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Robust central banking under wage bargaining: Is monetary policy transparency beneficial?☆

Marcelo Sánchez *

European Central Bank, Kaiserstrasse 29, D-60311, Frankfurt am Main, Germany

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ABSTRACT

We study the role of transparency in an environment of robust monetary policy under wage bargaining. The standard view from the game-theoretical literature is that, with unionised labour markets, monetary policy transparency is unambiguously "bad" (it induces increases in wage and price inflation, unemployment and may lead to higher inflation uncertainty). The empirical literature is instead ambiguous about the macroeconomic effects of transparency. By recasting the earlier theory into a robust monetary policy environment, and focusing transparency on the uncertainty about the preference for price stability, we show that the macroeconomic effects of transparency are more favourable than normally found. The impact on nominal wages, inflation and real variables (real wages and unemployment) is not parameter-free but depends on the public's informedness about this coefficient. The impact on real variables is found to disappear in case unions do not internalise the effect of wage decisions on the economy (i.e. in the case of atomistic unions). Finally, we find that the effect of transparency on inflation uncertainty is more complex than in the standard approach. We show that transparency may have the beneficial effect of reducing inflation variability not only when monetary uncertainty is low (as previously reported), but also when monetary uncertainty exceeds an upper threshold.

1. Introduction

Central banks make their decisions in the presence of considerable uncertainty about the structure of the economy and the impact of policy on private behaviour. Simple policy rules may give rise to the risk of disappointing outcomes when the reference model being employed fails to represent the economy well. This is the view recently conveyed by an increasing body of monetary policy research that delves into the formulation of robust control problems. According to this approach, central banks could be characterised as pursuing policies that trade *ex post* performance for greater certainty in the aim to avoid particularly poor economic outcomes.

The objective of this paper is to examine the effect of transparency on macroeconomic developments when a robust central bank interacts with wage setters. To do so, we set up a simple robust control model, revisiting the formulation of robust policies proposed by Giordani and Söderlind (2004) and Hansen and Sargent (2007).[1] The standard theory about monetary policy transparency under wage bargaining was developed by Grüner and Hefeker (1999) and Grüner (2002) in a context of "conventional" (i.e. not robust) central banking. The message from this game-theoretical literature is that, with a highly centralised labour market, monetary policy transparency leads to rises in wage and price inflation, unemployment and inflation uncertainty.[2] In short, transparency is necessarily "bad".[3] In this literature, transparency is given by an inverse measure of the uncertainty about the monetary policy rule which is assumed to capture uncertainty about the central bank preference for price stability (relative to stabilising activity); that is, the type of transparency involved refers to a so-called "political" concept of transparency. Here we recast the existing theory into a robust monetary policy environment, reassessing the effects of (political) transparency on the level of nominal and real variables as well as inflation uncertainty. Moreover, instead of assuming a connection between uncertainty about the policy rule and uncertainty about the central bank preference for price stability, we directly use the latter type of uncertainty to characterise monetary policy. We show that the macroeconomic impact of transparency is not parameter-free but depends on the (initial) degrees of transparency and conservativeness of the central bank.

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* Tel.: +49 69 1344 6531; fax: +49 69 1344 7602.
E-mail address: marcelo.sanchez@ecb.int.

[1] For an alternative to the latter approach to monetary policy uncertainty, see Levin et al. (2003) and Orphanides and Williams (2007). Dennis (2008) analyzes the case when the central bank commits to its policy.

[2] Sørensen (1991) was the first to show that more monetary policy transparency may raise nominal wages as the (monopoly) union behaves more aggressively when it is better informed about possible central bank moves.

[3] The intuition is that greater monetary uncertainty induces unions to moderate wage demands in order to protect their members from the potential decreases in employment owing to the heightened risk that actual inflation will be lower than envisaged.

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The unambiguously negative assessment of transparency advanced by the standard approach is inconsistent with the empirical literature. In fact, the latter provides conflicting findings about the macroeconomic effects of transparency, in particular uncovering in some cases favourable effects from disclosing more information to the public. With regard to nominal wages, Grüner et al. (2009) find that a higher value of their index of monetary policy uncertainty is associated with lower wage inflation in France, Germany and Japan, but plays an insignificant role in the UK and the US. Turning to price inflation, its level has been found to be lower with higher (political) transparency about the target (Kuttner and Posen, 1999; Fatás et al., 2007). Chortareas et al. (2002a) look into the effects of transparency about policy decisions and forecasts, reporting that higher transparency reduces average inflation. Chortareas et al. (2002b) show evidence that more forecast detail provided by central banks leads to lower average inflation in countries where the domestic nominal anchor is based on an inflation or money target but not when an exchange rate target is instead in place. In contrast, Demertzis and Hughes Hallett (2007) find that, among nine major central banks in the 1990s, transparency is not correlated with average inflation. The authors also find that transparency is negatively correlated with inflation variability, but this result is not so relevant here because it appears to be driven not by the "political" but by the "economic" and "operational" components of the transparency index. Using pooled regressions for 100 countries over the period 1998–2006, Dincer and Eichengreen (2009) show that higher monetary policy transparency (instrumented using political determinants) is associated with less inflation variability; however, this result depends on the controls used, with only half of the results being statistically significant (see their Table 7). Finally, the literature on the macroeconomic effects of inflation targeting (IT) could also be seen as indirectly providing information about the role of transparency, given that this monetary regime aims at increasing central bank transparency and accountability. For countries that target inflation explicitly, the international evidence on this issue is mixed. Experts often conclude that countries that adopt IT manage to lower the level and variability of inflation (see e.g. Corbo et al., 2001; Neumann and von Hagen, 2002). However, Ball and Sheridan (2005) question whether this is the case among advanced countries. In their study of 20 OECD countries (7 of which are inflation targeters), they show that, after controlling for the effect of the regression to the mean, IT countries fail to display a better performance than non-inflation targeters in terms of inflation.

The rest of the paper proceeds as follows. For the case where wage setters are organised as a monopoly union, Section 2 sets up the model, while Section 3 provides the results to be discussed in Section 4. Section 5 extends the results to the case of atomistic unions. Section 6 concludes.

2. The model

We consider a two-stage game between a monopoly union and a central bank. The outcomes of this game are the nominal wage (ω, in logs) set by the union and inflation (π) decided by the central bank. The unemployment rate equals $u = \alpha(\omega - \pi) + h$, where h represents—from the central bank's standpoint—a model misspecification error introducing ambiguity to the model.[4] Without loss of generality we set $\alpha = 1$.

We solve the two-stage game by backward induction. The central bank is assumed to move last, setting the inflation rate taking the value of wages as given.[5] Following Hansen and Sargent (2007), h is controlled by a fictitious evil agent who tries to maximise the central bank's loss. More intuitively, h represents—from the robust central bank's standpoint—a model misspecification error introducing ambiguity to the model. The problem is characterised by the loss function

$$\min_{\pi} \max_{h} \Gamma = u^2 + \chi\pi^2 - \theta h^2 \tag{1}$$

where χ and $\theta \in (1,\infty)$ measure the policymaker's aversion concerning inflation and robustness concerns about the uncertainty surrounding unemployment, respectively.[6] The loss function in Eq. (1) follows Dai and Spyromitros (2010). The robust control problem (1) is subject to linear constraint $h^2 \leq \eta^2$, where η is the budget allocated by the central bank to the evil agent in order to create misspecification. The central bank is assumed to act as a Stackelberg leader with respect to the evil agent.[7] The interior solution is characterised by

$$\pi = \frac{\theta}{\theta + \chi(\theta - 1)}\omega; \quad \text{and} \quad h = \frac{\omega - \pi}{\theta - 1} \tag{2}$$

This in particular shows that the degree of misspecification, h, is inversely related to θ. When $\theta \to \infty$, the monetary authority faces no model uncertainty, in which case $h = 0$. Moreover, a smaller value of θ is associated with larger misspecification.

In this section and the next two, we assume that all the workers are organised in a single union, leaving for Section 5 the extension to the case of atomistic unions. The union cares about the real wage and unemployment variability. In the first stage of the game, the union thus sets the nominal wage to minimise expected loss

$$\min_{\omega} E\Omega = -2E(\omega - \pi) + AEu^2 \tag{3}$$

where A measures the union's aversion to unemployment. Minimisation of Eq. (3) is subject to the monetary policy reaction functions in Eq. (2) and $u = \omega - \pi + h$. The substance of our results does not change if we allow unemployment to also be affected by an i.i.d. additive productivity shock.[8]

The union is not perfectly informed about the central bank's preference for price stability when it sets wages. It knows the mean of the price stability preference parameter, $\bar{\chi} = E\chi$, and its variance, $\sigma_\chi^2 = E(\chi - \bar{\chi})^2$.[9] Expectations are formed rationally. In the present model, as is standard in setups with labour market imperfections—which imply the existence of an inflation bias—forward looking expectations turn out to also give rise to a time-inconsistence problem (see Carlin and Soskice, 2005, and references therein). The latter problem is characterised by inflation exceeding the target aimed by the central bank in light of the latter's temptation to reach a level of activity above the one determined in the market place (pushed down by labour market imperfections).[10]

[4] We normalise the (log) price from the previous period to be zero, so that π is both the inflation rate and the (log) price.

[5] That wage-setters move first can be rationalised by the fact that, in a unionised labour market, wage contracts tend to last for very long, especially when compared with the much higher frequency at which monetary policy decisions are made.

[6] One may also characterise θ as a penalty restraining the minimisation of misspecification error h. The second-order condition of Eq. (1) with respect to θ implies that the evil agent's problem is well defined if and only if $\theta > 1$. Thus, $\theta = 1$ is a lower bound for θ or a breakdown point (see Hansen and Sargent, 2007).

[7] In the present case, the results are the same independently of whether the central bank acts as a Stackelberg leader with respect to the evil agent (as in Leitemo and Söderström, 2008) or they both play Nash against each other (as in Dai and Spyromitros, 2010).

[8] The evil agent's decision h differs from standard disturbances in that the central bank cannot attach a probability distribution to it.

[9] In this paper, we do not consider moments of χ higher than the second.

[10] One way proposed by Carlin and Soskice (2005) to solve the time-inconsistence problem in a model like ours is to set the inflation target high enough so that there are no incentives for the central bank to inflate further. The other way in which the time-inconsistence problem becomes negligible is by recasting the model for the case of atomistic unions and let their number be sufficiently large (or alternatively the degree of labour substitutability between unions be high enough). In the present paper, the latter extension is possible, but rather complicated by the robust policy features of our setup. Given that the conclusions from the related literature are obtained for the case of a monopoly union, this limitation should not detract from the relevance of our results.