5,87) =	1.8064	[0.1199]		
ARCH 1-4 test:	F(4,84) =	0.80851	[0.5232]		
Normality test:	Chi ² (2) =	5.3159	[0.0701]		
hetero test:	F(8,83) =	0.71401	[0.6785]		
hetero-X test:	F(14,77) =	1.3420	[0.2033]		
RESET test:	F(1,91) =	2.4094	[0.1241]		
Solved static long run equation for YoYNGDP					
	Coefficient	Std.Error	t-value	t-prob	
Constant	1.05026	0.2970	3.54	0.001	
YoYRes	0.0139807	0.006039	2.32	0.023	
YoYCr	0.740295	0.06512	11.4	0.000	
Long-run sigma =	2.43482				
ECM = YoYNGDP - 1.05026 - 0.0139807*YoYRes - 0.740295*YoYCr;					
WALD test: Chi ² (2) = 132.123 [0.0000] **					

Analysis of lag structure, coefficients:

	Lag 0	Lag 1	Lag 2	Lag 3	Lag 4	Sum	SE(Sum)
YoYNGDP	-1	0.621	0	0	-0.113	-0.492	0.0759
Constant	0.517	0	0	0	0	0.517	0.182
YoYRes	0	0	0.00688	0	0	0.00688	0.00278
YoYCr	0.365	0	0	0	0	0.365	0.0579

Tests on the significance of each variable

Variable	F-test	Value [Prob]	Unit-root t-test
YoYNGDP	F(2,92) =	33.764 [0.0000]**	-6.4894**
Constant	F(1,92) =	8.0862 [0.0055]**	
YoYRes	F(1,92) =	6.1258 [0.0152]*	2.475
YoYCr	F(1,92) =	39.706 [0.0000]**	6.3012

Tests on the significance of each lag

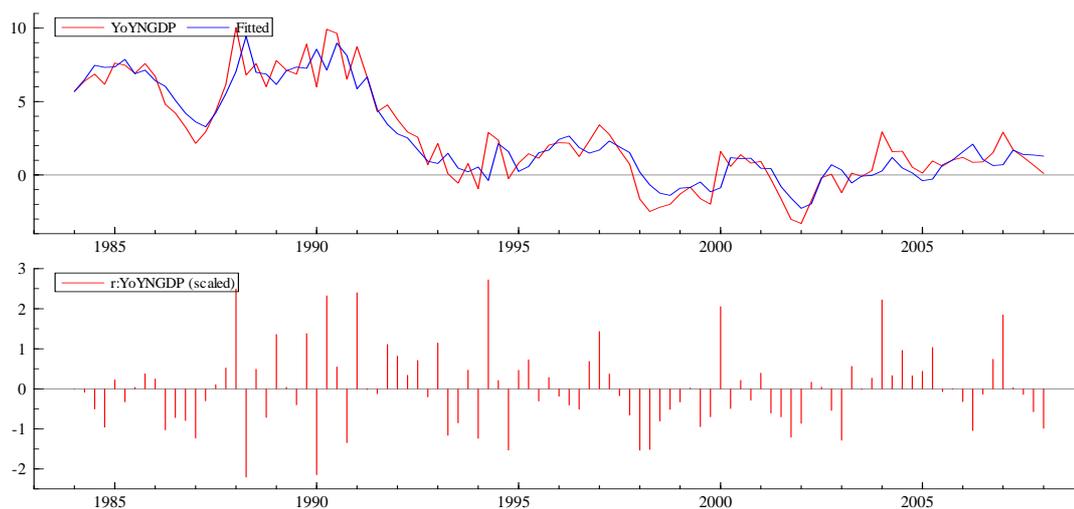
Lag 1	F(1,92) =	63.273 [0.0000]**
Lag 2	F(1,92) =	6.1258 [0.0152]*
Lag 4	F(1,92) =	3.0167 [0.0858]

Tests on the significance of all lags up to 4

Lag 1 - 4	F(3,92) =	26.493 [0.0000]**
Lag 2 - 4	F(2,92) =	5.4696 [0.0057]**
Lag 3 - 4	F(1,92) =	3.0167 [0.0858]
Lag 4 - 4	F(1,92) =	3.0167 [0.0858]

As can be seen, the parsimonious model has no noticeable problems and appears to be a valid empirical model of nominal GDP growth. The chart of the actual and fitted curves for nominal GDP growth are shown in Figure 1.

Figure 1 Nominal GDP, Actual and Fitted, Error terms



Granger-causality tests show that there is evidence for unidirectional ‘causality’ from credit variable Cr to nominal GDP, and not in the other direction (Table 5).

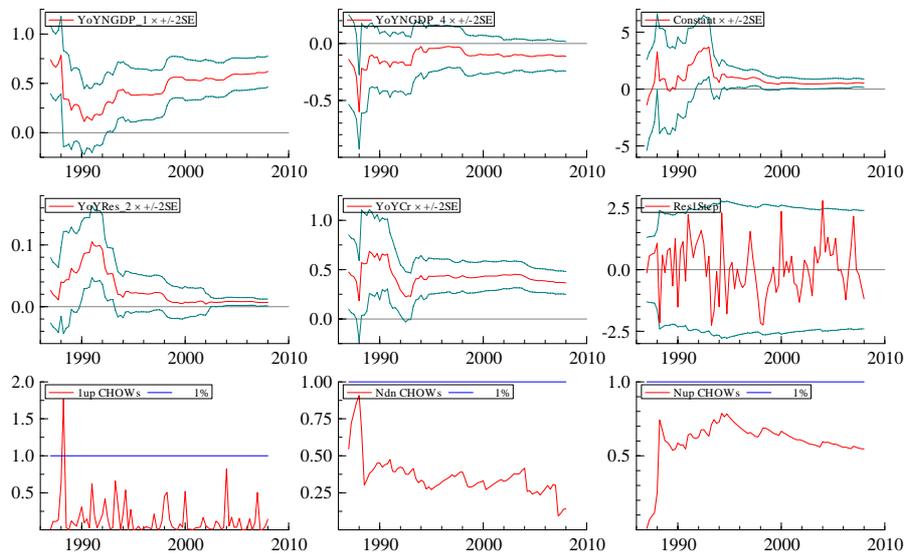
Table 5 Granger ‘causality’ tests: Autoregressive distributed lag model

Test on the significance of independent variable	nGDP dependent Cr independent	nGDP independent Cr dependent
Dynamic Analysis:	F(5,86) = 3.6510 [0.0048]**	F(5,86) = 0.23255 [0.9473]
Linear Restriction Test	F(1,86) = 10.1243 [0.0020]**	F(1,86) = 0.00355254 [0.9526]

Finally, structural break tests are conducted, to examine whether there were any breaks in the relationship between nominal GDP and monetary variables. This was done with the general model, in order to capture any structural breaks of any of the potential explanatory variables.

First, the recursive graphical tests are shown in Table 5. As can be seen, there is no indication that a structural break occurred in 2001 or 2006, when ‘quantitative easing’ was said to have been adopted.

Table 5: Recursive structural break tests



The data output shows that 1-step Chow tests found evidence for a structural break only in 1988 Q1 and Q2, 1991 Q1, 1993 Q2, 2004 Q1 (all at the 5% level, with the sole exception of 1988 Q2), but in no other quarter. The data output of the breakpoint chow test found evidence of structural break in the 1987 Q2 to 1988 Q2 period (5% level), but in no other period. We proceed to specifically test the hypothesis that a structural break occurred in 2001(1) by dividing the sample into two periods, from 1984 (1) to 2001 (1) and from 2001 (2) to 2008 (1) and test whether it is permissible to pool them into the full length sample. This is done with the Chow Breakpoint test. The F statistic is $F(20,57) = 0.9848$. The critical value is 1.757. We fail to reject the null hypothesis of parameter stability.

Based on the various statistical tests above, we conclude that no statistical evidence of a significant change in the relationship between potential monetary policy tools or intermediary targets and nominal GDP occurred. The announcement of changes in the operating procedure by the Bank of Japan should have made no difference to the implementation of monetary policy. This raises several hypotheses about the alleged QE announcement in 2001: For years, until 19 March 2001, the Japanese central bank had stated that “the operating target for money market operations is the uncollateralised overnight call rate” (BoJ, 2001). Then we were told that on 19 March 2001, the central bank had decided “to finally discard the orthodox operating framework and adopt a new framework” (Kimura, 2002, p. 4). There is a substantial literature on the role of central bank announcements and rhetoric. How do we know that either of these announcements was not mere rhetoric? There is no evidence that the true operating instrument of monetary policy had, in fact, been the call interest rate until 2001: as interest rates are not significant in explaining nominal GDP growth, a rational central bank would not target them, and any statement to that effect would be found to serve merely political and rhetorical purposes. For all we know, the Bank of Japan may have always focused on bank credit creation, supported by suitable provision of bank reserves, just as our empirical model suggests is appropriate.

The findings differ from much of the literature on the Japanese economy – as well as other G7 economies – in that there appears to be a stable relationship between nominal GDP growth and a broad money aggregate – albeit its modified credit counterpart. The results also suggest that the research strategy of measuring the effectiveness of QE by the perceived impact on nominal interest rates or the term structure – as has been dominant in the literature – may not be fruitful, as interest rates disappear from the parsimonious function.

In summary, key implications are:

- (a) The quantity equation relationship: One of the more orthodox intermediary targets, bank credit growth, appears to be in a stable long-term relationship with nominal GDP growth. The innovations made in the definition of the monetary aggregate are the use of the credit counterparts, and the disaggregation, so that only credit for transactions that are part of GDP are used. Lack of such disaggregation has been cited as a reason for the apparent ‘velocity decline’ (Werner, 1997).

- (b) Until the financial crisis of 2008, the ‘new consensus’ of monetary policy implementation had been the use of nominal short-term interest rates (call rates in the Japanese case). However, we found that interest rates dropped from the model in the sequential downward reduction as insignificant. This raises the prospect of a revival of the traditional, more monetarist approach (albeit modified for the use of its disaggregated credit counterpart).
- (c) ‘Unorthodox monetary policy tools’: There seems no need to take recourse to ‘unorthodox’ monetary policy: bank reserves must historically be considered a very orthodox method. (When it was the orthodox method, interest rate policy was considered unorthodox). The older and originally highly orthodox method of targeting a money supply aggregate (albeit its refined credit counterpart) appears to be a promising avenue for policy applications.
- (d) The Bank of Japan’s announcement of 19 March 2001 claimed that a break with past policy was made and reserves were newly emphasized. However, the empirical model derived through the ‘gets’ methodology found that reserves have been the only other of two successful explanatory variables throughout the 1984 to 2008 observation period, and therefore, if one ignores the PR aspect of the post March 2001 announcements, the use of reserves would not appear to be a new strategy. It will be of further interest, however, to check explicitly whether a structural break in the model occurred in 2001 and 2006, as the BoJ claimed.
- (e) While some studies claimed to have found support for a significant impact of the ‘qualitative easing’ strategy of changing a central bank’s balance sheet composition (by increasing long-term holdings of assets), this particular indicator dropped out from the model.
- (f) Similarly, total central bank asset growth was not found to be empirically relevant as a potential explanatory variable of nominal GDP growth. It is thus less likely to be attractive as monetary policy instrument.
- (g) Finally, given the importance of credit for GDP transactions in affecting economic growth, all methods to effectively influence this particular variable need to be considered. Two methods will be briefly discussed below.

3.3. Policy Implications

What do these findings mean for the interpretation of central bank policy?

One elephant in the room is the question that has so far not been addressed by the literature: why have successive interest rate reductions failed to stimulate the economy?” Some readers may feel that the ‘liquidity trap’ argument has answered this question. However, in the case of Krugman (1998), Svensson (2003), Eggertsson and Woodford (2003) the rational-expectations equilibrium is unaffected by the composition of the central bank’s balance sheet; the monetary transmission takes place purely via expectations, based on interest rate policy. More importantly, the liquidity trap remains unexplained: a trap is defined as the situation when interest rates reach the lowest point. In Japan this was reached only in March 2003, thus the

analysis does not apply to the entire decade of 1990s, when rates *fell* continuously and the economy was in its biggest slump since the Great Depression. The ‘liquidity trap’ argument fails to answer the question why interest rate *reductions* were not helpful throughout the 1990s; it collapses into the tautology of stating that rates can’t fall further, because they have fallen as low as they can fall. Hence the ‘liquidity trap’ argument cannot be considered an explanation or theory of what happened to Japan in the 1990s. The puzzle of the ineffectiveness of falling rates – which contradicts the interest rate based approach to monetary policy – remains unexplained.

If there is no ‘liquidity trap’, then “a serious policy error was made in the 1990s, and that error was based on a theory of monetary policy that treats the short interest rate as the central bank’s only tool, and characterizes the transmission mechanism as working solely through the influence of interest rates on aggregate demand.... It was therefore a dangerously defective guide to the conduct of monetary policy in Japan, as it is in any depressed economy. But it is precisely such a theory of monetary policy that lies at the heart of Woodford’s [2003] book.” (Laidler, 2003)

However, it should not entirely come as a surprise that interest rates have not been found useful to explain, predict or, indeed, steer nominal GDP. Two decades ago, two leading orthodox economists challenged the mainstream by remarking:

“... a recurrent theme in the literature and among market participants is that the interest rate alone does not adequately reflect the links between financial markets and the rest of the economy. Rather, it is argued, the availability of credit and the quality of balance sheets are important determinants of the rate of investment” (Blanchard and Fischer, 1989)

A case could be made to adopt the methodology of Samuelson’s (1938) revealed preference approach – here not applied to consumers (whose preferences may in practice be significantly constrained), but to the central bank (which at the time was independent from the government and whose actions were limited by few restrictive factors). Many economic models assume rational expectations and perfect information. Revealed preference would make the less stringent assumption that central banks are aware of the empirical facts concerning the various potential operational and intermediary targets. Their actions would thus reveal their policy preference. In this case, the findings suggest that the Bank of Japan failed to utilize the strong link between bank credit for the ‘real economy’ and nominal GDP in order to adopt policies and measures that boost the former, and hence its revealed preference would appear to be to prolong the recession and maintain deflation.

How could the central bank achieve a nominal GDP growth target? The empirical model indicates that the central bank would have to adopt policies that boost bank credit creation. Ironically, it is such policies that were defined as ‘quantitative easing’ when the expression was originally coined (Werner, 1995). A complete discussion of all possible measures to boost credit creation is beyond the scope of this paper. Here, it suffices to mention that, in principle, four sources of credit creation exist (central

bank, government, bank and trade credit creation). The situation in the UK is similar to Japan: bank reserve expansion has failed to boost bank credit creation.

Measures should be adopted to boost credit creation for transactions that are part of GDP and add to the stock of goods and services ('productive credit creation'). Two concrete ways in which this can be achieved will be briefly mentioned.

(a) Window guidance

Central banks have for substantial periods of time engaged in 'informal guidance' of bank credit. The policy consists of the central bank awarding loan growth quotas to banks, usually on a quarterly basis, in the fulfillment of an overall credit growth target. Quantitative window guidance is usually combined with qualitative window guidance, the direction of credit to specific purposes. This policy tool is extra-legal. Compliance could be achieved due to the influence central bank actions have on banks' solvency and the attraction for banks of what amounts to a cartel fixing market-shares and guaranteeing returns. Research has shown that window guidance has been highly effective in manipulating bank credit creation – both in reducing it, but also in raising it, when desired (Werner, 2002, 2005). The World Bank (1993) has concluded that this policy tool has been one of the important factors delivering the 'East Asian Economic Miracle'. Finally, the reason why the Chinese economy did not suffer a recession in the aftermath of the 2008 banking crisis was its successful implementation of window guidance: credit growth quotas were raised, boosting credit for the real economy and hence nominal GDP growth (as indicated in our empirical model). Under the assumptions that generate a frictionless economy at full employment, such a tool must, by definition, be unattractive, due to its effect of creating distortions. However, once the assumptions needed to obtain efficient, complete and perfect markets are relaxed, the hurdle for such an interventionist tool to improve welfare is lowered significantly. Thus our finding calls for further research into direct credit controls as a selective, targeted and limited intervention that may be justified under certain circumstances. It is noted here that the head of the FSA in London has recently called for the introduction of such credit controls.⁸

(b) Substitute bank credit for bond finance of PSBR

As the introduction of a 'credit guidance scheme' may meet political and ideological resistance, in the interim other methods can be used to boost credit creation. The fastest method was proposed by Werner (1996, 1997b, 1998): Instead of issuing government bonds, the government could fund the public sector borrowing requirement (PSBR) by borrowing directly from banks via long-term loan contracts. This would increase credit creation and hence boost money supply growth quickly. It would also render fiscal policy effective, since bond-financed fiscal policy is not backed by money supply growth and hence will suffer from crowding out (Werner, 2005).

⁸ FSA boss suggests 'maverick' watchdogs, Lord Turner sketches plans for more intrusive controls on lending, *Daily Telegraph*, 28 January 2010, Business Section, p. 5

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