The Financial Crisis: the Debate 'Benign Neglect' versus 'Leaning against the Wind' Revisited

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'*The other problem is that when we in central banks get into trying to respond to potential bubbles, we start to lose our basic mission. That can be extremely high cost, both in terms of what we do and what the public thinks we are doing*' (Mishkin, 2007c:428).

Abstract
After the high-tech bubble in 2001-2002, there has been a growing debate on how to integrate financial instability in monetary policy. The central bankers conventional wisdom of 'benign neglect' defended an *ex post* integration, central banks intervening only during the burst. On the contrary, some academics preferred the 'leaning against the wind' strategy promoting a policy intervention against financial fragility during both the financial boom and bust. This debate is re-examined in light of the current financial crisis that begun in August 2007. Has the crisis challenged the conventional wisdom? Three major central banks practices during the financial turmoil are studied (Bank of England, European Central Bank, Fed) in the controversy perspective. Evolutions of these central banks positioning in this dispute during the crisis is inspected via their real interest rate profiles, their speeches and an ***index*** based on central bankers' speeches on this controversy. These analyses show that next to the crisis central bankers are more sceptical about the Benign Neglect consensus, moving towards the 'leaning against the wind'.

JEL Codes: E44; E52;E58 ;E61; G10

Key words: financial crisis and instability, bubble, asset prices, credit crunch, monetary policy, central banks, inflation targeting.

Introduction

With the current financial crisis that begun in August 2007, central banks have re-discovered their traditional historical role in financial stability[1] they had forgotten since the 1990s, hidden by the priority put on price stability. The dramatic developments and deregulation of financial markets since the 1980s end up in putting the financial stability question on top of central bankers agenda.

Since the New Economy boom-bust in 2001-2002, central bankers' common wisdom is the 'Benign Neglect' (BN) strategy: '*the monetary authorities should deal with the financial instability that may result from a crash in asset prices if and when the latter occurs, but they should not adjust monetary policy pre-emptively in the boom phase*' (Bordo and Jeanne, 2002:4). In reference to the Mundell incompatibility triangle, recommending floating exchange rate, it means that central bankers do not have to take directly into account financial instability such as asset boom-bust or credit boom. They should 'laissez-faire' the bubble, i.e. '*surges in prices of assets to unsustainable levels*' (Greenspan, 2002)[2]. The BN strategy calls for addressing *indirectly* financial instability, via the primary goal of inflation. Financial imbalances matter only if they impact on future inflation or output (forecasts). This BN strategy has been developed in the academic field by Bernanke and Gertler (1999 ; 2001) and comforted by practitioners (Greenspan, 2002).

This common wisdom is criticised by the promoters of the '*leaning against the wind*' (LW) strategy defended by Cecchetti et al. (2000;2002), and also by the Bank of International Settlements[3]. They claim that the high-tech bubble and boom-bust should have been regulated via a more activist interest rate policy taking account *directly* asset prices. A pre-emptive action to prick the bubble[4] could have reduced the bust, improving social welfare.

The financial crisis has challenged the standard BN strategy, calling for a re-examination of the BN *versus* LW dispute. Despite it concerned the New Economy asset prices in 2001-2002, this controversy suits to the current crisis with the problem of toxic financial assets or real assets such as house prices. In the aftermath of the current financial crisis, does the BN consensus among central bankers still hold?

These questions are tackled with a focus not on the literature, but on central bankers' points of view. The practice, strategy and speeches of three central banks during the financial crisis are studied: the Bank of England (BoE), the European Central Bank (ECB) and the Fed. They are chosen because they are three major central banks in the crisis due to the importance of their role in global financial stability and the world economy in general; but also because they represent typical positions in the BN *versus* LW debate. The BoE is the typical inflation targeting regime point of view on this opposition. This regime is dominant in both academic and central bankers. The ECB is chosen because it proposes a regime different from inflation targeting. Finally, the Fed is the central bank where the BN was elaborated in practice, under the Greenspan era (1987-2006).

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[1] Defined as '*a condition in which the financial system – comprising financial intermediaries, markets and market infrastructures – is capable of withstanding shocks and the unravelling of financial imbalances in the financial intermediation process which are severe enough to significantly impair the allocation of savings to profitable investment opportunities*' (Papademos, 2009b)

[2] Also defined as '*the part of asset price movements that is unexplainable based on fundamentals*' (Trichet, 2005)

[3] Borio and Lowe (2002), Crockett (2003), Borio and White (2004), White (2006).

[4] 'Pricking' means intervening with a large interest rate increase to reduce the bubble, using the tightening as a signal for market participants.

Section 1 introduces the debate BN *versus* LW controversy and its implications for monetary policy (interest rate setting). Section 2 inspects each central bank interest rate policy during the crisis to determinate its positioning in the debate. It also examines central bankers' strategy towards financial stability before and during the crisis. In section 3 the central banks are compared, first in terms of interest rate policy. Next the evolution of their preferences in the debate during the crisis is analysed via the construction of a preference index based on their members' speeches. Finally their theoretical foundations are compared.

1. The debate: presentation and policy implications

The pros and cons the BN and LW strategies are presented using arguments from the three central banks officials' speeches and publication. Next, implications for interest rate policy (rule) and real interest rate trajectory are drawn.

1.1. The pros and cons LW

The main argument against the LW strategy is the identification problem, while its main advantage is its symmetric nature.

1.1.1. Cons LW

The identification problem. The identification problem means that LW is impractical: the central bank cannot really determinate if a financial imbalance, like a bubble, is under way (Papademos, 2004). As stressed by King (2002:16), '*No honest person actually knows the equilibrium level of asset prices*'. In the standard Neo-Classical theory based on the efficient market hypothesis, there is imbalance when assets are out of the fundamental value[5]. But in practice it is difficult to differentiate between movements in asset prices justified by their fundamental value and those which are not because the fundamental value is not observable (Gieve, 2009:12). This uncertainty suggests that the central bank can increase the nominal interest rate *i* while it is unnecessary, generating a sub-optimal growth and disrupting asset prices allocation role in the economy, reinforcing growth sub-optimality (Mishkin, 2008). Besides, the effect of *i* on the financial imbalance is uncertain: could be totally inefficient, could sustain the imbalance. More generally, if financial disturbance come from inefficient markets, *i* increases are inefficient. Consequently, identification is a costly and time-consuming process, with the risk of being achieved after a long time, leading to a 'too late' action (Gieve, 2009:12).

The non-rationality constraint. By definition a bubble is a situation out of the fundamental value, resulting from markets non standard rationality, like famous Keynes' animal spirits. Therefore there is no reason for markets to react to the central bank rationale action against the bubble because they are irrational acting with 'irrational exuberance'. Thus the LW strategy fighting against the bubble is supposed to be inefficient. Furthermore, because financial markets are not necessary inefficient, in particular during a bubble, but rather follow the Keynes' animal spirit psychology, it is difficult to predict their reaction to an active monetary policy. The LW can do more harm than good, adding extra market volatility instead of reducing it (Papademos, 2004). Moreover, because of their herding behaviour, it is difficult to influence market participants, making the LW poorly efficient. Finally, due to financial markets complexity and their potential inefficiency, their reaction to large *i* increases is unpredictable and can be inexistent (ECB, 2005:57).

An inappropriate instrument. The nominal interest rate *i* is traditionally used to regulate price stability, not financial stability (Bean, 2009a:24). This is a blunt instrument that could

[5] Defined as the '*part of the asset price that reflects expectations about future inflation*' (Stark, 2009a).

generate collateral unnecessary damage to the real economy while attempting to preserve financial stability (Gieve, 2008:9). It can affect the financial sector and assets in general, while in fact only a fraction of the financial sector or assets are imbalanced. Hence, it is not an appropriate instrument to deal with financial boom/bust, requiring a better targeted instrument. Moreover, because of the interest rate transmission lags, there is potentially a timing problem: the LW can affect too late the economy, being out of phase with the current situation: when *i* increases affect the economy to fight the boom, the economy can already have turned to a burst (Bean, 2005b:10). This implies that the LW is pro-cyclical for timing reasons. On top of that, because of market participants' imperfect rationality, very large rate increases are required to reverse 'animal spirits'. The magnitude of rate increases can damage the real economy while having little effect on financial markets[6]; and we can doubt '*that people would be prepared to accept the clear short-term costs of such a strategy in return for the uncertain long-term benefits*' (Bean (2008:7). Consequently, the costs of the LW are potentially high while its benefits are uncertain and low. Finally, financial instability, like bubbles, can be only the symptom of an underlying more structural imbalances, suggesting that instability should be addressed through other more appropriate policy than interest rate policies like prudential regulation or supervision (ECB, 2005:58).

1.1.2. Pro LW

First, being symmetric, the LW strategy reduces the moral hazard generated by the BN (Trichet, 2009a). Moreover, by stabilising the financial cycle, it is supposed to improve macroeconomic stability. Meanwhile, the idea that asset imbalances are not identifiable is not specific to financial instability: it is also difficult to estimate potential output (output gap), the NAIRU or the natural or neutral real interest rate. Yet, central banks produce forecasts from these variables and publish their misalignment state. So it does not seem totally impossible for asset prices. Finally, the BN claims to be able to forecast the financial instability impact on inflation and output. So there it seems possible to assess financial instability too, meaning that the identification problem can be overcome.

1.2. The Benign Neglect (BN): pros and cons

The BN is the common wisdom among central bankers and many leading scholars. The pros and cons are inspected.

1.2.1. Pros BN

The BN rests upon 'mopping up' after the bubble burst: using monetary policy to offset the bust negative impact on the economy, so acting *ex post*, not *ex ante*. It is not supposed to create a bubble, since monetary policy easing is followed by a form of bubble in only one third of case, and because asset prices boom can happen when monetary conditions are not easy[7]. This strategy is based on the efficient market hypothesis and the dichotomy between the real and financial economies. Hence, there is little or no chance that the bubble feeds into the real economy, meaning that the boom and the bust are inoffensive. It is also based on historical studies claiming that bubbles do not influence the real economy since market crashes generally do not degenerate into financial instability (Mishkin, 2008).

1.2.1. Cons BN

Identification possible? The BN is based upon the identification impossibility that is contested: identification is not necessary a problem. First, as an institution the central bank is

[6] See Bean (2005b:11), ECB (2005:57).
[7] Posen (2003).

supposed to have more information than markets, is supposed to be independent from the markets and should have information on them. The fact that the fundamental value cannot be judged precisely, so that the proper action is difficult to assess, does not mean that no action is possible. It only implies that the precise action to implement is difficult to calibrate, but the action direction seems to be identifiable (Issing, 2003b:8). During the financial crisis, the exact magnitude of policy action was clearly difficult to determinate, but the direction was clear: stop the housing bubble (boom) and stop the credit crunch (burst). It was not impossible to identify the housing bubble (Trichet, 2009a).

An asymmetric policy. The BN asymmetric nature is an incentive to moral hazard by announcing that the central bank will help banks and financial actors, what ever the price. Asymmetric policy also means inactive interest rate policy during the boom period, implying potentially too low interest rates, encouraging excessive risk taking so preparing the burst.

Limits to the 'mop up'. The mop up strategy is also perilous since it is not necessary fast working enough. The current financial crisis suggests that it could be overwhelmed by the speed and magnitude of the financial crash, in particular because of the zero lower bound on nominal interest rate constraining the extent of the mop up. The burst is actually non linear and can be brutal and deep, threatening the whole economy and making the mop up inefficient. The mop up can lay the ground for the next bubble by setting interest rate too low (Gieve, 2009:13). Besides, this address of the bubble burst can relocate the bubble elsewhere, in another part of the financial system or the real economy, meaning that one imbalance is leading to another (Tucker, 2008a:7)[8].

Animal spirits work in both directions. The inefficient interest rate policy stressed by the BN during the boom works in both directions: if market participants do not react to rate increases during the boom because of optimism, there are reasons to think they won't react to rate reductions during the mop up because of pessimism. Market participants' panic requires large rate cuts for the mop up, meaning that the 0% lower bound is quickly achieved. Finally, the BN rests upon the fundamental value theory that has been challenged by the current financial crisis.

The implications in terms of interest rate setting of the two sides of the debate are now investigated.

1.2. Implications in terms of interest rate policy

Recommendations of the BN and LW for interest rate setting are analysed, first in terms of policy rule, next in terms of real interest rate profile.

1.2.1. A rule-based approach of the controversy.

We first present the formal presentation of the debate in terms of monetary policy rules and then explain why this approach is not followed in this article because of its pitfalls.

Presentation. The debate is generally formalised in terms of monetary policy rule with the interest rate as the monetary policy instrument. The starting point of this formalisation is the classical forward looking Taylor (1993) rule of the form:

$$r = r^* + \gamma_\pi(\pi_{t+h} - \overline{\pi}) + \gamma_y(y_{t+h} - y^*_{t+h}) \qquad (1)$$

r is the real interest rate that can be calculated via the simple Fisher formula: $r = i - \pi^e$; with i being the nominal interest rate and π^e inflation expectations. r^* is 'neutral' rate or the Wicksell's natural real rate of interest. π represents inflation and $\overline{\pi}$ is the inflation target. The variable y represents output and y^* the potential output. This rule is forward-looking because forecasts of variables are considered at the optimal target horizon h so forecasts at t_{+h}.

[8] See also Tucker (2006:18).

According to the LW approach, asset prices (S, for stock exchange indices such as Standard & Poor's 500) is an indicator that should enter permanently and explicitly in the rule that becomes:

$$r = r^* + \gamma_\pi(\pi_{t+h} - \bar{\pi}) + \gamma_y(y_{t+h} - y^*_{t+h}) + \gamma_s(S_{t+h} - S^*_{t+h}) \qquad (2)$$

The term S^* correspond to the asset fundamental value or some equilibrium value approximated for example by historical average. The response to asset prices S is direct and explicit. For simplicity we can suppose that γ_S>0 so that the central bank reduce r in case of stock market collapse[9].

On the contrary, the BN approach recommends to respond only implicitly and indirectly to S via their impact on inflation and output forecasts. The response coefficients is γ_S=0 most of the time during normal times. Yet the BN is in favour of the 'mopping up' that can be interpreted formally as responding strongly to asset prices collapse during the bust, so that the response is asymmetric and the rule 'non linear':

$$r = \begin{cases} \textit{Equation (1) if } b=0 \\ \textit{Equation (2) if } b=1 \end{cases}$$

b is a binary variable that can take on values of 0 or 1 only, with b=0 meaning the absence of asset prices bust and b=1 when the bust is observed. The BN consists in having γ_S=0 when b=0 and γ_S>0 when b=1.

Consequently the debate could be closed by estimating γ_S. Nevertheless, we don't adopt this rule-based approach of the BN vs. LW because rules estimation suffers from several pitfalls.

Drawbacks. The policy rule estimation suffers from numerous drawbacks. First no central bank pretends to follow such a rule: in the rule *versus* discretion dichotomy, central bankers claim to be on the discretion side. The rule is descriptive *ex post*, not prescriptive. But even as a descriptive tool the rule is not satisfying because it is the MPC rule, so that is does not open the black box of individual MPC members' positions. It describes the central bank as a homogenous representative central banker while it is not the case in practice.

Moreover, even if the hypothesis of a representative central banker is accepted, the data choice remains a problem. What are the r^* and the inflation and output gap forecasts chosen for the policy rule (eq.1) estimation? What is the variable chosen to represent financial instability? The three central banks examined does not publish r^* and there is no consensus on its estimation in the literature. The real time forecasts used by the MPC to take the decision also are not published. On top of that, the choice of the right optimal target horizon h for the forecasts is also a problem since it is supposed to vary with the degree of integration of financial stability in monetary policy. For the variable representing financial stability it can be financial asset prices (stock exchange index, spread), a real asset (house prices), a monetary index (credit growth) or a composite index with the problem of choosing the weight given to each component.

Finally, since central bankers are under discretion, they use their judgment to take their decisions. Judgement is difficult to incorporate in the rule and is not easily observable and certainly not published in terms of number. Consequently central bankers' judgment on financial stability cannot really be integrated in the rule.

Hence the policy rule estimation is perhaps a too simple tool to judge of γ_S, i.e. central banks and central bankers' preferences in the BN vs. LW debate. This is confirmed by empirical

[9] But can be negative if financial instability is measured by the credit spread.

estimations conflicting results in the literature: depending on the article or the financial stability variable, γ_s can be nil or non nil and often is statistically significant but with the wrong sign[10]. These limits lead to envisage another empirical interest rate measure for the BN vs. LW debate.

1.2.2. An interest rate profile approach of the controversy.

In practice, the BN and LW lead to distinct policy in practice, in terms of interest rate in particular, that is distinct interest rate profile or trajectory. In the spirit of Bordo and Jeanne (2002:21), the typical real interest rate *r* trajectories under the BN and LW strategies are represented (Figure 1)[11]. The variable *r* is calculated using the simple Fisher formula described above. The BN strategy moves the interest rate only during the asset prices crash (mopping up), not during the boom phase. On the contrary, the LW strategy adjusts monetary policy pre-emptively in the boom phase to prick the bubble and avoid the future crash or at least reduce its magnitude.

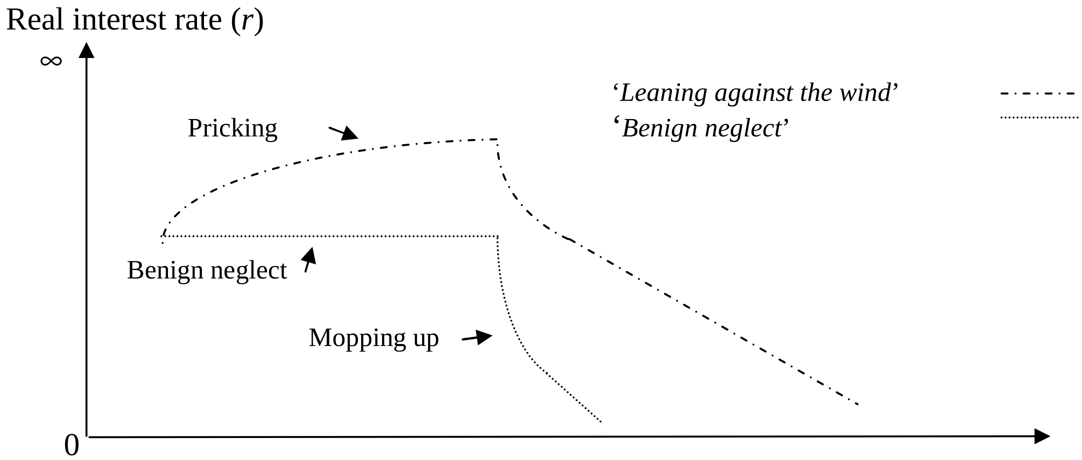

Figure 1 - Real interest rate profile: Benign Neglect VS. Leaning against the wind

How does the real interest rate *r* profiles in the United Kingdom, the Euro area and the USA compare with these typical trajectories? This confrontation to the typical profiles gives a first indication on the strategy followed by each central bank during the current financial crisis.

2. The policy and strategy during the crisis in light of the BN versus LW debate

The real interest rate profiles of each three countries are compared with the typical real interest the strategy (Figure 1) to determinate what was their choice in the BN *versus* LW debate during the current crisis. For each central bank the strategy is examined to give the reasoning behind the profile. Finally, the foundations of each central strategy during the crisis are inspected.

2.1. The Bank of England

To have a first indication of whether the Bank of England (BoE) has followed rather the BN or the LW, the United Kingdom real interest rate is studied, calculated using the simple Fisher

[10] In a parallel preliminary work, 17 articles estimating empirically a Taylor-type rule for the U.S. have been reviewed over the period 1999-2009: 13 articles suggest that $\gamma_s \neq 0$ significantly while 4 suggest the contrary. Yet γ_s is sometimes the wrong sign. Hence this literature rule-based does not appear perfectly conclusive.
[11] Figure differs from Bordo and Jeanne (2002), it is an adaptation.

formula. Its trajectory during the crisis is compared with the BN and LW interest rate profile. Then, investigation is pursued further by examining the nominal interest rate profile of each Monetary Policy Committee (MPC) member. It is aimed at looking at possible divergence in strategy inside the MPC among members, with for instance some of them preferring BN to LW, or the contrary. Thirdly, the presentation of the BoE strategy vis-à-vis financial instability as explained by MPC members is studied.

2.1.1. Interest rate profile

The BoE real interest rate profile is a mix of BN and LW, but the BN seems dominant (Figure 2). It implements a small tightening during the boom, but it could be due to the positive output gap. During the burst, there is a light 'mopping up' but not a severe easing. The BoE insists on its large interest rate cuts, highlighting the 'mopping up' of the BN.

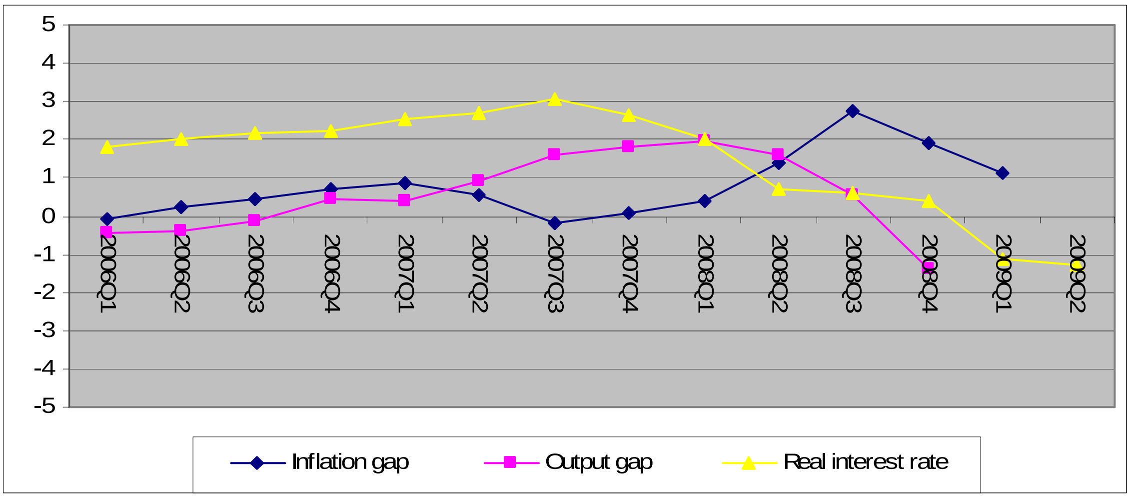

Figure 2 - Inflation gap, output gap and real interest rate, United Kingdom (2006-2009).

Notes : Horizontal axis: time ; vertical axis: % points for the real interest rate. Inflation gap : CPI, mean of monthly data. Output gap: Hodrick-Prescott filter, 1600 on quarterly GDP; Real interest rate = nominal interest rate - Inflation expectations 1 year ahead (NOP); mean of monthly data. The Bank/NOP measure of expectations is chosen since it is the most developed and specific to the BoE.

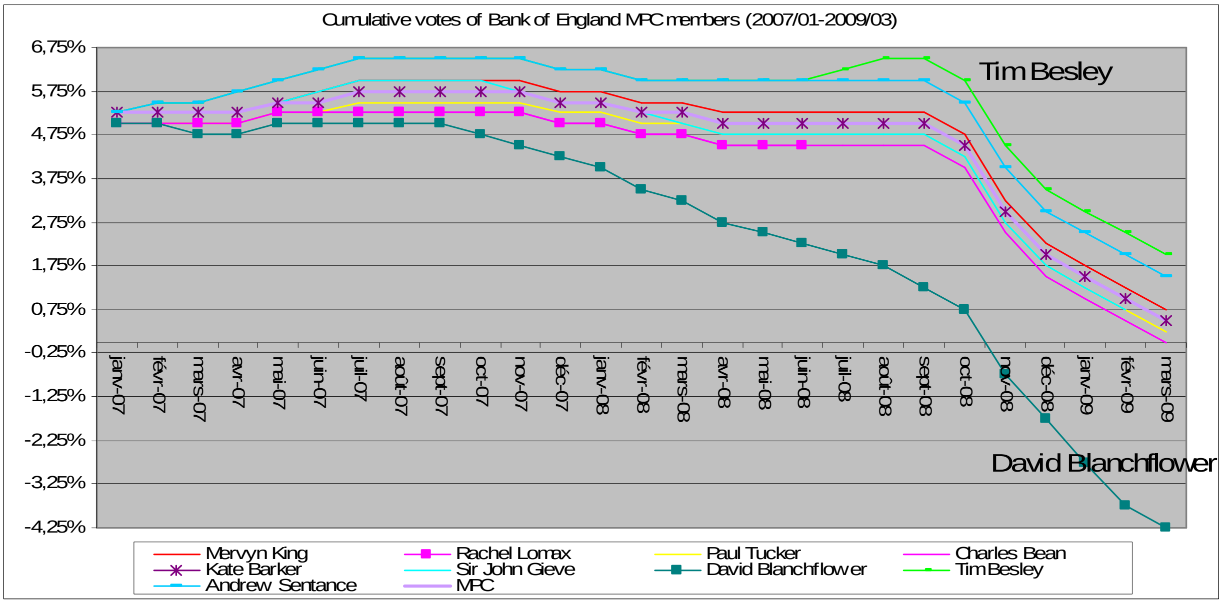

Figure 3 - Bank of England MPC members' interest rate trajectory 01/2007-03/2009

The BoE is a monetary policy committee (MPC) publishing individual voting records. These individual votes (nominal interest rate) confirm a small or inexistent tightening during the boom, preferring the BN to the LW (Figure 3). Yet heterogeneity in preferences is revealed by these individual votes. A majority of members has an interest rate profile that looks like a BN strategy. Besley's interest rate profile with votes for rate increases at the end of 2008 resemble a 'hawk' behaviour following the Bagehot's (1873) doctrine of lending at high interest rate during a financial crisis (further developments below). On the opposite side, Blanchflower's interest rate profile is congruent with a strong version of the BN with a large 'mopping up', that is a 'dove' behaviour.

2.1.2. Explanations of the strategy by the Bank of England.

The BoE's position on the BN *versus* LW debate before and during the financial crisis is examined, evolution being highlighted.

Inflation targeting and financial stability: a pro BN background. The BoE strategy towards financial instability and asset prices bubbles has been elaborated during the 1995-2002 high tech bubble (King, 2002; Bean, 2003a-b). This leads to the assimilation of financial instability to asset prices misalignment. Embedded in inflation targeting, it claims that this framework is enough, so that the BN is the best strategy: price stability is enough and financial stability is not a goal *per se*[12]. There is no asset price targeting, meaning that financial instability is not included in the loss function or the reaction function.

On the contrary, the LW, generally assimilated to asset prices targeting by BoE officials, is rejected for practical reasons. First, bubbles cannot be identified because '*no honest person actually knows the equilibrium level of asset prices*' (King, 2002:16)[13]. Secondly, the Tinbergen principle stipulates that the central bank must have as many instruments as goals. It is violated in the LW strategy because the MPC has two goals (price and financial instability) but has one instrument (interest rate)[14]. This line of reasoning drives the BoE to a critical adoption of the BN: it rejects the 'mopping up' (Tucker, 2006:18). The other reason for its rejection is that low interest rate can prepare the next boom-bust cycle in financial markets. Hence, contrary to the Fed, the BoE propose a different version of the BN which, excluding the 'mopping up', looks even more inactive (Figure 2).

Despite this inflation targeting pro BN, financial instability is a challenge for monetary policy creating a restricted trade-off: '*Achieving price stability is no guarantee that financial instability can be avoided*' (Bean, 2003a:18). Nevertheless, in accordance with the BN, this trade-off is of limited importance so is taken into account not *directly* but *indirectly* via its long term consequences on the economy (inflation and output). It is integrated through inflation and output forecasts, i.e. forecast inflation targeting pretending to be forward-looking (Bean, 2003a-b). If the financial imbalances impact on inflation or output, it is taken into account in the interest rate setting. This integration is conform to the academic strategy proposed by Bernanke and Gertler (1999; 2001), i.e. the BN. It suggests that the BoE defends a strategy not far from the Greenspan's Fed.

Nevertheless, the BoE admits that financial instability is a complication that has to be taken into account. Under the BN and the related forecasts based inflation targeting it means that financial instability is addressed through the optimal inflation target horizon h flexibility, instead of the interest rate instrument flexibility. In case of financial crisis with a severe burst, the central bank can lengthen h, from 2 to 3 years for instance. Yet during the recent crisis, the BoE has not clearly increased h, while the Swedish Riksbank did, from 2 to 3 years. In practice this flexibility in h implies that the central bank accept a temporary deviation from

[12] King (2002), Bean (2003a:18, 2006:5)

[13] See Also Tucker (2006:18): '*we just don't know enough about the determination of asset prices*'.

[14] Tucker (2006 :18).

the inflation target, i.e. a flexible interpretation of inflation targeting (King, 2004). This flexible inflation targeting is supposed to be sufficient to deal with financial imbalances.

The strategy during the beginning of the financial crisis (2007-2008). During the first phase of the financial crisis until the Lehman Brothers collapse in October 2008, MPC members have continued in their speeches to defend most previous BN strategy elements: asset prices are not a goal nor a target, the LW strategy is not recommendable, once again due to the Tinbergen principle[15]. Inflation targeting was still enough[16]. Moreover, taking the credit crunch directly into account in the interest rate stance would create some confusion on the BoE's goals, challenging the rhetoric of priority to price stability (instead of financial stability) and the credibility of the commitment to the inflation target[17].

Forecasts and flexible inflation targeting with the *h* lengthening were considered as more appropriate than the LW too difficult to implement in practice. In a cost benefit/analysis, the LW cost of pricking the bubble were judged to high compared to hypothetical long run benefits (Bean, 2008:7)[18].

But the BoE couldn't really practice the BN neither. Indeed, the real interest rate quickly reached 0% (figure 2) and the MPC was even pretending that the nominal interest rate was also inefficient not only because it was reaching the 0% lower bound but also interest rate transmission channels were impaired by the financial crisis. Finally the interest rate was judged a 'too blunt instrument' to deal with the financial crisis[19]. That is why *in fine* '*I do not think that mopping up is a doctrine than can be relied upon*' (Tucker, 2008a:7). Such evolution in strategy could mean that the forecast inflation targeting (*h*) became inefficient in dealing with financial instability. Instead the BoE put the emphasis on the necessity to move to a 'macro-prudential' solution to the financial crisis. A new instrument was required to complement the interest rate and let monetary policy free for the price stability goal: the quantity of money, not its price (interest rate); this is the so called '*quantitative easing*'[20]. The interest rate easing (mopping up) is rejected in favour of unconventional instruments. This new instrument was supposed to be directly oriented towards one of the major cause of the crisis: the market failure (Bean, 2008:9). Reading MPC members' speeches, the quantitative easing was presented as a temporary extraordinary instrument, with the underlying idea that the financial crisis will not last, so a quick return to a 'normal' inflation targeting. But implicitly it was the signal that the BN strategy was challenged and that financial stability had become a goal.

The strategy post Lehman Brothers collapse. In the 2009 speeches, the doctrine 'price stability and inflation targeting are enough' was declared still alive by most MPC members, but more in the rhetoric than in practice. *De facto* the BoE had adopted the financial stability goal, meaning that the central bank was not regulating finance temporary and indirectly, but permanently and directly. Thus despite pretending dealing with financial instability through other instrument than the interest rate, the BoE has on the contrary practised interest rate cuts after Lehman Brothers collapse in October 2008 (Figure 3). Such interest rate cuts looks like a 'mopping up' despite the BoE to be against.

It implies that inflation targeting is not enough, as confessed by a few MPC members: '*inflation targeting as currently operated is not sufficient*' (Dale, 2009:5)[21]. But most MPC members continue to pretend that the LW is impossible in practice, due to the Tinbergen

[15] Gieve (2008 :11).
[16] Bean (2008 :7).
[17] Sentence (2008:15).
[18] This line of reasoning with a costs/benefits analysis is very similar to the Fed (Kohn, 2006).
[19] Gieve (2008 :9).
[20] Defined as: '*to expand the money supply through large-scale asset purchases*' (Benford et al., 2009). This refers to the policy introduced by the Bank of Japan in March 2001; See Baba (2005).
[21] See also Gieve (2009:13-4).

principle in particular: '*The idea that we can and should use short-term interest rates to quell asset booms or to curb lending practices is intellectually and practically suspect*' (Besley, 2009:4). A majority of members continues to defend the macro-prudential solution instead of the LW, arguing that it addresses more directly and efficiently the credit boom-crunch problem (Bean, 2009a:24). A minority of MPC members have to admit that the financial crisis give some elements in favour of the LW and less for the BN, the collapse of the efficient market hypothesis in particular[22]. This limited critique of inflation targeting and the BN means that the MPC pursue a less inflation target driven approach to monetary policy. In practice some MPC members recommend to augment the price index from houses prices to deal with financial instability. The BN being less accepted, a more activist policy is required. The MPC implement an 'aggressive' action, not based on LW or the mopping up but the 'quantitative easing'.

Back to Bagehot? Numerous members of the BoE's MPC refer explicitly to Bagehot (1873) to justify its policy during the crisis, its interest rate policy in particular[23]. In his famous book '*Lombard Street*', Bagehot recommends to 1) '*lend freely*' but 2) '*at a very high rate of interest*' (meaning that both money quantity and price matter) and 3) against a good collateral. This Bagehot's doctrine corresponds to the lender of last resort role of the central bank providing a 'liquidity insurance'. The *quantitative easing* practised by the BoE has provided liquidity to the economy, respecting the first part of the Bagehot's doctrine. Yet, the interest rate has been cut during the crisis, so that the second part of the Bagehot's doctrine on high interest rate does not seem applied. According to some BoE members' high rates don't mean a penalty rate, but instead the rate charged by the central bank relative to the market in normal conditions, i.e. before the crisis (Tucker, 2009:10). Using this measure, the BoE has not really lent at a high rate partly because imposing a 'penalty rate' was a stigmatisation creating more trouble than security in the financial system (Tucker, 2008b:5).

Limits to the BoE strategy during the crisis. This BN of financial stability by the BoE is surprising because it deals traditionally with it, with the publication of the *Financial Stability Review*. Nevertheless, it seems that the apparent success of inflation targeting during the Great Moderation has put the focus on price stability, putting aside financial stability. The current crisis has reminded the BoE its classical role of lender of last resort and demonstrated the limits to more than 20 years of myopia looking only to price stability. Contrary to what central bankers, the New Classical school and some New Keynesians assert, price stability is not the silver bullet producing automatically financial stability. It suggests that during the recent crisis, like MPC member Besley, the BoE put probably to much weight on the credibility of its commitment to inflation target, and not enough weight to interest rate instrument flexibility. The risk of interest rate rigidity was Goodhart famous 'too little, too late'. But during a severe crisis it is rather 'too late, nothing possible'. Indeed if the BoE acts when the recession and deflation have already taken place, interest rate cuts are not enough to stimulate the economy, in particular because the zero per cent nominal interest rate bound is quickly attained. As soon as monetary policy transmission channel are impaired by the financial crisis (lack of confidence in financial markets) and that the interest rate is inefficient, the BoE is condemned to unconventional instrument.

From the strategic point of view, this inflation targeting collapse leads former MPC member Blanchflower to propose not to target asset prices, but at least to integrate a composite financial instability indicator (house prices) in the price index.

Finally, financial stability is nowadays a goal *per se* for the BoE, added in the Banking Bill, so that that *de jure* inflation targeting has evolved, even if the BoE acts as if it was 'business as usual'. In face of the new financial stability goal, the interest rate inefficiency, the large

[22] Gieve (2009 :18).
[23] Bean (2009a).

quantitative easing and the difficult situation of United Kingdom economy, some MPC members had to recognize that the inflation targeting strategy was not enough. But most of them did not admit it explicitly and prefer claiming that a '*macro-prudential*' framework is necessary. This justifies, *a posteriori*, the BN since prudential policy was supposed to be required, not interest rate cuts.

2.2. The European Central Bank

We proceed as for the BoE, analysing first the interest rate profile to determinate if the ECB follows rather the BN or LW strategy. Then the ECB strategy vis-à-vis financial instability before and during the recent crisis is inspected.

2.2.1. Interest rate profile

ECB's real interest rate profile (Figure 4) resembles a LW with a larger interest rate tightening during the boom than the BoE or the Fed. In line with the LW typical profile, the *r* reduction during the crisis is less vertical than for the BN, so a smaller easing than the BoE or the Fed.

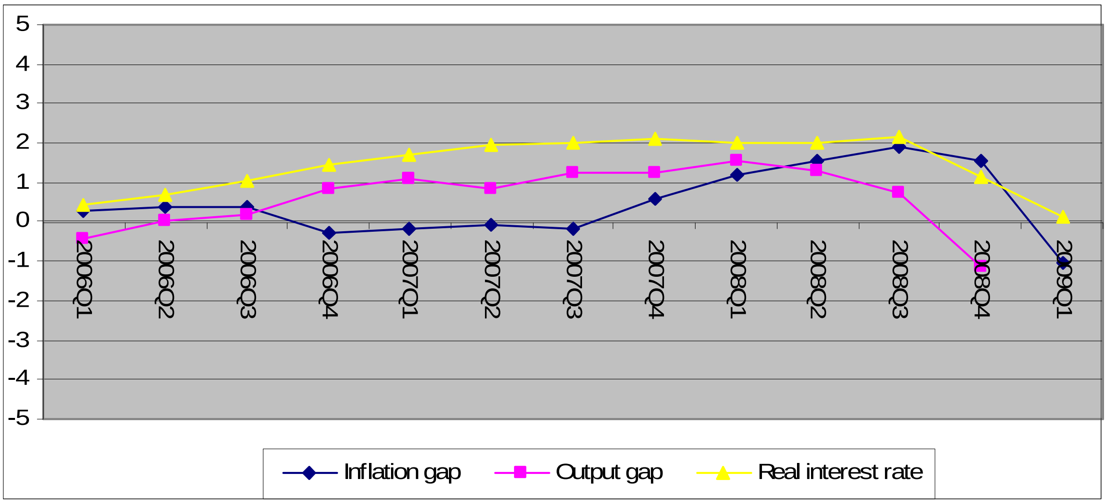

Figure 4 - Inflation gap, output gap and real interest rate, Euro Area (2006-2008).
Notes: Horizontal axis: time ; vertical axis: % points for the real interest rate. Inflation gap : HICP, mean of monthly data. Output gap: Hodrick-Prescott filter, 1600 on quarterly GDP; Real interest rate: nominal interest rate - Inflation expectations (Quarterly Survey of Professional Forecasters or SPF, mean point estimates, 2 years ahead). Mean of monthly nominal interest rate. SPF is selected as the most commonly used at the ECB, and 2 years correspond to its medium term oriented strategy.

The ECB position in the debate BN *versus* LW is a compromise. It has a Monetarist tradition where money matters: the quantity of money and monetary indicators (credit) remain at the centre of its analysis while they have nearly disappeared at the BoE and the Fed. In the two-pillars strategy, the monetary pillar is then presented by ECB members as a relevant tool to deal with financial instability. The economic pillar focused on the crisis impact on inflation and the real economy looks like what central banks under inflation targeting are doing. The cross-checking of these two pillars is supposed to offer a more accurate portrait of the financial situation than other monetary policy strategy. The ECB is vigorously opposed to inflation targeting, precisely because it considers that neglecting monetary conditions is not perfectly adapted to financial instability. The ECB explicitly states that its strategy is superior to the BoE, that it better predicts financial instability. Better anticipating financial imbalances, it can act more pre-emptively and more cautiously, explaining the more smoothed profile of *r* compared to the BoE.

2.2.2. Explanations of the strategy by the ECB

Before the crisis: financial stability in the two pillars strategy. During the period before the crisis, the ECB convincingly integrates financial instability in its two pillars strategy that is the cross checking of the monetary (credit, money) and economic pillars. The idea of taking into account financial imbalances via their future consequences on the economy is also present with the '*medium term orientation*' of the strategy. Those elements seem similar to inflation targeting (BoE) with apparently the same emphasis on the priority to price stability and the idea that the policy framework is enough so that that asset prices targeting is not required. Nevertheless, the BoE and ECB strategies are different: the BoE puts little emphasis on credit and money indicators monitoring constituting the ECB monetary pillar.

Because of this two pillars strategy, the monetary pillar in particular, the ECB is more in favour of the LW than the BoE or the Fed, and more in favour of the LW than the BN. Credit and money careful monitoring in the monetary pillar gives early warnings on the bubble. Hence, contrary to the BoE and the Fed, the ECB alleges to have some possibility to identify the bubble, even if it remains difficult (Papademos, 2004). That is also why the ECB claims its strategy is more appropriate than inflation targeting to deal with the financial crisis (Issing, 2005; Papademos, 2009a).

Beginning of the crisis: a Bagehot strategy. According to ECB members the financial crisis in 2008 has confirmed these claims: importance of monitoring credit and money, the superiority of the two pillars strategy on inflation targeting. Until the Lehman Brothers collapse, the ECB has explicitly followed the Bagehot's (1873) doctrine[24]. It was supposed to protect from moral hazard by distinguishing illiquidity from insolvency. Hence the ECB was not 'mopping up', practising instead inertia in the interest rate: the ECB was acting as a lender of last resort not as the monetary policymaker using the interest rate instrument. It results high interest rates during this period, with no interest rate cuts (Figure 4). It was justified by the '*separation principle*': the monetary policy instrument (interest rate) stance was not influenced by financial instability (Trichet, 2008). In terms of real interest rate profile, it resembles (a little) a BN while the rationale is different.

The ambiguity post Lehman Brothers collapse. Nevertheless, next to the Lehman Brothers collapse, in October 2008, the ECB began to cut the interest rate in what look like a 'mopping up' and accordingly its MPC members' begin to defend more explicitly the LW in their speeches (Trichet, 2009a). Yet, they were in a difficult position since they explained before that they were following the Bagehot's doctrine (a form of BN) and that the ECB strategy was enough so that the mopping up was not required. That is why some members continued to refuse the LW, claiming that the two pillars strategy is enough (Bini-Smaghi, 2009a). The solution to reduce this lack of clarity was to pretend that financial imbalances were so large that the interest rate instrument was not enough for the LW. The latter had to be pursued, but other means that the interest rate instrument[25]. At short term to save the financial system a new instrument of 'liquidity management' was required, non standard measures of '*enhanced credit support*' in the ECB terminology. Hence, the '*separation principle*' could continue to prevail: monetary policy remains focused on price stability, the focus on financial stability being managed via another instrument. As a consequence, the crisis had little impact on the ECB's doctrine of priority to price stability at the medium term and the related two pillars strategy. The only change is at the instrument level, revealing that price stability is not enough. In the log run, the solution is not a new goal of financial stability but a reform and development of the regulatory system.

[24] Bini-Smaghi (2008)
[25] This discourse is not totally different from the BoE's rhetoric.

In the end of 2009, as it became clear that the financial crisis was a permanent and extraordinary shock, demonstrating that the BN was inappropriate in this case, the ECB has reinforced its case for the LW strategy. It is now clearly in favour of the LW (Trichet, 2009b). Yet it should not be applied mechanically and should remain embedded in the two pillars strategy and the medium term orientation. ECB members also put the emphasis on the trade-off between price stability and financial stability[26], while it remains only implicit in the BoE case. ECB members consider that the trade-off is present at short term, but nearly absent at long term. It implies that at short term the interest rate instrument cannot pursue both goals, so that another instrument is needed or that price stability should be forgotten temporarily. But the recent crisis has demonstrated that the short-term could be very long, as Keynes stressed with its famous expression that in the long run we are all dead. The ECB has no answer to this criticism, and there is no mention of what will be the post crisis strategy. There is no sign of deep change in the ECB strategy. It does not seem a real problem since the crisis has shown that its strategy was clearly more appropriate than those of the BoE or the Fed. It does not mean that ECB pragmatic Monetarism is still the best strategy but instead that the BoE inflation targeting was apparently wrong in giving little or no role to money and credit. Beyond inflation targeting it is the demonstration of the limits to its underlying New Keynesian theory developing models with no imperfection in the monetary side with no banks and no credit crunch.

2.3. The Fed

As for the BoE and the ECB, the Fed's interest rate profile is first examined to judge if it is more congruent with the BN or LW approach. Next, the Fed's strategy against financial instability before and during the recent crisis is analysed.

2.3.1. Interest rate profile

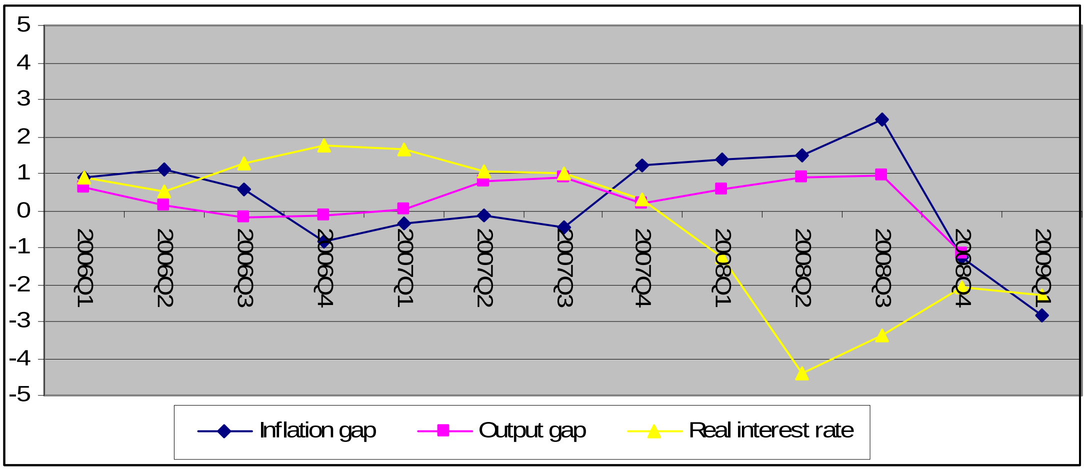

Figure 5 - Inflation gap, output gap and real interest rate, USA, 2006-2008.

Notes: Horizontal axis: time; vertical axis: % points for the real interest rate. Inflation gap : CPI, mean of monthly data. Assumed inflation target: 2.8%. Output gap: Hodrick-Prescott filter, 1600 on quarterly GDP; Real interest rate: nominal interest rate - Inflation expectations (Survey of Consumers, University of Michigan, expected change in prices during the next 12 months, quarterly data). Mean of monthly nominal interest rate.

The Fed real interest rate profile is the more conform to the BN: compared to the BoE or the ECB, the boom tightening is reduced (Figure 5). On the contrary, the mopping up is severe compared to the two others central banks. Since Greenspan (2002) the Fed is actually the leader of the BN developed during the boom/burst of the internet economy. During the recent 2007 financial crisis, huge rate cuts accompanied by large liquidity injections in the economy

[26] Papademos (2009b).

suggest that the Fed follows the first part of the Bagehot's doctrine ('lend freely') but not the second part on 'high interest rate', partly because it judges the distinction between insolvency and illiquidity is not easy to make in practice[27]. Moreover, high interest rates would penalize commercial banks, loans and the financial markets functioning[28].

2.3.2. Explanations of the strategy by the Fed

The Fed strategy towards financial instability inherited from Greenspan is first analysed, then the strategy during the current financial crisis is examined.

The Greenspan's standard. Since the high tech bubble the Fed is the BN strategy champion with, contrary to the BoE, some preference for the 'mopping up'. This strategy to deal with financial crisis is inherited from Greenspan and the peculiar episode of the high tech bubble. It is *prima facie* quite surprising that this doctrine has survived to Greenspan. Nevertheless, Greenspan had apparently a lot of influence on Bernanke's way of thinking[29]. Moreover, Bernanke is the leader of the BN's school, in particular on how to integrate asset prices in monetary policy indirectly, via forecasts. His works are the basis for the BoE strategy, but also the Fed strategy.

The belief in the soft version of the efficient market hypothesis[30] and the fundamental value theory are the root of the Fed BN. It is a soft version because Greenspan was aware of market participants 'irrational exuberance'. Despite this imperfection, Greenspan claimed that on average bubbles are beneficial and that market exuberance is beneficial. He considers the fact that asset prices are away from the fundamental value as to some extent a rational behaviour from market participants. Not only because it is financial markets normal functioning, but also because it is beneficial for them, and also for the rest of the economy. He considers bubble as pro-growth. He also judged as limited and manageable the cost of the bubble burst, so that costs-benefits analysis is pro bubble. This faith in markets functioning is based upon his experience at the Fed. His conclusion from the high tech bubble is that markets and the economy are resilient to shock. It means markets are to a certain extent self correcting so that central bank intervention to prick the bubble is not required and could kill its pro-growth character. Even if the central bank has to intervene during the bubble burst, it is easily done via the 'mopping up', partly because self-correcting markets help the monetary authorities; but also because the markets soft efficiency implies that asset prices misalignments are limited. Finally, he defended the BN because he believed that a large part of the asset prices boom at the end of the 1990s was justified by the productivity boom caused by the new technologies that he identified in 1995.

This Greenspan doctrine should not be classified has a total BN in the sense of no action at all. Indeed, Greenspan is in favour of a classical BN incorporating the mop up action during the bubble burst. On top of that, he tried to prick the high tech bubble with high nominal interest rate from 1995 to 1998, and warns markets about the 'irrational exuberance' since November 1996. But it had little or no impact on markets, so his experience is that the pre-emptive action against bubble is inefficient and so is the LW. Hence the Greenspan BN version is not only theoretical, but also a result from practice.

Following Greenspan, Federal Open Market Committee (FOMC) members have developed a case against the LW they re-named the '*extra action*', while the BN has the denomination '*conventional view*' (Kohn, 2006). Based on the Greenspan era experience

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[27] Bernanke (2008a), Kohn (2009).

[28] Mishkin (2007d).

[29] Looking at Bernanke's speeches at the Fed during the Greenspan era, they clearly are more and more influenced by Greenspan in time.

[30] Blanchflower (2009a:9) defines this hypothesis as follows : '*financial sector has price all assets efficiently at all times in the past, and will continue to do so over the infinite future*'.

(1987-2006), they allege that the LW is difficult to implement in practice since market participants following Keynes' animal spirits don't listen to the Fed. Pricking the bubble is not feasible in practice due to markets limited efficiency. LW effects are uncertain because markets are deaf so that the central bank has to increase the interest rate a lot before markets react. Those rates increase can destabilise the real economy (recession) before markets react. There is a trade-off between financial and macroeconomic stability that the LW cannot avoid. Since FOMC members claim that their official mandate is according to the Federal Reserve Act of 1977 '*maximum employment, stable prices and moderate long term interest rates*', they have no incentive to generate unduly high interest rate to prick a financial instability that is not a priority in their mandate. Like proposed by academics[31], asset prices are taken into account only if they affect in the long run the mandate's primary goals: price stability and employment. This BN permits to avoid confusion on monetary policy goals (mandate). In this respect, the Fed resembles the BoE inflation targeting strategy. Yet one major difference is that the Fed responds in principle equally to the asset prices impact on inflation and output forecasts while the BoE mainly respond to their impact on the inflation forecasts.

Furthermore, another major argument against the LW is bubble identification. Based on the 1990s example, FOMC members consider that part of asset prices increase can be justified by economy fundamentals with the productivity boom. It was difficult to separate the part of asset prices increase due to fundamentals from the one not caused by fundamentals. It is difficult to distinguish the boom from the bubble. The LW would have destroyed the part of asset prices boom justified by fundamentals, causing an undue contraction in the economy. It demonstrates that the LW calibration is difficult: what is the exact amount of interest rate increase justified by fundamentals? A limited increase has no effect on markets exuberance but preserves the mandate and the part justified by fundamentals. A large increase can affect markets but does not respect the mandate and produces undue fluctuations in the economy.

Another problem with the LW, according to FOMC members, is the timing. The LW can be pro-cyclical instead of contra-cyclical: pricking can happen while the economy has moved from the boom to the burst. This limit to the LW is partly due to the monetary policy transmission lags. Some FOMC members also allege that the LW is a source of moral hazard. Regulating asset prices can lead market participants to be convinced that the central bank is taking full responsibility for asset prices, targeting them. Becoming a new target for monetary policymakers, markets participants can put even more pressure on the Fed to intervene in case of asset prices collapse (Kohn, 2006). Besides, the high tech bubble, but also the 1929 crash and the 1990s Japan experience is supposed to have demonstrating that monetary policy intervention limited to 'mopping up' is enough and efficient. FOMC members summarize this line of reasoning with a costs-benefits analysis of the LW strategy that is associated with the time horizon: short-term, long run (Figure 6).

	Costs of LW	Benefits of LW
Short term	Recession	No gain
Long run	No costs	Avoiding depression

Figure 6 - Costs-benefits analysis of the LW strategy according to Fed members

Hence the LW is valuable (Figure 6) only if the long term depression generated by the asset prices burst is larger than the recession caused by pricking the bubble. According to FOMC members, the high tech bubble has demonstrated this is not the case. The financial burst is not necessary large and is easily reduced by 'mopping up'. They reject the idea behind the LW that the bubble can lead to a non linearity with the risk of collapse of the economy. This is possible but unlikely. The theoretical apparatus underlying this case against non linearity is

[31] Bernanke and Gertler (1999; 2001).

the efficient market hypothesis and the fundamental value theory that promote a substantial dichotomy between the financial side and the real economy. Furthermore, they note that even if the non linearity does happen, the appropriate instrument is not monetary policy but instead the regulatory framework.

The strategy during the crisis: before Lehman Brothers collapse. During this period the Greenspan standard against the LW and pro 'mopping up' remains dominant. The bubble identification was still a problem condemning the LW. The belief in the soft efficient markets hypothesis still lead FOMC members to affirm that the central bank had no more information than market participants, so that it couldn't do more that waiting for their self-correction. Moreover, the belief that bubbles are not dangerous was strong: recent financial crises demonstrate that they have little impact on the real economy. The non-linearity defended by the LW strategy was not judged realistic; and once again if ever the non-linearity is present, the regulatory framework is the solution, not monetary policy. The reason is that the burst is presented as a market failure, in line with textbook micro-economy, not as a global risk threatening the whole economy. Market failure is a neutral and technical description with no mention of the importance of the costs for people. It is an ambiguous terminology suggesting either that the market is imperfect, either the market collapse. It seems that FOMC members defends the first version, pretending that the solution to the crisis is a new institution (regulatory) to complete markets and avoid the future crisis with more regulated markets. Behind the expertise, the Fed claims that the collapse of the economy is nearly impossible and that if happens it is not really its responsibility: this is an escape.

The strategy after the Lehman Brothers collapse. The refusal to rescue Lehman Brothers has often been positively interpreted has the respect of the Bagehot's doctrine: insolvent banks should not be rescued. Yet the effect of this inactive policy on financial instability has been dramatically negative. The crisis deepened, forcing the Fed to change slightly its position in the BN *versus* LW debate. The crisis spill over on the real economy was so large that the LW idea of a non-linearity with the collapse of the economy became likely. The Fed had to consider the queue of the probability distribution of risks and mop up severely, using an extraordinary interest rate cut the 29th of October, so two rate cuts in the same month: the nominal interest rate i was reduced from 1.5 to 1%. Another cut was done in December with i reduced to between 0 and 0.25%. Thus the 0% lower bound on the official interest rate i was quickly attained. They fear that the insurance policy against the non-linearity was not enough, suggesting some limits to mopping up with the interest rate instrument since despite they had put the real interest rate r deep in the negative zone (Figure 5) it was not enough to prevent the financial market panics and the severe attack to their neo-Bagehot strategy. The alleged regulatory solution was rejected since too long too implement due to the necessity of a long reflexion (Bernanke, 2008b). The regulatory framework was perhaps part of the solution, but its weaknesses and shortcomings were also a cause of the crisis. Instead, some emergency solutions and some new instruments were needed. The Fed moved to the 'credit easing' and had to produce a collection of innovations in monetary policy implementation to give liquidity to the markets and the economy[32].

This high uncertainty with a risk not considered in the Fed's BN strategy has forced FOMC members to re-examine the case against the LW. The doctrine inherited from the high tech bubble and Greenspan was apparently under stress: '*I may have been unduly comforted by the resilience of the U.S. economy to the collapse of the high-tech bubble*' (Kohn, 2008b). The efficient market hypothesis, even its soft version, was challenged by the crisis with large market participants mistakes in assets valuation and a limited relation with the alleged fundamental value. The mopping up was also call into question since it proved to be more

[32] This is outside the scope of the article. See Loisel and Mésonnier (2009).

complicated and less efficient than during the high tech burst in 2001-2002. This drives some FOMC members to consider that the ability to detect the bubble should have been more important during the current crisis, but that in fact it had been not large enough to practice the LW. After re-examination, FOMC members continue to defend the BN strategy, insisting on the same limits to the LW implying its rejection.
In the reality the Fed has been very innovative in the implementation of its policy, probably partly due to the inappropriateness of its doctrine, but in the rhetoric its strategy towards financial instability has remained rather unchanged. Such maintenance of the BN policy is not perfectly consistent with the challenge that faced its underlying hypotheses during the current crisis: the Fed's position in the BN *versus* LW debate lacks of robustness in the light of the recent crisis. The idea that financial instability is not a full goal of the Fed is not consistent with its history: it has been created in 1913 next to the recurrent problem of (banking) panics in 1873, 1884, 1893 and 1907. Indeed in the preamble of the original Federal Reserve Act it was declared that the Fed was created '*to provide for the establishment of Federal reserve banks, to furnish an elastic currency, to afford means of rediscounting commercial, to establish a more effective supervision of banking in the United States*'[33]. Nowadays the complete Fed's 'monetary policy goals' are: the Fed '*shall maintain long run growth of the monetary and credit aggregates commensurate with the economy's long run potential to increase production, so as to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates*'[34]. Thus credit is mentioned in Fed's mandate.
The Fed mopping up strategy was also based on the hypothesis that it has no informational advantage compared to market participants. This is not totally consistent with the fact that it is an institution centralising information, not a market player. Even if it has as much information than market participants, it can more intervene than them that cannot act even if they know there is a bubble because it is not their interest. In the face of market participants rational herding behaviour the hypothesis that the Fed has no informational advantage is not a reason for inaction (BN). Finally, the Fed seems, to use Keynes words, prisoner of past conceptions: the high tech bubble and the Greenspan doctrine. Past experience can help for the future, but it is often a limited or even useless guide since the future is different from the past.

Why these central banks and central bankers propose different approaches to this debate, what are the foundations of their differences in strategy?

2.4. Differences in foundations

Differences in monetary policy regime among the three central banks are crucial to explain the differences in positioning (Figure 7).
The inflation targeting (BoE) and the Fed are post monetary targeting strategy with little or no emphasis on monetary aggregates and credit. They have abandoned monetary aggregates since the end of the 1980s. The underlying theory of inflation targeting developed by some New Keynesian is totally anti-monetarist, rejecting the quantitative theory, the Friedman's theory of inflation, and don't include banks or credit crunch. Apparently rejecting all that looks monetarist, New Keynesians have also abandoned credit and money monitoring since there are not supposed to be anymore the most important indicators or information variables. It could explain New Keynesians difficulties to identify the credit bubble of the current crisis, or at least difficulties in justifying a focus on credit, that is the LW. The Fed case is more difficult to understand since Bernanke is one the best specialist of the credit channel and of the 1929 crash. The predominant role of the BN can be due to the presence of Kohn (close to Greenspan) or Mishkin, a typical New Keynesian. Moreover, Bernanke and Mishkin are one

[33] See Ferguson (2002).
[34] Federal Reserve Act, Section 2a, 1977.

the best specialists of the inflation targeting regime they want to implement at the Fed, what could explain the choice of the BN, like the BoE.

	BoE	ECB	Fed
Policy regime	Inflation targeting	Two pillars	Risk management
Preferred strategy vis-à-vis financial instability	BN	LW	Mopping up
Bubble identification	Very difficult	Possible	Impossible
Belief in the fundamental value theory	Yes, but limited	Not really	To a certain extent
Efficient market hypothesis	No	No	To a certain extent
Self regulated markets	No	No	To a certain extent
Financial/real economy dichotomy	Small	No	Moderate
Boom/bust	Limited risk	Costly	Mostly beneficial
Financial stability considered as a goal	No	Yes	No
Priority to price stability	Yes	Yes	Yes
References	Bernanke and Gertler (1999; 2001)	Cecchetti et al. (2000; 2002)	Greenspan (2002)

Figure 7 - Positioning of the BoE, ECB and Fed in the BN and LW debate: the foundations.

It contrasts with the pragmatic monetarist of the ECB and its monetary pillar offering the ability to monitor credit and to justify its role in the policy decision. It also allows for a better and early identification of the credit bubble and beyond the LW. The ECB, unlike the BoE and the Fed, is not really in favour of Neo-classical hypothesis such as the fundamental value[35]. Because of irrational market participants there is a risk of boom/bust or credit cycles threatening the whole economy. Financial markets and financial stability should be monitored and manage permanently, not only in case of crisis. ECB members sometimes suggest that financial stability is a goal *per se*, even if it remains less important than price stability, like at the BoE and the Fed. At the centre of this positioning is the belief that financial crisis are perilous for the economy because it can easily transmit to the economy.

The BoE's MPC members sometimes mention the fundamental value theory[36], but they don't really believe in hypothesis such as efficient market, the dichotomy or self-regulated markets. That is why some MPC members judge that mopping up is uneasy because irrational markets are not ready to react or overreact to monetary policy. The fact that the dichotomy between the real and financial sectors, albeit imperfect, exists, is another reason for not intervening under inflation targeting. Hence, even if credit boom/bust can destabilise the economy, the magnitude is small. For all these reasons financial stability has not to be a goal *per se*: inflation targeting is enough to address the crisis.

The Fed is closer to the BoE than the ECB in terms of positioning in the BN *versus* LW debate. Indeed they both believe that identification is difficult, and that there is a form of dichotomy prevailing, the resilience. Moreover they both mention frequently in their speeches Neo-classical hypothesis like the efficient market hypothesis or the fundamental value[37]; and even if they claim it is almost impossible to observe, they believe in it, and markets are relatively well following it (Bernanke, 2002)[38]. Yet the BoE and the Fed differ because the

35 Papademos (2008a), Stark (2009a).
36 Bean (2003b).
37 Bernanke (2002), Kohn (2008b).
38 It seems based on ideas that the fundamental value is an intrinsic of properties of markets and their resilience, which are partly characterised by their ability to disperse risk (Warsh, 2007). But dispersing the risk does not eliminate it and can even increase the systemic risk by increasing the potential of contagion.

Fed is not an inflation targeter and respond equally to the impact of the crisis on both output and inflation forecasts because of its dual mandate. The BoE is an inflation forecast targeter that put more weight on the inflation forecasts because of its hierarchical mandate with priority on inflation.
This Fed Neo-Classical rhetoric, inherited from Greenspan, leads to the idea that bubbles are not necessarily dangerous. The BoE and the ECB are defending the opposite view. Contrary to the BoE that defends the BN because inflation targeting is enough, the Fed defends this strategy because of Neo-classical beliefs and for practical reasons. While it sounds strange for FOMC members belonging to the New Keynesian school (Bernanke, Mishkin), it could be caused by the difficulty and fear to change the strategy established by Greenspan. Moreover, the dramatic magnitude and quickness of the credit easing can be justified by the fear of the 1929 deflation, but it looks like a temporary priority to financial stability over price stability. From this point of view the ECB strategy seems clearer and more appropriate, not because of its monetarism, but because of its transparent monitoring of money and credit. Nevertheless, the ECB has an ambiguous position since it is not clear if financial stability is a goal per se or not: is the second pillar a goal?

After analysing each three central banks in isolation, their practices and strategies regarding the BN *versus* LW debate are compared, and their evolutions before and after the crisis.

3. A comparison of the BoE, the ECB and the Fed

First, for comparing their positioning in the debate BN *versus* LW debate, the real interest rate profiles of the three central banks during the current crisis are studied simultaneously. Next, the comparison is refined by examining the evolution of individual members on the debate via an index based upon the content analysis of their speeches. Finally, the underlying hypothesis behind their positioning are confronted.

3.1. Interest rate policy during the crisis

Real interest rate stance before the crisis is first analysed, then the period after the crisis.

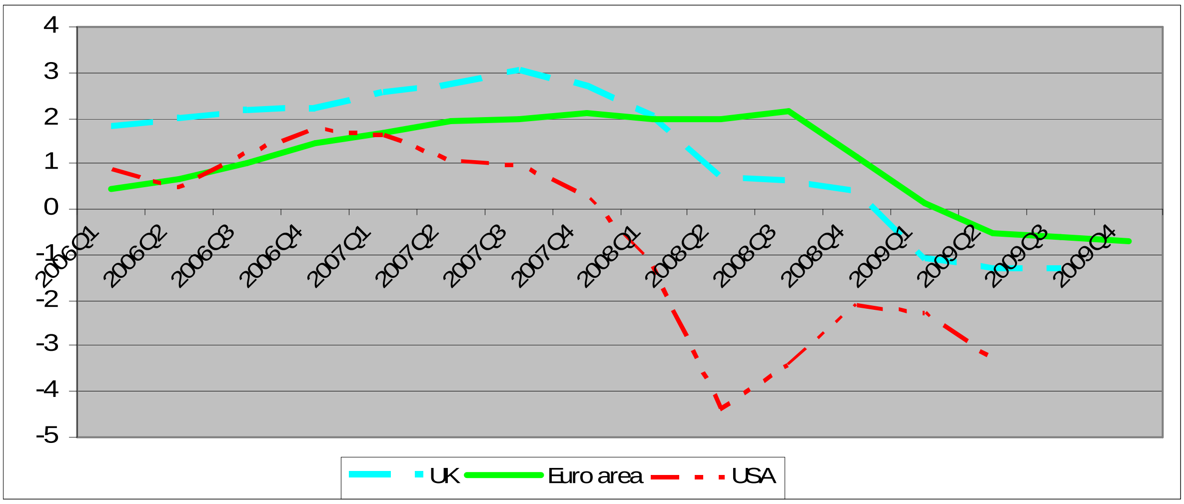

Figure 8 - Real interest rate Euro area, U.S. and United Kingdom, 2006-2008.
Notes: Horizontal axis: time; vertical axis: % points for the real interest rate. For explanations of calculation see Figure 2, 4 and 5.

The comparison of the three central banks real interest rate profiles (Figure 8) indicates that the BoE and the ECB have little or no preferences for the BN consensus: they don't maintain the real interest rate constant during the boom period before the crisis. This is less clear for the Fed with the U.S. real interest rate declining before August 2007. The LW recommends a bubble pricking during the asset boom that seems more practised by the BoE and the ECB more the Fed (Figure 8 and Figure 9, column A)[39]. This is consistent with the Fed being anti LW, considering than pricking can do more harm than good.

	Real interest rate increase (Boom) A	Real interest rate decrease (Bust) B	Behind the curve (*real interest rate falls after output gap*) C	Behind the curve (*real interest rate falls after inflation gap*) D	Real interest rate heated 0% in 2008 E
United-Kingdom	1,2%	-4,1%	No	No	No
Euro area	1,6%	-2,6%	Yes	No	No
USA	0,8%	-6,3%	No	No	Yes

Figure 9 - Interest rate policy of the BoE, ECB and the Fed during the financial crisis

The Fed. During the burst period post August 2007 the Fed is more practising the 'mopping up' than the BoE and the ECB: the Fed seems more pro BN than the others two central banks (Figure 8, Figure 9, column B). The Fed is the first to decrease the real interest rate to 0% (Figure 8, Figure 9, column E) and does it in about 4 quarters. This can be interpreted positively by claiming that the BN strategy of the Fed allows for acting soon and strongly during the burst, so that the Fed interest rate action is ahead of the curve. This is apparently confirmed by the output and inflation situations (Figure 9, columns C and D).

ECB. It would suggest that the ECB and to a lesser extent the BoE are reluctant to implement this strategy, so would be behind the curve. Inflation and output situations don't confirm this assertion for the BoE, while the ECB acts late only in terms of production (Figure 9, columns C and D). Thus apparently the ECB has more conservative preferences than the BoE or the Fed, that is less weight on output than these central banks in its loss function. Since compared to UK the Euro area real interest rate is maintained constant for a longer period post August 2007 and remains higher, there are some indications that the ECB is less pro BN than the BoE (Figure 8). Put differently the ECB seems the more in favour of the LW. The BoE has a mixed strategy BN-LW with increasing r before the crisis and next a 'mopping up' (Figure 9, columns A and B). It also confirms ECB more pronounced reluctance to implement the 'mopping up', or a more prudent application of this action. But *in fine* the BoE and the ECB don't look totally behind the curve. Indeed the ECB puts the real interest rate in about 3 quarters while the BoE needs 5 quarters. This illustrates that the ECB activism is not that far from the Fed mop up. The ECB is against mopping up but lead an activist policy.

As a conclusion, the current financial crisis the Fed is rather pro BN, the ECB pro LW while the BoE leads a mix strategy BN-LW.

Yet such comparison doesn't highlight potential evolutions in central banks preferences in the BN vs. LW debate during the current crisis, and more precisely eventual evolutions in individual central bankers' preferences. Central banks are not a single decision-maker, but a MPC made of several individuals. That why an index of central bankers preferences is constructed to spot their dynamics during the crisis.

The points of view of the three central banks members are inherited from the high tech bubble burst in 2001-2002. The magnitude and nature of the current crisis can lead to change in their positions.

[39] The limit to this exercise is that the interest rate and inflation expectation can be driven by other elements than the financial crisis, such as the oil price shock.

3.2. Evolution during the crisis: a central bankers individual preference index

The reason for analysing the BN vs. LW debate among the three central banks (BoE, ECB, Fed) with an index and not a policy rule estimation are first presented. Next, arguments in favour of the index are exposed, followed by its limits that are reduced with the use of an explicit formal construction scheme with selection criteria. Finally the index results are discussed.

3.2.1. The index: pros and cons, construction criteria

3.2.1.1 The pros

It is common in central banking literature to use index, for example to measure the level of central bank independence, accountability or transparency (Eijffinger and Geraats, 2006). This allows for a both quantitative and qualitative analysis. The index measures central bankers' preferences in the BN vs. LW debate. Preferences are revealed via the intensity of words used by central bankers to describe the two approaches of this controversy. This text analysis is frequent in social sciences, and is now used in economics: 'wording' or codes models are employed precisely to understand and predict central banks behaviour (Rosa and Verga, 2005). Speeches content analysis permits to extract MPC members' individual position in the debate. The complexity of central bankers judgment on this debate, described by words, can be taken into account in the index.

3.2.1.2. Index: limits, data and methodology

The methodology to collect data, build the preference indicator and measuring the preference are dedicated to alleviate the index construction drawbacks.

Criteria for speeches entering in the index. In the index construction, subjectivity and arbitrary choice can be a problem in the selection of speeches entering in the database. This problem is reduced if the criteria to select speeches are explicit so that the index construction can be verified. All articles chosen are serving central bankers' speeches. Former central bankers' contributions are excluded from the sample. The article choice main criterion is the presence of the words '*lean*' or '*leaning against the wind*' so that the central banker is explicitly dealing with the debate. The search has been done on central banks websites using the information provided by their webcrawler, metasearch engine. It results 47 speeches: 17 from the BoE, 20 from the ECB and 10 from the Fed (Figure 10 in annex).

Criteria for the sample period. The time period of the speeches database is 2002/08–2009/12. Despite there are previous contributions to this debate, the sample begins in August 2002 with Greenspan's article considered in the literature as the central bankers' first major contribution to the debate, but also because the aim of this index construction is primarily to study the current crisis that began in 2007.

Criteria for the mapping from the wording to the index. Such index is limited since it is based on the researcher subjectivity in associating a number with 'words'. Yet such drawbacks are limited if the criteria, words and references for index construction are presented so that the index can be replicated by other researchers. The index is based on the intensity preference for the BN and LW approaches revealed by the wording employed (Figure 10 in annex, columns 5 and 6) but also if the central banker present or not the arguments of both sides of the debate. Each central banker scores in their different speeches are reported in Figure 10 (annex).

3.2.2. Index presentation

The index for the debate BN vs. LW is organised as follows:

- Index < 0 : 'Benign Neglect' (BN)
  The index is *negative* for preference for the 'benign neglect' approach, and its maximum (-3) very strong preference for the BN, while (-2) being strong preference and (-1) moderate preference for the BN.
- Index > 0 : 'Leaning against the wind' (LW)
  The index is on the contrary *positive* for preference for the 'leaning against the wind' with the maximum (3) corresponds to very strong preference for the LW, while (2) and (1) are respectively strong and moderate preference for the LW.
- Index = 0. It means no preference for one of the approach judged equal or that both approaches are rejected.

As in Eijffinger and Geraats (2006) the basic index interval is 3 points and the mid-point, for instance -0,5 or 1,5, are used for a more precise index. It is based on the criteria such as the presentation of the arguments of both approaches of the debate or the depth of the counter arguments presentation.

In accordance with Eijffinger and Geraats (2006) average index score in time are calculated for each three central banks (Figure 11, bottom). This average has some limitations since it represents individual MPC members' preferences, not the whole MPC preference. Moreover, not all MPC members are represented in the sample. Hence the mean or average index for a given central bank is a rough indicator of the MPC preference and has little informative power on the average MPC position. On top of that speeches dealing with the controversy do not have a regular frequency in time so that the mean index for a given period is not necessary very representative. Nevertheless, the number of speeches, especially during the recent crisis period seems large enough to get a few information. Moreover, it is individual member that decides the interest rate so their preferences are relevant for the BN vs. LW debate.

3.2.3. Index results

Results of the index in terms of speeches number in general and in each three central banks in particular are studied. Next, index results are examined at the central banks macro-level to see potential evolution in their preferences in the BN vs. LW debate during the crisis. Finally the index is analysed at the central bankers' micro-level to shed light on individual preferences in this debate. Consequences for the aggregate MPC position in the debate are considered.

Speeches number. With a more limited number of speeches, the Fed is less talking about the debate than the BoE or the ECB (Figure 11). Central banks are less silent on this debate before than after the Lehmann Brothers collapse in October 2008. After this critical moment, they begin to talk more about the controversy. Indeed the number of speeches post Lehman Brothers is superior to the number corresponding to the period before the crisis, while the time period is five time smaller. This is a signal that the debate has been intense during the recent crisis period in 2009, meaning this period is worth studying.

	All central banks	Bank of England	ECB	Fed
Number of speeches on the debate :				
Before the crisis (08/2002 – 07/2007)	20	8	6	6
08/2007 – 09/2008	5	2	1	2
10/2008 – 12/2009	22	7	12	2
Whole sample (08/2002 – 12/2009)	47	17	20	10
Index mean				
Whole sample (08/2002 – 12/2009)	-0,37	-0,88	0,53	-1,3
Ante crisis	-0,88	-1,12	0,25	-1,67
Post crisis (start 08/2007)	0	-0,67	0,64	-0,75
Post crisis – Lehmann (start 10/2008)	0,18	-0,5	0,62	-0,25

Figure 11 - BN/LW preference index data and results for the period ante and post financial crisis
Source: author, based on the BN/LW preference index (See Figure 10 in annex for index details).

Index mean: the central banks macro-level. According to the index average, the three central banks are making a continuum with the ECB traditionally pro LW, the BoE clearly pro BN and the Fed being the BN champion. For the case of the ECB, its president claims that '*Over the past few years, both experience and developments in the literature appear to support a shift in favour of the adoption of some form of leaning against the wind*' (Trichet, 2009a). The index also permits to clarify the position of the BoE that looking at real interest rate profile was a mix BN-LW. Considering central banks together, the BN is the consensus before the crisis. The crisis[40] is challenging this consensus with mean index for the crisis moving towards the LW with a neutral position (0).

The mean post Lehman Brothers collapse is also considered since it is described by central bankers and academics as a turning point in the current financial crisis. This sub-sample indicates a more pro LW position for central banks together, suggesting a consensus shift among central bankers from the BN to the LW. Yet there are some disparities with the BoE clearly moving towards the LW, while ECB is not because according to the index its members fluctuate in their position in the recent period, Papademos or Bini-Smaghi in particular. Thus the ECB remains only a 'soft' defender of the LW. It is not a strong defender of the LW as stressed by its mean index (below 1). The ECB applies the LW with prudence, embedded in the two pillars strategy and the medium term orientation.

The mean for the period post Lehman Brothers collapse as little signification for the Fed due to the reduced number of speeches during this period (2 speeches). Thus the index suggests central bankers positions have moved during the crisis: their preferences have moved from the BN to the LW. Hence the BN consensus has been under pressure, the index even indicating that in the most recent period the LW has become the consensus. This can be seen at the individual central bankers level.

Index at the micro-individual level and MPC macro consequences. As stressed before, this index is first an individual members index, so that previous results at the central banks macro-level have a limited signification. Indeed not all MPC members are represented in the database. So results at the individual micro-level seem the more relevant. After a few general remarks, the analysis is focused on the crisis period and finally consequences for the MPC aggregate level are studied.

The index shows that preferences for BN are generally more intense (-2 or -3) while preferences for the LW don't go high (Figure 12). Central bankers speeches analysis suggests it is due to the fact that the BN is presented has the common wisdom so that is easy to be radically pro but difficult to be totally against since it implies being against the central bankers wisdom and the academic mainstream. Besides, significant variations in preferences during the crisis (Papademos) are difficult to explain.

For the ante/post crisis evolution, the index highlights three groups of central bankers (figure 12), as shown by the index means (Figure 11). A first group has strengthened its preference for the BN consensus during the crisis, Tucker or Bini-Smaghi for instance[41]. A second group, whether it is pro BN or pro LW, has not changed its mind during the crisis, Mishkin or Tumpell for instance. The third group is made of central bankers with preferences evolving towards the LW during the current financial crisis. According to the index they are numerous: Bean, Gieve or Kohn. They explain part of the evolution of the mean index towards the LW. The change in preferences can be radical, with the index indicating that Bean and Gieve for instance have moved from the BN to the LW. Thus according to the index the more radical individual changes in preferences are at the BoE.

[40] In the literature August 2007 is the consensual date for the beginning of the current crisis.

[41] Bini-Smaghi is a special case with 0 in the index because he refuses both the BN and the LW pretending that ECB's strategy encompasses this debate.

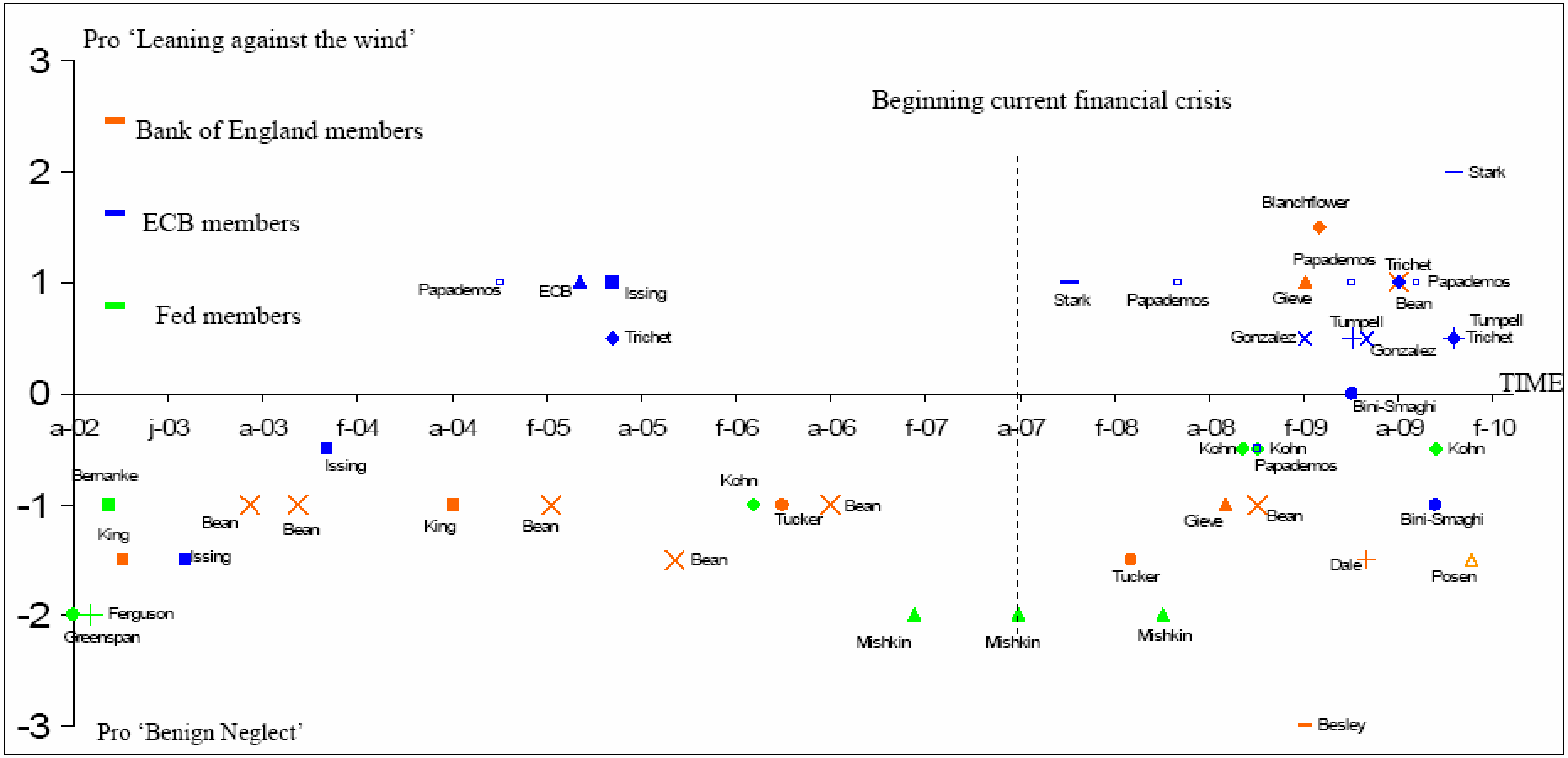

Figure 12 - Index of central bankers' preference in the 'Benign Neglect' versus 'Leaning against the wind' debate

Notes: each point represents a central banker preference in the BN versus LW debate with his name added. Members of three central banks are analysed and represented with different colours: orange for the BoE, blue for the ECB and green for the Fed. Figure 10 is giving each central banker affiliation. The *vertical* axis corresponds to preference index in the BN versus LW debate. The positive upper side (0 to 3) corresponds to pro LW preference with 3 being the strongest pro LW preference of the index. On the contrary the down negative side of the index corresponds to pro BN preferences with -3 being the more intense preferences for BN. The *horizontal* axis is time, and the sample period is 08/2002–12/2009. Details of index elaboration are presented in the article.

Yet the impact on the MPC is limited since despite Bean stayed in the MPC, Gieve is not any more since February 2009. Moreover, Gieve has been replaced by Tucker at the position of Deputy Governor for Financial Stability, and Tucker seems against the LW (Figure 12). Nevertheless, Bean's change in preferences is important since he was the member the more elaborating on the debate with a total of 7 speeches (Figure 11). The change can be more modest with King becoming less against the LW.

In the end, the BN mainstream remains largely represented and mainly central bankers continue to defend this approach despite the financial crisis. Nevertheless, they admit that the current financial crisis has shown some limits to this approach, reviving the LW[42]. Consequently, the BN consensus has been challenged by the current crisis, leading to an evolution of central bankers' positioning towards the LW: central bankers moved North in Figure 12.

Since individual preferences are heterogeneous among central bankers it means that at the aggregate level of the MPC that there is no unanimous position. This is particularly the case of the BoE where members can be pro BN or pro LW. This heterogeneity in preferences is consistent with its type of 'individualistic committee' with incentives for individual position due to an individual accountability[43]. Despite small individual variations, the ECB is more homogenous. Thus contrary to the BoE, the rather unanimous ECB preferences are in accordance with its 'truly collegial' type. Yet the ECB heterogeneity in preferences appears more important that what could have been expected with its type. Finally, despite a small movement towards the LW during the crisis, the Fed keeps homogenous pro BN preferences. These MPC internal diversities demonstrate that the debate BN vs. LW is still strong behind central banks closed doors.

Conclusion

In the aftermath of the 2001-2002 New Economy boom-bust, the debate BN *versus* LW seems relevant to understand the BoE, ECB and Fed actions during the current crisis that begun in August 2007. The latter has slightly changed the positioning of these three central banks, evolving from the BN to the LW strategy. But at the end their positions remain more or less the same. Thus even if the crisis has forced central banks to reassess their financial stability goal, they continue to pretend that its weight is always less important than other goals: the priority to price stability remains the norm. Moreover, the coordination between these multiple goals is not yet clarified by the three centrals and will be their next task in the future. These relatively small evolutions are in sharp contrast with the extraordinary magnitude of this crisis with the triumph of Keynes' ideas: speculation, inefficient markets with optimistic-pessimistic animal spirit. It reveals that despite a new situation, central banks have the temptation, as stressed by Keynes, to remain in their *rhetoric* prisoners of past concepts. On the contrary the current crisis tends to prove that this time the past wisdom of the BN was less appropriate than the LW. That is why the ECB following this strategy was more ready to deal with this new situation than the BoE or the Fed believing in the old BN.

The crisis also suggests that the inflation targeting regime, that was the dominant paradigm before the crisis, is not necessary the one best way to deal with Minsky's financial fragility that has become a major question with financial markets development. Indeed, in the face of the current severe crisis, central banks have implemented in *practice* less price stability focused strategy. In the face of high uncertainty and risk they have been able in practice to produce innovations. It is in sharp contrast with their theory and rhetoric that stick to past ideas, the Fed and the BoE in particular. This gap between theory and practice could

[42] Kohn (2008b).

[43] See Blinder (2004) for a detailed presentation of this MPC typology.

mean that the call for change stressed by the current crisis with the adoption of Keynes ideas will not happen. This possible rapid return to 'business as usual' could presage that we could be quick back in a new crisis.

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Annexes

Central banker	Year	Central Bank	Preference index in the BN vs. LW debate	Citation on the opinion about the 'leaning against the wind' (LW)	Opinion about the 'benign neglect' (BN)
(1)	(2)	(3)	(4)	(5)	(6)
Bean	2003a	BoE	-1	*'considerable difficulties*	
Bean	2003b	BoE	-1	*'Extraordinary difficult'*	
Bean	2005a	BoE	-1		'Satisfactory'
Bean	2005b	BoE	-1,5	*'Unlikely to be appropriate'*	
Bean	2006	BoE	-1		'Reasonable'
Bean	2008	BoE	-1	*'Practical difficulties'*	
Bean	2009a	BoE	1	*'the events of the past couple of years have clearly tipped the balance in favour'*	
Bernanke	2002	Fed	-1	*'Not entirely without merit' but 'unlikely to be productive in practice'*	
Besley	2009	BoE	-3	*'intellectually and practically suspect*	
Bini-Smaghi	2009a	ECB	0	*'remains an abstract concept'*	'Not sufficiently'
Bini-Smaghi	2009b	ECB	-1	*'the case has not yet been made'*	
Blanchflower	2009	BoE	1,5	*'Need to consider such a course'*	
Dale	2009	BoE	-1,5	*'Difficult to implement in practice'*	
ECB	2005	ECB	1	*'attractive features' but 'risks'*	
Ferguson	2002	Fed	-2	*'Very problematic', 'extraordinarily difficult'*	
Gieve	2008	BoE	-1	*'hard to believe'*	
Gieve	2009	BoE	1	*'willing to' but macroprudential better*	'not safe'
Gonzalez-Paramo	2009a	ECB	0,5	*'support'*	
Gonzalez-Paramo	2009b	ECB	1,5	*'support'*	'moral hazard', 'excessive risk taking'
Greenspan	2002	Fed	-2	*'an illusion'* *'Difficult to conceive'*	
Issing	2003a	ECB	-1,5	*'concerns'*	
Issing	2003b	ECB	-0,5	*'Clarifications are required'*	
Issing	2005	ECB	1		
King	2002	BoE	-1,5	*'virtually impossible'*	
King	2004	BoE	-1		'I agree'
Kohn	2006	Fed	-1	*'Likely to lead to worse macroeconomic performance', 'dubious'*	
Kohn	2008a	Fed	-0,5		
Kohn	2008b	Fed	-0,5	*'larger potential gain that I had anticipated' but 'still sceptical'*	
Kohn	2009	Fed	-0,5	*'limited ability'*	
Mishkin	2007a	Fed	-2	*'No', 'almost impossible to do'*	
Mishkin	2007b	Fed	-2	*'do more harm than good', 'against'*	
Mishkin	2008	Fed	-2	*'should be avoided'*	
Papademos	2004	ECB	1	*'To cautiously consider' but risks*	
Papademos	2008a	ECB	1	*'try' but 'may not be straightforward'*	
Papademos	2008b	ECB	-0,5	*'not always feasible'*	
Papademos	2009a	ECB	1	*'Cannot be implemented mechanically'*	
Papademos	2009b	ECB	1	*but 'limits'*	
Posen	2009	BoE	-1,5	*'daunting prospect'*	
Stark	2009a	ECB	2	*'encourage'*	'called into question'
Stark	2009b	ECB	1	*'effective'*	
Trichet	2005	ECB	0,5	*'will occur rarely'*	
Trichet	2009a	ECB	1	*but 'not in a mechanical way'*	
Trichet	2009b	ECB	0,5	*But 'practical questions'*	'limitations'
Tucker	2006	BoE	-1	*'we just do not know enough'*	
Tucker	2008a	BoE	-1,5	*'cannot rely on'*	
Tumpell-Gugerell	2009a	ECB	0,5	*'may pose problem' but 'should try'*	
Tumpell-Gugerell	2009b	ECB	0,5	*'more wary'*	

Figure 10 - Data on individual central bankers' preference in the BN vs. LW debate

Notes: the index for the debate on asset prices integration (column 4) in the policy rule is negative for preference for the 'Benign Neglect' (BN) approach, and is on the contrary positive for preference for the 'leaning against the wind' (LW) approach. In this index, 0 means no preference for one of the approach judged equal or means that both approaches are rejected. All articles chosen are serving central bankers' speeches. Former central bankers' contributions are excluded from the sample. The index is based on the intensity preference for the BN and LW approaches revealed by the wording employed (columns 5 and 6) but also if the central banker present or not the arguments of both sides of the debate. BoE: Bank of England; ECB: European Central Bank; Fed: U.S. Federal Reserve. 47 speeches are considered: 17 from the BoE, 20 from the ECB and 10 from the Fed.