Uncertainty and central bank transparency: A non-Bayesian approach

Daniel Laskar *

Paris School of Economics-CNRS, France

ABSTRACT

We use a non-Bayesian approach to uncertainty, where "ambiguity" is taken into account, in order to analyze the issue of central bank transparency, and we underline that the use of such an approach may greatly change the results. We reconsider a specific argument against transparency found in the literature. We show that, in the presence of ambiguity, the argument can become a case in favor of transparency, which seems more in accordance with some stylized facts. Reduced Knightian uncertainty associated with increased transparency can contribute to making transparency beneficial.

© 2011 University of Venice. Published by Elsevier Ltd. All rights reserved.

1. Introduction

In the past two decades, there has been a widespread move of central banks toward more transparency. Such a move has in part been due to the trend toward more central bank (CB) independence. Being more independent, CBs had to be more accountable and, for that, had to be more transparent about the way they conducted their monetary policies. But there are also economic reasons for CBs to be more transparent. By providing additional information on the underlying factors affecting monetary policy (objectives of the CB, economic data and forecasts made by the CB, procedures involved in the decision process, etc.), transparency can help the private sector to make better decisions. As a consequence, there has been a large development of both the theoretical and the empirical literature on the economic effects and possible usefulness of increased CB transparency.[1]

Theoretical studies have mixed conclusions. Although some results are favorable to transparency, there are also several types of arguments pointing to the possible deficiencies of increased transparency. Thus, the results obtained in the literature depend on the model considered and on the specific assumptions made.

In this paper, we will develop the argument that the results obtained in the literature may also depend on the approach to uncertainty which is taken. The theoretical literature on CB transparency usually adopts a Bayesian expected utility criterion.[2] However, Knight (1921) already argued that a distinction should be made between a situation of "risk", where there is some known objective probability distribution, and a situation of "(Knightian) uncertainty", where this is not the case. Furthermore, some insufficiencies of the Bayesian approach (where uncertainty is represented by a subjective probability distribution) in describing behavior have been pointed out. Thus, the Ellsberg's paradox (Ellsberg, 1961) has underlined the existence of some "aversion to ambiguity". Therefore, in the past two or three decades, new approaches to

---

* Correspondence to: CEPREMAP, 142 rue du Chevaleret, 75013 Paris, France. Tel.: +33 (0)1 40 77 84 08; fax: +33 (0)1 44 24 38 57.
E-mail address: laskar@pse.ens.fr.

[1] For some recent surveys of the theoretical and of the empirical literature on CB transparency, see, for example, Blinder et al. (2008) and Van der Cruijsen and Eijffinger (2007).

[2] An exception is Schipper and Winschel (2004). They introduce Knightian uncertainty in an ambiguous game framework.

uncertainty, where such an aversion to ambiguity is introduced, and which encompass the Bayesian approach as a special case, have been developed.[3]

Such a non-Bayesian approach has been applied to some number of issues in economics. This has actually helped us understand some rather puzzling phenomena.[4] It would therefore seem worthwhile to try to apply this approach to the issue of CB transparency. Here, we will see that, by using of a non-Bayesian approach, some theoretical argument found in the literature on CB transparency could be made more in accordance with some existing stylized facts on CB transparency.

In the literature on CB transparency, there seems to be some discrepancy between the results found in the theoretical literature and those found in the empirical literature. While, as we have just mentioned, the theoretical literature leads to mixed conclusions, the empirical literature is largely in favor of CB transparency. This especially concerns the effect of "political transparency" of the CB, which includes transparency on the CB's objectives. Depending on the model used, the existing theoretical arguments may be either favorable or unfavorable to such transparency. But empirical studies seem more in favor of political transparency of the CB. Empirical results tend to show that higher political transparency of the CB leads to a better performance in terms of macroeconomic variables and, in particular, reduces inflation.[5]

In this paper, we will reconsider some rather simple specific theoretical argument against political transparency of the CB which is found in the literature. We will show that the argument can actually become a case for transparency when we depart from the Bayesian case. By using a non-Bayesian approach, the results we obtain are therefore more in accordance with the existing empirical finding that political transparency of the CB tends to improve macroeconomic performance.

The specific argument of the literature that we will consider, underlines that reduced uncertainty on the CB's preferences may be harmful through its unfavorable effect on the level of the nominal wage (Grüner, 2002; Sorensen, 1991). The argument relies on the analysis of a game between a monopoly labor union and a CB. The labor union sets the nominal wage before the CB chooses its monetary policy. As the weight the CB attaches to its inflation objective relatively to its unemployment objective is not known to the labor union, this creates some uncertainty on how the CB reacts to the nominal wage. It is then shown that less uncertainty increases the level of the nominal wage chosen by the labor union. As a consequence, this may worsen macroeconomic performance defined in terms of unemployment and inflation, and therefore may be harmful.[6]

In this analysis of the literature, uncertainty is represented by a probability distribution, and a standard expected utility criterion is used. Less uncertainty is associated with a smaller variance of the probability distribution. In Sorensen (1991), the source of the uncertainty is assumed to be some political factors, and the implication of the result is that political uncertainty, which creates variability in the weight between the CB's objectives, may be beneficial. In Grüner (2002), this result is rather interpreted as an argument against too much transparency, where more transparency is assumed to imply a lower variance of the probability distribution.

As we have indicated, in the present paper, we will revaluate this argument by using a non-Bayesian approach, where the decision maker has some aversion to ambiguity. Such a framework will allow us to introduce Knightian uncertainty into the analysis. As we want to compare situations which are more or less uncertain in some sense, we need to consider the effects of changes in the information available to the decision maker. Therefore, we will consider a non-Bayesian approach which makes explicit the information available to the decision maker.[7] We will use the approach of Gajdos et al. (2004), which introduces some aversion to ambiguity under the form of an "aversion to the imprecision of information". Under this approach, the information available to the decision maker consists in two things: a "central probability distribution"; and a set of possible probability distributions around this central probability distribution, which represents Knightian uncertainty around this central distribution.

We will assume that political factors can create fluctuations in the CB's preferences which follow some given probability distribution. This probability distribution is only imperfectly known to the private sector. In the information available to the private sector, the central probability distribution is an estimate of this probability distribution obtained under some central prior, while Knightian uncertainty around this central distribution represents the sensitivity of the estimates to other priors. Increased CB transparency reduces both the variance of the central distribution and the amount of Knightian uncertainty.

The presence of Knightian uncertainty and of some aversion to ambiguity will lead to results which are different, and often opposite to those obtained in the literature under a Bayesian approach. First, we will find that a decrease in the variance of

---

[3] Two classical references are Gilboa and Schmeidler (1989) and Schmeidler (1989). In Gilboa and Schmeidler (1989), the decision maker has a set of probability distributions, instead of a unique probability distribution, and uses a maxmin criterion over this set of distributions. In Schmeidler (1989), non additive probabilities ("capacities") and a Choquet expected utility criterion are used.

In these non-Bayesian frameworks, the presence of some aversion to ambiguity leads the decision maker to give more weight to the bad outcomes implied by each decision.

[4] For example, because of the presence of ambiguity in financial markets, such a non-Bayesian approach has given some new explanations to the large volatility of asset prices, or to the home-bias puzzle (domestic assets being perceived as less ambiguous than foreign assets), or to the empirical finding that unindexed debt is often preferred to indexed debt. A survey of some economic applications can be found in Mukerji and Tallon (2004).

[5] On all these points, see Van der Cruijsen and Eijffinger (2007, pp. 20–24).

[6] This argument has been developed by Sorensen (1991). Grüner (2002) gave an interpretation in terms of CB transparency, and also showed that reduced uncertainty on the CB's preferences (which may be due to more CB transparency) may actually increase inflation uncertainty.

[7] This is not the case for the two classical approaches previously mentioned. In Gilboa and Schmeidler (1989), or in Schmeidler (1989), the information available to the decision maker is not made explicit.