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Country differences in the ECB monetary reaction function

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ABSTRACT

The European Central Bank (ECB) and the Eurosystem consisted of 18 member countries in the end of 2014. Each of these countries had an own vote in the interest rate decisions of the governing council. Since decisions in this council are mostly reached by unanimous vote, those seem to be harder to reach when individual country variables differ than when they are rather similar. Therefore, in this article this pattern is investigated empirically by adding the standard deviations of fundamental variables to an otherwise standard Taylor reaction function. The results indicate that reaction coefficients on the inflation rate and the output gap are indeed lower when dispersion in the Euro Area countries is higher while monetary policy inertia is more pronounced in times of higher dispersion of the fundamentals.

1. Introduction

As the monetary policy authority of up to 18 Euro Area countries in the end of 2014 the European Central Bank (ECB) is responsible to achieve overall price stability in these member countries. This is commonly done by the ECB via interest rate setting of its main refinancing rate. However, whether to change the rate was decided normally in the first meeting of the governing council in each month.[1] Here besides 6 members of the executive board all 18 governors of the national central banks have a vote.[2] Even though the 6 members of the executive board do normally come from national central banks, they can be supposed to take only the Euro Area wide development into account while voting for interest rate changes because they get the data to base their decisions on directly from the ECB staff. However, the 18 governors of the national central banks do for sure know about the Euro area wide development but even better about their domestic economies. Therefore, it seems not unlikely that in their vote, developments in their home country play a dominant role.[3]

But according to the ECB press conferences held by the president and vice-president, directly after the first meeting of the governing council in each month, the majority of decisions concerning the interest rate changes are achieved by unanimous vote. There might be three reasons for this outcome: First, each governor does truly only take Euro Area wide

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[1] Since the beginning of 2015 the governing council decides every six weeks about the monetary stance instead of every month (ECB, 2014a). Since our sample period covers only the period until 2014 this fact does not change our results.

[2] With Lithuania entering the Euro Area in 2015 a rotation model started (ECB, 2014b). In this model none of the countries will have a permanent vote. Since this change is a breakpoint in our analysis we restrict it to the period before 2015 and leave possible changes resulting from the introduction of the rotation model for further research.

[3] It is well-known that monetary impulses have different effects on the Euro Area member states. See e.g. Berben, Locarno, Morgan, and Valles (2004).

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developments into account, even if a decision would hurt the domestic economy. Second, the developments in each member country do always coincide with those the whole Euro Area. Third, in the discussion prior to the voting decision potential dissenters are persuaded to make the vote unanimous. We will show in the following that the second point cannot be confirmed in the Euro Area. So we stay with the first and the third point. The first point would mean that the monetary policy reaction function is independent of the different country developments. In contrast, the third point would call for an adjustment of such a function by some dispersion index. We would suspect that if the dispersion is high among the 18 Euro Area countries the weight of this variable in a reaction function is decreasing. So there is a way to proof which of the explanations for the interest rate decisions is more convincing.

There exists a large strand of literature concerning the voting behavior of the council member from a game theoretical viewpoint (see e.g. Belke & Styczynska, 2006; Fahrholz & Mohl, 2006; Ullrich, 2004 or Belke & von Schnurbein, 2012). Although these articles mainly focus on the rotation model now introduced by the ECB the results also generate insights for the one country – one vote era. First, the governors of the national central banks are assumed to vote mainly in their national interest since e.g. they are elected by national authorities. But even the members of the executive board may follow national interest of their domestic country (Sanchez-Santos & Varela, 2003, Ullrich, 2004). Second, the voting power of each council member may not be equal even if every vote is counted equally. The votes become more important as they represent a median position and so this voter has to decide whether to go for the one or the other alternative. Third, coalitions among voters make it much harder to reach unanimous votes.

In order to test whether our first or the third proposition is true a Taylor reaction function (Taylor, 1993) is used to investigate whether the country dispersion of the inflation rate and the output gap plays a role in the interest rate decisions of the ECB. Although there still exists a large literature on Taylor reaction functions with respect to the ECB we are to the best of our knowledge the first to explicitly account for country dispersion in this framework. Our results indicate that this dispersion plays a role in the interest rate setting of the ECB.

Therefore, this paper proceeds as follows: Section 2 develops the Taylor reaction function appended by dispersion indices. Section 3 provides an overview over the data used, i.e. on the dispersion indices. Section 4 delivers the empirical estimates and section 5 a robustness check, while section 6 finally concludes.

2. Taylor reaction functions with country dispersion

In 1993 John B. Taylor proposed a simple rule to track the interest rate set by the US Federal Reserve (Fed). According to this rule the interest rate depends on only two time varying variables namely the inflation rate and the output gap and a set of constant variables which are the equilibrium real interest rate and the central banks inflation target. So the rule can be formalized as follows:

$$i_t^T = \overline{r} + \pi_t + (\alpha_\pi - 1)(\pi_t - \overline{\pi}) + \alpha_y(Y_t - Y_t^{pot}) \tag{1}$$

with i_t^T as the Taylor interest rate, $\overline{r}$ as equilibrium real interest rate, $\pi_t/\overline{\pi}$ as inflation rate and its target value, $(Y_t - Y_t^{pot})$ as output gap measured as the output level minus its potential value. Setting the equilibrium real interest rate and the inflation target of the Fed equal to 2% each and the reaction coefficients $(\alpha_\pi - 1)$, α_y to 0.5 each, he was able to mimic the Fed funds rate targeted by the central bank. However, in contrast to simply applying the coefficients suggested by Taylor (1993) in this simple rule, Taylor reaction functions explicitly estimate those coefficients.

Simple rearranging of Eq. (1) leads to:

$$i_t^T = \overline{r} - (\alpha_\pi - 1)\overline{\pi} + \alpha_\pi \pi_t + \alpha_y\left(Y_t - Y_t^{pot}\right) \tag{2}$$

In this specification the Taylor principle becomes evident according to which the reaction coefficient towards inflation (α_π) needs to exceed unity in order to influence the nominal interest rate by more than the change in the inflation rate. This moves the real rate which is the decisive variable for investment and consumption decisions.

The inflation target of the ECB is defined as inflation rates being close to but below 2% in the medium term and thus constant. In contrast, recent studies on the equilibrium real interest rate have shown that this variable is by no means constant over time but has to be modeled time varying in Taylor reaction functions as well (see Belke and Klose (2011, 2013) for the Euro Area; Horváth (2009) for the Czech Republic or Plantier and Scrimgeour (2002) for New Zealand). Those suggest to proxy the equilibrium rate at least by a HP-filtered variable of the real interest rate modeled by the Fisher equation with adaptive expectations. We will follow this procedure in this article and additionally set the inflation target equal to two percent[4] which changes Eq. (2) to:

$$i_t^T = \overline{r}_t - (\alpha_\pi - 1)\bullet 2 + \alpha_\pi \pi_t + \alpha_y(Y_t - Y_t^{pot}) \tag{3}$$

Moreover, it has been observed empirically that central banks do not adjust their interest rates in large steps but exhibit some kind of monetary policy inertia. Therefore, the interest rate set by the ECB is characterized as:

[4] Setting the inflation target equal to two percent is a reasonable assumption since the ECB defines their goal to deliver price stability which means inflation rates close to but below two percent.

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