



# A sheep in wolf's clothing: Can a central bank appear tougher than it is?



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## ABSTRACT

Central banks (CBs) in Europe and the US have been providing virtually unlimited amounts of liquidity to banks for quite some time now. This may lead banks to expect that these CBs will be lenient in the future. Will this expectation be justified? I present a model in which a commercial bank, subject to idiosyncratic liquidity shocks, faces uncertainty about whether the CB is tough (Hawk) or lenient (Dove). Specifically, the CB knows its nature, but the bank does not. When uncertainty is high, the CB can use this to its advantage and try to build a reputation for toughness. In response, the bank chooses higher liquidity reserves in equilibrium. Furthermore, increasing bank capital and penalty rates make it easier to build a reputation, while bailouts by the fiscal government make it more difficult.

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## 1. Introduction

In the run-up to the recent financial crisis the doctrine of “constructive ambiguity” has been popular with central bankers. They would not be clear about their exact goals and instruments, providing financial institutions with an incentive to be vigilant and prudent. Since the crisis, however, this ambiguity has largely disappeared. According to Jeffrey Lacker, president of the Richmond Fed, “the difficult dilemmas that policy makers faced in the fall of 2008 were in part the legacy of a financial safety net policy that ultimately proved unworkable. Often referred to as ‘constructive ambiguity’, this approach encouraged financial firms and their creditors to behave as if they were not protected [...] while policymakers actually were standing ready to act in a crisis.”<sup>1</sup> The elaborate assistance programmes by the US authorities (such as TARP and the QE programmes) and the Fed’s intentions to keep the interest rate low show that the ambiguity doctrine has been largely abandoned in the United States. The ECB’s actions in the past

years, such as the large Long Term Refinancing Operations (LTRO) and the Outright Monetary Transactions Programme (OMT), indicate that the same holds for Europe.

Although this policy has proved unworkable for systemic banks, ambiguity can help solving commitment problems in interactions with less systemically relevant banks. The commitment problem in this paper is as follows: on the one hand, a central bank may not be able to stick to a credible no-bailout policy but, on the other hand, always bailing out (a blanket guarantee) can cause moral hazard. This paper analyzes how this dilemma can be solved by a strategy of constructive ambiguity, making use of a central bank’s reputation.

We consider a model economy with a bank and a central bank (CB). The bank (after choosing its asset mix) may face a liquidity crisis, which requires emergency liquidity from the CB. The CB, in deciding whether to provide liquidity, will have to weigh the costs of bank failure (a danger to financial stability) against possible moral hazard from bailout expectations. Bank failure costs can be substantial: fiscal costs of recent crises are estimated at 4.7% of GDP on average, while subsequent output losses can be as much as 25% (Laeven and Valencia, 2013). More direct costs stem from disruption of payment systems, impairment of monetary transmission and liquidity dry-ups (Freixas and Parigi, 2008); bank failures can also lead to contagion (Goodhart and Huang, 1999) and fire-sales (Brunnermeier and Pedersen, 2009). On the other hand,

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<sup>1</sup> Lacker, Jeffrey M. (2010), “Reflections on Economics, Policy and the Financial Crisis”, Speech at the Kentucky Economic Association, September 24, [www.richmondfed.org/press\\_room/speeches/president\\_jeff\\_lacker/2010/lacker\\_speech\\_20100924.cfm](http://www.richmondfed.org/press_room/speeches/president_jeff_lacker/2010/lacker_speech_20100924.cfm)

avoiding bank failures as has a cost: next to the immediate fiscal outlays, interventions can lead to a loss of reputation and subsequent moral hazard. This may make the next crisis even more costly (Cukierman and Izhakian, 2011) and likely (Morrison and White, 2013).

As proposed by Goodfriend and Lacker (1999), the CB can follow a strategy of constructive ambiguity by using its reputation as a commitment device. Reputational concerns can discipline a lenient CB that rescues too often (Boot and Thakor, 1993). In the monetary policy context this mechanism is quite commonplace: Barro and Gordon (1983) already showed that a government that inflates excessively can be restrained by a credible reputation. Backus and Driffill (1985) have modeled this reputation building process explicitly, by allowing for uncertainty about a central bank's objective. The public updates its belief about this objective by observing its actions.

The CB can be of two different types (a tough Hawk or more lenient Dove), but the bank does not know this (as in Backus and Driffill (1985)). It can only infer the nature of the CB after observing its actions, and updates its beliefs accordingly: if the CB provides no assistance, it is a Hawk, but if it rescues the bank it is perceived as a Dove.

Indeed, the results show that when the CB has a high reputation, this induces the bank to keep more liquid reserves. This reduces the probability of failure, making it less likely that the CB has to assist and thus making it more easy to build its reputation further. Note that this requires assuming the costs of bank failure are not extremely high: ambiguity cannot solve systemic banking problems, in which even a Hawk would always assist.

The results also show that this ambiguity strategy can be costly for the CB: there is always a possibility that its reputation is blown and it has to resort to a costly blanket guarantee strategy. This risk is mitigated by higher capital buffers, as these decrease the probability of bank failure. We also find that charging a penalty rate on liquidity limits the need for reputation building. Conversely, when the government (next to the CB) stands ready to provide capital assistance, the bank will behave less prudently. The CB will thus have to exert more effort to build a reputation.

This paper combines two different strands of the central banking literature: transparency and the Lender of Last Resort function.<sup>2</sup> Albeit the transparency literature has mainly discussed the monetary policy context, increasingly more attention is being paid to communication about financial stability (Crujnsen et al., 2012; Liedorp et al., 2013). While the latter type of communication is still less frequent than that about monetary policy, CB actions can reveal information about its financial stability objective.

In this context, we formalize that a CB will rescue too often if this objective is fully revealed, as in Boot and Thakor (1993). Our analysis also complements the monetary policy analyses by Faust and Svensson (2001) and Sibert (2006), who find that transparency is (in moderation) socially beneficial. Full transparency, however, leads to suboptimally high inflation. Empirical research on transparency also focused on monetary policy communication (Dincer and Eichengreen, 2009). Recently however, Born et al. (2011) have analyzed communication about financial stability and found that transparency is beneficial, except in crisis times: too much transparency can trigger bank runs or market panics. This pleads in favor of constructive ambiguity.

The literature on the LLR and bailouts has dealt with time inconsistency and, as a possible solution to this problem, constructive ambiguity. The time inconsistency problem is particularly pervasive in crisis management (Mailath and Mester, 1994; Ennis

and Keister, 2009; Chari and Kehoe, 2013). Ex ante, a financial regulator would like to be tough to stem moral hazard. When a crisis has hit, however, it is optimal to save systemically important banks. This does not only hold for large Too-Big-to-Fail banks, but also for groups of smaller banks: Too-Many-to-Fail (Acharya and Yorulmazer, 2007; Acharya and Yorulmazer, 2008). The empirical literature finds that expectations of a bailout increase risk taking (Dam and Koetter, 2012; Black and Hazelwood, 2012) and create an implicit bailout subsidy, especially for large (Knaup and Wagner, 2012) and complex banks (Carbo-Valverde et al., 2011).

Several authors have put forward constructive ambiguity as a solution to this time inconsistency problem. Freixas (1999) argues that a LLR should resort to a mixed strategy to limit bank risk taking. Goodhart and Huang (2005) reach a similar conclusion: the CB should keep the bank in the dark about the exact conditions under which it will be assisted. We model this explicitly by making use of the reputation mechanism from Backus and Driffill (1985).

Our model of reputation describes the policy problem the world's Lenders of Last Resort are facing after the crisis. Should they act as Hawks, which keeps their reputation high but leads to more bank failures? Should they act as Doves, avoiding failures but increasing moral hazard? Or is it possible to return to constructive ambiguity? Although new regulatory developments may turn the tide, confidence in financial institutions is currently very low. Authorities have little room for maneuver, making it unlikely we will be seeing any ambiguity soon.

## 2. Model

Our model economy consists of two players: a commercial bank (denoted "bank") and a central bank and regulator (CB). The bank is financed by capital and deposits, and chooses its investment policy every period. It is also subject to liquidity shocks. The CB has a mandate for financial stability and is the Lender of Last Resort (LLR). In this role it can assist a bank in need with liquidity.

### 2.1. The central bank

The central bank's financial stability mandate involves striking a balance between avoiding bank failure and curtailing moral hazard by the bank. Bank failures can lead to substantial fiscal costs, financial system disruptions and output losses. While assisting the bank avoids these immediate costs, ensuing moral hazard may increase the costs of a next crisis.

Let us denote the strength of the financial stability mandate by  $\theta$ . This is a proxy for all costs of bank failure. To allow for uncertainty we can distinguish two types of CB: a Hawk, with  $\theta_H$ , and a Dove with  $\theta_D$ . As a Dove cares more about bank failure than a Hawk,  $\theta_D > \theta_H$ . In fact, a Hawk will hardly ever assist a bank since it attaches a very low weight to bank failure:  $\theta_H$  is practically zero.<sup>3</sup> A Dove, which is more lenient, has a positive  $\theta_D$ . Clearly, this characterization of central bank types is strongly simplified. In practice a central bank will always have some motivation to provide a bank with liquidity. However, some CBs may be less willing to assist than others, depending on their responsibility for financial stability: our parameter  $\theta$ .

The ex ante uncertainty about  $\theta$  is a process governed by Nature, quantified as follows:

$$\theta = \begin{cases} \theta_H = 0 & \text{with probability } \lambda_H \\ \theta_D > 0 & \text{with probability } 1 - \lambda_H \end{cases} \quad (1)$$

<sup>2</sup> Blinder et al. (2008) provide a review of the central bank transparency literature. For literature on the Lender of Last Resort, see Freixas and Parigi (2008).

<sup>3</sup> The assumptions on  $\theta$  can be generalized such that  $\theta_H > 0$  and a Hawk is also willing to assist an illiquid bank. However, as long as a  $\theta_H$  is sufficiently below  $\theta_D$ , our results will remain qualitatively unchanged.

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