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Eijffinger, S.C.W.; Hoeberichts, M.M.

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The trade-off between central bank independence and conservatism in a New Keynesian framework

Sylvester C.W. Eijffinger\textsuperscript{a,b,c,*,} , Macro M. Hoeberichts\textsuperscript{d,e}

\textsuperscript{a} CentER, Tilburg University, P.O. Box 90153, 5000 LE Tilburg, The Netherlands
\textsuperscript{b} RSM Erasmus University, The Netherlands
\textsuperscript{c} CEPR, London, U.K.
\textsuperscript{d} De Nederlandsche Bank, The Netherlands
\textsuperscript{e} University of Amsterdam, The Netherlands

1. Introduction

The purpose of this paper is to discuss the issue of Treaty reform and its consequences for monetary policy. Inter alia, the changes include that the institutional set-up will be subtly changed and the European Central Bank (ECB) will be grouped in the first part of the Treaty as one of the “other institutions and advisory bodies”. Possibly more importantly, the euro area as such will be in the position to act legally as itself within the European Union (EU) legal structures. The Eurogroup also will be officially recognized (“Euro-Ecofin-Council”). President Jean-Claude Trichet’s concern about the status of the ECB under the new Treaty and fear that by including the bank in a list of EU institutions implies a risk that EU member states could formulate policy recommendations to the ECB, but may also lead to more central bank conservatism with the ECB as explained in our analysis. In this paper we analyze the trade-off between central bank independence and conservatism with New Keynesian framework following Woodford [Woodford, M., 2003. Interest and prices: foundations of a theory of monetary policy. Princeton University Press, Princeton.] and others. Our conclusion is that the trade-off between central bank independence and conservatism still holds within the New Keynesian framework. Politicians should therefore realize that their attempts to downgrade ECB’s independence legally and verbally will only increase its conservatism in order to maintain the same inflationary bias and limit the ECB’s degrees of freedom with respect to its interest rate policy.

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three-pillar structure of the EU, more democracy, change of the institutional setup of the Union, improvement of the solidarity and 63
security within the Union and enhancement of the position of the EU on the global stage (European Commission, July 10, 2007). 64
The three-pillar structure will be abolished, as to simplify the structure of the EU. The structure will be reorganized, with more 65
emphasis on foreign and security policy and justice and home affairs. More democracy is realized by giving national parliaments 66
and the European Parliament (EP) a bigger say, while the power of the European Commission (EC) will decrease. The EP will be on 67
equal footing with the Council of Ministers in many areas in terms of decision making. Also, a withdrawal option will be included, 68
as to state that member states are part of the EU by their own choosing. The change in the institutional set-up of the ECB will be 69
most important for the working of monetary policy and the status of the ECB. The latter effects will be singled out later in the text 70
and treated in more detail. Furthermore, decision making will be made more swiftly and more commonly supported by the system 71
of qualified majority voting, which will be introduced in more than forty new areas. This is also going to apply to economic 72
governance. These measures include the giving up of veto power in many areas (including the ECB's powers over financial 73
regulation), the appointment of a permanent President of the European Council, and a reinforcement of the Commission’s 74
authority. Also, as will be clear later on, it is easier to amend the treaty in the new form, by means of co-decision and qualified 75
majority voting, so that a new IGC will not be necessary.

Although Article 108 of the Treaty still states that “neither the European Central Bank, nor a national central bank, nor any 76
member of their decision-making bodies shall seek or take instructions from Union institutions or bodies, from any government of 77
a Member State or from any other body”, the fact that the ECB will be grouped with institutions such as the EC and the EP makes 78
that its special status may or will be affected. This may have consequences for the functioning of the ECB in conducting effective 79
monetary policy. The grouping of the ECB with other EU institutions will affect its independence and must be considered as an 80
extremely dangerous development.

In this paper we will argue that a Thomas Becket effect is likely to occur after a reduction of central bank independence.1 Once 81
appointed as a central banker, officials learn to behave like an independent central banker. Faced with the reduction in their 82
independence, they develop a more conservative attitude and become like Wim Duisenberg’s “whipped cream”: the more 83
politicians stir them, the stiffer they become.2 We argue that it is optimal for society to select central bankers that have the right 84
degree of conservatism (given the present level of independence) and have the “whipped cream” property that makes them more 85
conservative, if and when the level of independence is reduced. Both the Thomas Becket effect and the “whipped cream” 86
characteristic are perceptible with the (newly) appointed members of the Governing Council of the ECB and perhaps most 87
remarkable with President Trichet after the discussion of Treaty reform including the change of the institutional set-up and the 88
grouping of the ECB in the first part of the Treaty as one of the “other institutions and advisory bodies” President Trichet’s concern 89
about the status of the ECB under the new Treaty and fear that by including the central bank in a list of EU institutions implies a risk 90
that EU member states could formulate policy recommendations to the ECB, but may also lead to more central bank conservatism 91
with the ECB as will be explained by our analysis.

Section 2 discusses briefly the time inconsistency problem and the rationale for central bank independence based on Rogoff 92
(1985) and others. In Section 3 we analyze whether there exists a trade-off between independence and conservatism within a New 93
Keynesian framework following Woodford (2003) and others. Section 4 draws some conclusions.

2. The rationale for central bank independence

The Maastricht Treaty has made the ECB very independent. Nowadays it is widely believed that a high level of central bank 98
independence and an explicit mandate for the bank to deliver a low and stable rate of inflation are important institutional devices 99
to assure price stability. It is thought that an independent central bank can give full priority to low levels of inflation. In countries 100
with a more dependent central bank other considerations (notably, re-election perspectives of politicians and a low level of 101
unemployment) may interfere with the objective of price stability. In that context the German central bank is often mentioned as 102
an example. The Deutsche Bundesbank was relatively autonomous; at the same time, Germany had one of the best post-Second 103
World War inflation records among the OECD countries. Indeed, the statutes of the ECB are largely modeled after the law governing 104
the Bundesbank. Why would central bank independence, ceteris paribus, yield lower rates of inflation? The theoretical reasoning 105
in this field stresses the time inconsistency problem (see Kydland and Prescott, 1977; Barro and Gordon, 1983). The basic idea behind 106
the time-inconsistency problem can be explained as follows. Suppose, the policy maker announces a certain inflation rate that (s) 107
he considers optimal. If private sector agents take this announced inflation rate into account in their behavior, it becomes at that 108
time optimal for the government to renge and to create a higher than announced inflation rate. The reason for this is that a burst 109
of unexpected inflation yields certain benefits. For instance, unexpected inflation reduces real wages, thereby increasing 110
employment. Of course, this is only part of the story. The next step is to add rational expectations. Under rational expectations 111
economic agents know government’s incentive to create unexpected inflation and take this into account in forming their 112
expectations. Government has no other choice than to vindicate these. It is clear that the inflation rate will be higher than under 113
the situation in which government would stick to its promise. No matter which factors exactly cause the dynamic inconsistency 114
problem, in all cases the resulting rate of inflation is sub-optimal. So in the literature devices have been suggested to reduce this so- 115

1 The Thomas Becket effect was coined by the first and former Chief Economist of the ECB, Otmar Issing, and expresses the fact that it takes time for a central banker to learn to behave independently from politics.
2 This comparison was introduced by the first and former President of the ECB, Wim Duisenberg, who stated (in Dutch): “Centrale bankiers zijn als slagroom: hoe meer je in ze roert, hoe stijver ze worden”.

called inflationary bias. Rogoff (1985) has proposed to delegate monetary policy to an independent and 'conservative' central banker. Conservative means that the central banker is more averse to inflation than the government, in the sense that he places a greater weight on price stability than the government does. Why would a central banker be more inflation averse than the government? Two main differences have been pointed out in the literature between preferences of the government and those of the central bank (see Cukierman, 1992). One relates to possible differences in the time preference of political authorities and that of central banks. For various reasons, central banks tend to take a longer view of the policy process than do politicians. The other difference concerns the subjective weights in the objective function of the central bank and that of government officials. It is often assumed that central bankers are relatively more concerned about inflation than about other policy goals such as achieving high employment levels and adequate government revenues. If monetary policy is set at the discretion of a 'conservative' and independent central banker, a lower average time-consistent inflation rate will result. Eijffinger and Hoeberichts (1998) analyzed the trade-off between central bank independence and conservatism within the traditional Lucas supply framework with rational expectations and concluded that this trade-off between independence and conservatism exists. We will now analyze whether this conclusion still holds within a New Keynesian framework following Woodford (2003) and others. In this framework, we abstract from the inflationary bias and the time-inconsistency problem to motivate central bank conservatism. Instead, we assume that the government has a relatively stronger preference for stabilization of the output gap than society as a whole.

3. The trade-off between central bank independence and conservatism within a New Keynesian framework

The forward-looking New Keynesian model is the standard workhorse model for monetary policy analysis. This model, with a forward-looking Phillips curve (or aggregate supply function) and a forward-looking IS-curve (or aggregate demand function), provides realistic interactions between nominal and real variables in the economy. The two base equations are derived from optimizing behavior by the forward-looking agents that live in the economy with sticky prices and. On top of that, we introduce two policymakers (called government and central bank) who influence monetary policy. Monetary policy is set after the two policymakers have bargained over the appropriate monetary policy rule.

We have the standard New Keynesian Phillips curve and an IS equation, following Giannoni and Woodford (2003):

\[
x_t = E\pi_{t+1} - \sigma(\pi_t - \pi^*_t) + \beta E\pi_{t+1} + \kappa x_t + u_t
\]

\[
\pi_t = \beta E\pi_{t+1} + \kappa x_t
\]

where \(x_t\) is the period \(t\) output gap, \(E\pi_{t+1}\) the current period expectation of next period's output gap, \(\sigma\) is the interest elasticity of the output gap, \(\pi_t\) the period \(t\) nominal interest rate, \(E\pi_{t+1}\) the current period expectation of next period's inflation rate, \(r^*_t\) the neutral real interest rate in period \(t\), \(\beta\) the discount factor, \(\kappa\) the sensitivity of inflation to the output gap and \(u_t\) a supply shock (cost push shock). The monetary policy maker fully controls the short-term nominal interest rate \(i_t\). The micro-foundations of the 151 model imply that \(\sigma, \kappa > 0\) and \(0 < \beta < 1\).

For society as a whole, the welfare theoretic loss function is of the form:

\[
W = E_0\left\{ \sum_{t=0}^{\infty} \beta^t L_t \right\}
\]

where \(\beta\) is again the discount factor and the per period loss function is given by:

\[
L_t = (\pi_t)^2 + \lambda (x_t - x^*_t)^2
\]

where \(x^*_t\) is a certain optimal level for the output gap and \(\lambda\) is the weight attached to output gap stabilization relative to inflation 157 stabilization. Woodford (2003) justifies the welfare function and widely assumed specification of the quadratic loss function (4) by 158 showing that it represents a second-order Taylor series approximation of the representative household's expected utility. Woodford (2003) also derives an optimal weight on output stabilization \(\lambda^*_t\) that depends on the structural parameters of the model. The two policymakers that are relevant for the way interest rates are set, the government and the central bank are 161 characterized by the following one period loss functions:

\[
L_t^G = (\pi_t)^2 + \lambda^G (x_t - x^*_t)^2
\]

\[
L_t^{CB} = (\pi_t)^2 + \lambda^{CB} (x_t - x^*_t)^2
\]

where superscript \(G\) indicates the government and superscript \(CB\) indicates the central bank. The only difference between these two loss functions and the loss function for society as a whole lies in the weight that is attached to stabilization of the output gap. In this model, we suppose that the government, for political reasons, is more concerned about deviations in the output gap than society. So, it attaches a higher weight to stabilization of the output gap than society does (%(\lambda^G > \lambda^*_t%), which is suboptimal for social welfare.\(^3\)

\(^{3}\) Note that the target for the output gap \((x^*_t)\) is the same for the central bank and the government. This implies that the economy does not suffer from an inflationary bias, in equilibrium, independent of the central bank's independence or conservatism. There may be good reasons to assume that the government actually aims for a higher output gap. By abstracting from an ambitious output target for the government, we bias our model against central bank conservatism and independence. Introducing a government with a higher target for the output gap would strengthen our results.
Monetary policy is implemented by the central bank, but the central bank is not completely independent in the way it sets policy. The central bank faces pressure from the government about the weight that should be given to the objective of output stabilization. The strength of the central bank in the negotiations with the government, or her independence from politicians, is captured parameter $\gamma$, with $0 < \gamma \leq 1$. The loss function that effectively governs monetary policy is a weighted average of the central bank's loss function and the government's loss function with weights $\gamma$ and $1 - \gamma$ attached to the central bank and to the government, respectively.

$$L^p_t = (1-\gamma)L^G_t + \gamma L^CB_t = (\pi_t)^2 + \left[(1-\gamma)\lambda_t^G + \gamma \lambda_t^CB\right] (x_t - \kappa)^2 \quad (7)$$

In the remainder of the paper the optimal levels for inflation and the output gap have been set at zero, both for the central bank and the government. This implies that our results hold even if the government does not suffer from an inflationary bias. Introducing a positive bias for the government would only strengthen our results. Setting the target values at zero, and minimizing the loss function subject to the Phillips curve, we get the following optimal targeting rule for monetary policy:

$$x_t = -\frac{\kappa}{(1-\gamma)\lambda^G_t + \gamma \lambda^CB_t} \pi_t \quad (8)$$

This rule is optimal in the sense that it minimizes loss function (7), so that given the preferences of both the government and the central bank and also given the weight that both policymakers have in determining the monetary policy loss function (7), targeting rule (8) is the best policy rule that can be implemented. This targeting rule implies that the central bank should set nominal interest rates in such a way that the output gap moves in an opposite direction as inflation, scaled by the slope of the Phillips curve $\kappa$ divided by the "effective" weight on stabilization of the output gap $(1-\gamma)\lambda^G + \gamma \lambda^CB$. If this preference for output stabilization is very high, the coefficient on inflation in Eq. (8) is very low, which means that the cost-push shocks $\pi_t$ will mostly affect inflation and will hardly be stabilized by letting the output gap fluctuate. The opposite will happen if the preference for output stabilization is very low.

This policy can be implemented when the monetary policymaker set its short-term nominal interest rate $i$ according to a Taylor rule. This rule implies that the short-term nominal interest rate moves with inflation and the output gap, with the weights $\varphi_\pi$ and $\varphi_x$ optimally chosen: $i_t = \varphi_\pi(\pi_t) + \varphi_x(x_t - \kappa)$. It is beyond the scope of this paper to derive an exact mapping between the optimal weights in the optimal Taylor rule and the optimal targeting rule, but it can be done.

In the institutional design stage, society knows the degree of independence $\gamma$ that is granted to the central bank as well as the preferences of the government. Its task, at this stage, is to pick a central banker with such preferences that the effective weight on stabilization of the output gap is in line with society's optimal weight. To ensure this, society should select a central banker with the following preference for output stabilization:

$$\lambda^CB = \lambda_G - \frac{\lambda^G - \lambda^*}{\gamma} \quad \text{or} \quad \gamma e = \lambda_G - \lambda^* \quad \text{with} \quad e = \lambda^G - \lambda^CB \quad (9)$$

In Eq. (9), $e$ can be interpreted as the level of central bank conservatism vis-à-vis the government. Because the government attaches too much weight to output stabilization ($\lambda^G > \lambda^*$), society selects the central bank that compensates by being conservative in the sense that she puts relative more weight on inflation stabilization rather than output stabilization. The equation above also shows that the central bank needs to be more conservative, the less independent it is (so, the lower $\gamma$). So, if the government interferes a lot in the formulation of monetary policy, it will encounter a more conservative central bank. If, on the other hand, the central bank is completely independent ($\gamma = 1$) and determines monetary policy without any interference from the government, it is optimal for society to simply pick a central banker whose preference for output stabilization is equal to the optimal value derived by Woodford (2003), so $(\lambda^CB = \lambda^*)$. The less independent the central bank has (low $\gamma$) and the more excessive weight politicians attach to stabilization of the output gap $(\lambda^G > \lambda^*)$, the more conservative the central bank has to be in order to conduct optimal monetary policy.

4. Policy implications of the trade-off between independence and conservatism

In other words, delegating monetary policy to an independent and ‘conservative’ central bank will reduce the variability of inflation and improve welfare. There is an optimal level of independence cum conservatism ($\gamma e^*$). Under certain assumptions, this is shown graphically in Fig. 1. Optimal means that the loss function of the society (Eq. (3)) is minimized.

It also follows from Eq. (9) that both independence and the inflation aversion of the central bank matter. If the central banker has the same inflation aversion as government (i.e. $\varepsilon = 0$), the independence does not matter. And similarly, if the central bank is fully under the spell of government (i.e. $\gamma = 0$), the conservatism of the central bank does not matter. There are various combinations of $\gamma$ and $\varepsilon$ that may yield the same outcome, including the optimal one. We can illustrate this in Fig. 2.

From a practical point the concept of a ‘conservative’ central banker seems, however, void, if only since the preferences of possible candidates for positions in the governing board of a central bank are generally not very easy to identify and may change after they have been appointed. So, it is hard to find some real world example of a ‘conservative’ central banker. Still, one could argue that the statute of the central bank could be relevant here, especially with respect to the question of whether or not it defines price stability as the primary goal of monetary policy. Whether or not the statute of a central bank defines price stability as the

primary policy goal, can be considered as a proxy for the ‘conservative bias’ of the central bank as embodied in the law (see Cukierman, 1992).

In the institutional design stage of the ECB, when its statutes were drawn up, the ECB was granted a very high degree of independence (γ close to 1). This arrangement allowed the ECB to have the best of both worlds by having preferences close to the social optimum (λ_CB close to λ⁎, see Eq. (9)) and still be a credible inflation fighter. It is also obvious from Fig. 2 that if the independence granted to the ECB was going to be reduced (lower γ), it would be optimal to appoint more a conservative central banker (higher ε, lower λ_CB). The reduction in independence combined with an increase in conservatism ensures that society shifts along the optimal curve in Fig. 2. This is summarized in the following proposition.

**Proposition 1.** It is in the interest of society to appoint a monetary policy maker endowed with the optimal combination of independence and conservatism vis-à-vis the government. It is also in the interest of society that this policy maker, when faced with a reduction of its independence, becomes more conservative.

**Proof.** Starting from the optimal (middle) curve in Fig. 2, lower independence pushes society to the left of the optimal curve and makes it worse of. An increase in conservatism pushes society upwards and back to the optimal curve.

However, it can be argued that the monetary policy makers (or the members of the Governing Council in the case of the ECB) are still the same people, with the same preferences. Moreover, when their term ends they will be replaced by a new member, selected by the same government(s) that weakened the independence of the central bank. In practice, however, the Thomas Becket effect is likely to occur after a reduction of central bank independence. Once appointed as a central banker, officials learn to behave like an independent central banker. Faced with the reduction in their independence, they develop a more conservative attitude and become like Wim Duisenberg’s “whipped cream”: the more politicians stir them, the stiffer they become. We argue that it is optimal for society to select central bankers that have the right degree of conservatism (given the present level of independence) and have the “whipped cream” property that makes them more conservative, if and when the level of independence is reduced. Both the Thomas Becket effect and the “whipped cream” characteristic are perceptible with the (newly) appointed members of the Governing Council of the ECB and perhaps most remarkable with President Trichet after the discussion of Treaty reform including...
the change of the institutional set-up and the grouping of the ECB in the first part of the Treaty as one of the “other institutions and advisory bodies”. President Trichet’s concern about the status of the ECB under the new Treaty and fear that by including the central bank in a list of EU institutions implies a risk that EU member states could formulate policy recommendations to the ECB, but may also lead to more central bank conservatism with the ECB as explained by our analysis.

5. Concluding remarks

So from a theoretical point of view it can be argued that an independent and conservative central bank improves the social welfare implications of monetary policy and ensures optimal stabilization policy in a world where the government puts too much emphasis on stabilization of the output gap. Moreover, the trade off between central bank independence and conservatism enables the central bank to continue implementing optimal monetary policy even after its independence is reduced, by becoming more conservative. If a government, for political reasons, decides to limit the central bank’s independence, it is in the interest of society that this is countered by a more conservative central bank. This holds under the ceteris paribus assumption that society’s preferences do not change.

What about the empirical evidence? A substantial amount of empirical research supports the inverse relationship between central bank independence and the level of inflation (see also Eijffinger and De Haan, 1996 for a review). The negative relationship between indicators of central bank independence and inflation in OECD countries is quite robust, also if various control variables are included in the regression. Still, it should be noted that a negative correlation does not necessarily imply causation. The correlation between both variables could be explained by a third factor, e.g. the culture and tradition of monetary stability in a country however, sometimes central bank independence is a condition sine qua non to establish the culture and tradition of monetary stability in a country (e.g. in France).

President Jean-Claude Trichet’s concern about the status of the ECB under the new Treaty and fear that by including the bank in a list of EU institutions there is a risk that EU member states could formulate policy recommendations to the ECB is not only true, but may also lead to more conservatism (inflation aversion) with the ECB. Central bankers are like Duisenberg’s “whipping cream” faced with the reduction in their independence, they develop a more conservative attitude.

As we argued above both the Thomas Becket effect and the “whipped cream” characteristic are perceptible with the (newly) appointed members of the Governing Council of the ECB and perhaps most remarkable with President Trichet after the discussion of Treaty reform. President Trichet’s concern about the status of the ECB under the new Treaty and fear that by including the central bank in a list of EU institutions may also lead to more central bank conservatism with the ECB as explained by our analysis.

Politicians should realize that their attempts to downgrade ECB’s independence legally and verbally will only increase its conservatism in order to maintain the same monetary policy stance and limit the ECB’s degrees of freedom with respect to its interest rate policy. The consequences of these attempts are relative higher interest rates in the eurozone, being exactly the opposite of what they wish to achieve.

Sometimes it is better to tie yourself, like Odysseus, to the mast to resist the siren voice.

6. Uncited references

Clarida et al., 1999
Eijffinger and Schaling, 1993
Mankiw, 2006
Trichet, 2007

References
