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MAGYAR NEMZETI BANK

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Which Aspects of Central Bank Transparency Matter? Constructing a Weighted Transparency Index*

(Melyek a jegybanki transzparencia valóban fontos összetevői? Javaslat a súlyozott transzparenciaindexre)

Written by: Csaba Csávás, Szilárd Erhart, Dániel Felcser, Anna Naszodi**

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**Csaba Csávás, Department of Financial Analysis, Magyar Nemzeti Bank, email: csavascs@mnb.hu; Szilárd Erhart, Department of Financial Analysis, Magyar Nemzeti Bank, email: erhartsz@mnb.hu; Dániel Felcser, Department of Economics, Magyar Nemzeti Bank, email: felcserd@mnb.hu; Anna Naszódi, Research Department, Magyar Nemzeti Bank, email: anna.naszodi@gmail.com (corresponding author)

Contents

Abstract

In this paper we investigate the effect of central bank transparency on survey forecasts. Similar to Ehrmann et al. (2010), we find that greater transparency can reduce the degree of disagreement across individual forecasters and it can also improve the forecasting performance of survey respondents. However, our empirical approach is more rigorous than that of Ehrmann et al. (2010) as we test both for causality and misspecification. The analysis is carried out on a panel dataset that is much richer than those used by previous studies. This unique dataset allows us to identify the effects of various aspects of transparency separately and to assign weights to them reflecting their relative importance in reducing uncertainty. Finally, we construct a new composite measure of central bank transparency using the estimated weights.

JEL: C53, D83, E50.

Keywords: central bank transparency, survey forecast, weighted transparency index, dynamic panel model, overlapping observations.

Összefoglalás

Ebben a tanulmányban a jegybanki transzparencia szakértői előrejelzésekre gyakorolt hatását vizsgáljuk. Ennek során azt találjuk, hogy a magasabb fokú transzparencia mérsékli az előrejelzést nyújtó szakértők közötti véleménykülönbséget, valamint javítja az előrejelzésük pontosságát. A fenti eredmények megegyeznek Ehrmann és szerzőtársai eredményeivel, ugyanakkor több lényeges különbség van a két tanulmány által alkalmazott empirikus módszertan között (Ehrmann et al., 2010). Ezen tanulmány eredményei megalapozottabbak annyiban, hogy a transzparencia és az előrejelzések közötti oksági kapcsolatot, valamint bizonyos fajta specifikációs hibát is tesztel. Tanulmányunk abban is előrelépést mutat, hogy az irodalomban felhasznált adatoknál lényegesen gazdagabb paneladatokon végezzük el az elemzést. Ezáltal elsőként van módunk egyrészt arra, hogy megmérjük a transzparencia különböző aspektusainak egyedi bizonytalanságcsökkentő hatását; másrészt, hogy a hatások erősségét tükröző súlyokat rendeljünk az egyes aspektusokhoz. Ezen becsült súlyok felhasználásával a jegybanki transzparencia egy új, összetett mérőszámát alkotjuk meg.

1 Introduction

There is no consensus in the literature how the degree of central bank transparency influences the level of uncertainty in the economy and thereby the economic performance of a country. In this paper we contribute to the literature by investigating empirically whether higher transparency can reduce the uncertainty regarding both future monetary policy and future macroeconomic outcomes. In addition, we analyze what aspects of transparency are important (if any).

A number of empirical and theoretical studies claim that central bank transparency has a *favorable* effect on the economy. These studies are Chortareas et al. (2002), Crowe and Meade (2008), Demertzis and Hughes Hallett (2007), Dincer and Eichengreen (2010), Middeldorp (2011) and Swanson (2004), inter alia. Some other papers, however, come to a different conclusion. The papers of Cruijsen et al. (2010), Dale et al. (2011), Demertzis and Hoeberichts (2007), Kool et al. (2011), Morris and Shin (2002) and Walsh (2007) find either that higher transparency is *unfavorable*, or that it has an *ambiguous* effect at mitigating the uncertainty.

One of the most comprehensive empirical analyses on the subject is by Ehrmann et al. (2010). They investigate the relationship between central bank transparency and the quality of survey forecasts on a number of economic indicators. In this paper we use a modified version of their model and data from the same source. We deviate from their approach in three important respects. First, the aim of this paper is to shed light not only on the effect of the overall level of transparency, but also to analyze the *effects of each measureable dimension of transparency separately*. Second, our purpose with this detailed analysis is to help central bankers to decide *what specific aspects of transparency should be improved*. To do that, we have to test whether a higher degree of transparency can cause lower uncertainty, or they are just correlated. As Ehrmann et al. (2010) do not test *causality*, their results have only limited relevance for policy. Third, we apply a novel way to *check unknown form of misspecification* of the model and *adequacy of the estimation method*. Here, the idea is to estimate the model not only on those variables, whose forecasts are hypothesized to be influenced by central bank transparency, but also on oil price that is exogenous to monetary policy.[1] Thereby, we can detect misspecification by finding significant relationship between any measure of transparency and oil price predictions.

The most commonly used measure on central bank transparency is the index developed by Eijffinger and Geraats (2006).[2] This index is an *equally weighted* sum of 5 sub-indices each of which breaks down to further 3 components. The Eijffinger-Geraats index has been criticized on a number of grounds.[3] Some of these criticisms can be dealt with by assigning unequal weights to the components. Even Eijffinger and Geraats (2006) remark themselves that it is obviously questionable to simply add the scores of the 15 components in order to obtain a meaningful measure for the overall degree of central bank transparency. Moreover, they share the view that the composite index of transparency and the weight of each of its components should be established empirically.

This paper fills the gap by *constructing a weighted index of central bank transparency*. The index we propose aggregates the same 15 components as the composite Eijffinger-Geraats index. The weights we assign to the components are estimated and they reflect the relative importance of the components in reducing uncertainty. Our purpose with publishing the weights

[1] Whether oil price is unaffected by monetary policy in general, and especially to monetary policies of large economies such as the US, or China is not obvious. The test of Kilian and Vega (2011), however, underpins oil price exogeneity.

[2] The Eijffinger-Geraats index is used for example by the empirical works of Cruijsen et al. (2010), Csávás et al. (2011), Demertzis and Hughes Hallett (2007), Dincer and Eichengreen (2007), Ehrmann et al. (2010), Middeldorp (2011) and Siklos (2011).

[3] For instance, Claussen (2008) argues that the Eijffinger-Geraats index can be misleading, because its crude scores blow up the difference between countries, and the equal weighting does not take into account that some aspects are more important for transparency than others. Cruijsen et al. (2010) suggest that transparency indices should measure the clarity of information instead of the quantity and should help to decide which specific information to disclose and which specific information to keep secret. Minegishi and Cournéde (2009) argue that one aspect of transparency may substitute for another.

and the weighted composite transparency index is to give central bankers guidance about which types of transparency have so far worked best.[4]

In these empirical exercises, we use a *unique panel data set* that is richer in both of its dimensions than any of those used by previous panel analyses in the literature.[5] The number of countries in our dataset is 26 and the sample covers the period between October 1989 and December 2009. The main advantage of such a rich dataset is that there is high enough variation in almost all measureable aspects of transparency to identify their effects on the quality of forecasts. Ehrmann et al. (2010) also make an attempt to estimate the importance of each of the sub-indices of the composite Eijffinger-Geraats index separately;[6] however, the countries in their sample are too homogenous to find significant effects of 4 sub-indices out of 5. The 12 advanced economies in their sample are broadly the same at most of the sub-indices of the Eijffinger-Geraats index.

The rest of the paper is structured as follows. Section 2 presents our benchmark econometric model. Section 3 describes our dataset. Section 4 presents the results obtained with the benchmark model and highlights their deviations from that of Ehrmann et al. (2010). It also presents a number of robustness checks and the Granger causality tests. Finally, it introduces the weighted transparency index. The conclusions are presented in Section 5.

[4] Dincer and Eichengreen (2010) and Geraats (2009) provide extensive analyses on the evolution of transparency practices.

[5] The panel analysis of Middeldorp (2011) covers almost as many countries as our. His panel data set includes 24 economies: Argentina, Australia, Canada, Chile, Czech Republic, Germany, Hong Kong, Hungary, India, Indonesia, Japan, Malaysia, Mexico, New Zealand, Norway, Poland, Singapore, Slovakia, South Korea, Sweden, Switzerland, Thailand, the United Kingdom and the United States.

[6] See footnote 7 in Ehrmann et al. (2010).

2 Benchmark Regression Model

This section describes our benchmark model which is a modified version of the Ehrmann et al. (2010) model. The model is given by

$$y_{i,t} = \beta x_{i,t} + \alpha_i + \gamma_1 \sigma_{i,t} + \gamma_2 |\Delta \text{oil}_{t-1}| + \epsilon_{i,t} \quad , \tag{1}$$

where $y_{i,t}$ denotes the dependent variable characterizing the forecasts in country i at time t. More precisely, it measures the quality of forecasts either by the degree of disagreement across individual forecasters, or by the forecast accuracy. The measure on central bank transparency in country i at time t is denoted by $x_{i,t}$. To be more specific, $x_{i,t}$ can be either the composite transparency index, or one of its 5 sub-indices, or one of its 15 components.

The main parameter of our interest is β. Our *hypothesis* is $\beta < 0$, i.e., forecasters disagree less and make smaller forecast errors if the central bank is more transparent. The only forecasted variable where the hypothesis is different from the above is the oil price. As the oil price is considered to be exogenous to monetary policy, we do not expect transparency to have any effect on the oil price forecast error and on the disagreement over the future oil price. The corresponding hypothesis is $\beta = 0$.

We control for country fixed effects by α_i. *The country fixed effect* captures some unobserved country-specific characteristics, like how difficult it is in general to predict some country-specific economic indicators, and also what is the overall level of skills of the forecasters in the country.

In addition to the country fixed effects, we also include the conditional volatility of the variable to be forecasted $\sigma_{i,t}$,[7] and the absolute change in oil price in the previous period $|\Delta \text{oil}_{t-1}|$. We expect that the higher is the volatility of the economic indicator to be forecasted, the higher is the degree of disagreement and the less precise are the forecasts ($\gamma_1 > 0$). Finally, larger absolute changes in oil price are likely to be associated with higher general uncertainty in the oil-dependent globalized world economy that may increase both the degree of disagreement and the forecast errors ($\gamma_2 > 0$).

[7] Section 3.3 discusses in detail how the conditional volatility is measured.

3 Data

In our empirical exercise, we use data on the transparency index, survey forecasts on various macro variables and historical data of the same set of variables. This section provides a detailed description of these data.

Our data covers 26 countries. 12 of them are advanced economies, which are investigated also by Ehrmann et al. (2010). These countries are Canada, France, Germany, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom and the United States. In addition to the developed countries, our sample covers also 14 European emerging countries: Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia, Turkey and Ukraine.

At first sight, the time dimension of our panel is much larger than the cross-sectional dimension, which is not typical to traditional panels in micro studies. Our panel data comprises 243 periods from the monthly sample between October 1989 and December 2009. However, by restricting the sample to the forecasts with non-overlapping forecast horizons, the time dimension reduces substantially to 81 periods for the 3-month forecasts, 21 periods for the 12-month forecasts and the end-of-year forecasts and 10 periods for the end-of-next-year forecasts. Our benchmark estimates are carried out on a sample that is restricted not only to non-overlapping observations, but also to an even shorter period that spans between January 1998 and December 2009.[8] This shorter sample covers only 144 months and only 49 forecast rounds with non-overlapping 3-month forecasts, 12 forecast rounds with non-overlapping 12-month and end-of-year forecasts and 6 forecast rounds with non-overlapping end-of-next-year forecasts.

3.1 DATA ON CENTRAL BANK TRANSPARENCY

Although the concept of central bank transparency is rather complex, there is a forming agreement on its definition. Still, it is difficult to find reasonable quantitative measures on it. In the literature the most commonly used transparency measure is the one constructed by Eijffinger and Geraats (2006). Others, such as Minegishi and Cournede (2009), have proposed alternative measures. We opt for using the Eijffinger-Geraats index for most of our analyses and the Minegishi-Cournéde index for robustness check. The main advantage of the Eijffinger-Geraats index is that it has the broadest coverage of countries and periods due to the work by Dincer and Eichengreen (2007) and Siklos (2011), who have expanded and updated the original sample of Eijffinger and Geraats (2006). We use the latest update of the Eijffinger-Geraats index by Siklos (2011) with some minor modifications.[9]

The *sample* of the latest update of the transparency index spans between 1998 and 2009. Therefore, our benchmark estimates are carried out on this sample period. However, in some instances, we work with a sample *lengthened* by the period between 1989 and 1997 for which survey forecasts are available. Ehrmann et al. (2010) also lengthen their sample by a period preceding 1998 to enrich the data used in their benchmark estimation. They apply the 1998 values of the indices for a given country to all years prior to 1998. As we could not find convincing evidence for no progress in transparency in the investigated countries before 1998,[10] and our sample is rich enough even without this dubious way of producing extra

[8] In Section 4.2, we argue in favor of estimating the model on non-overlapping sample with the short sample period.

[9] The Czech National Bank and the Central Bank of Hungary have been publishing individual voting records since 2008 and 2005, respectively. As these developments in transparency are not captured by the updated index by Siklos (2011), we make the following corrections. We change the score of the 3C component from 0.5 to 1 for both countries for the relevant periods. Furthermore, Slovakia introduced the euro in January 2009, therefore we assign the values of the transparency indices of the ECB to Slovakia since then.

[10] The reforms in the Sveriges Riksbank are counter examples for having no progress in transparency before 1998. The Swedish central bank started to announce inflation target in 1993 and they started to publish inflation forecast in 1995. Some further changes in transparency in 9 central banks between 1989 and 2003 are collected by Cruijsen and Demertzis (2005) in their Appendix B2.

observations, we start our sample in 1998 in the benchmark estimation. But we present estimates on the longer sample, generated the same way as Ehrmann et al. (2010) do, as part of the robustness checks.

The frequency of the transparency index is annual, while the survey forecasts are on monthly frequency. We harmonize the data frequencies by transforming the data on transparency into monthly by assigning the annual value to each of the 12 months in the given year.

The Eijffinger-Geraats index measures five distinct dimensions of transparency along the policy-making process. The first dimension, *political transparency*, concerns the central bank's openness about its policy objectives. In particular, whether it announces quantitative targets, formal goals and the priority of these goals. The institutional arrangements, such as central bank independence and codification of roles and responsibilities of the central bank are also vital elements of the political dimension of transparency. The second dimension, *economic transparency*, refers to the central bank's willingness to release information relevant for monetary policy, including economic data, forecasts and policy models. Sharing these information with the public allows independent, external assessment of monetary policy decisions. The third dimension, *procedural transparency*, gauges how monetary policy decisions are made, whether the decision makers follow an explicit policy rule or strategy. This dimension indicates also whether the central bank publishes minutes and voting records that document how its policy-making committee arrives at its decisions. The fourth dimension, *policy transparency*, is about the communication of the policy decisions, whether decisions are announced promptly following the committee meetings, whether the public is provided with a detailed explanation underlying the decisions, and finally, whether these explanations include signals of policy inclination or bias of future policy actions. The last distinct dimension, *operational transparency*, focuses on the implementation aspects of monetary policy. In particular, whether the central bank publishes its forecast errors made in the past, and whether it assesses past errors in its policy.

All five dimensions have three components. Out of the 15 components, 6 scores either 0 or 1, while 9 of them scores either 0, or 1/2, or 1. A higher score corresponds to a higher level of transparency. The composite index, or total index is calculated as the sum of the sub-indices. Accordingly, the total Eijffinger-Geraats index can take the minimum of 0 and the maximum of 15. The scoring system is summarized by the left panel of Table 1.

The main advantage of our rich panel data is that the transparency indices exhibit substantial variation. When comparing the *variation in the transparency index* in all 26 countries in our data with that in the 12 advanced countries examined also by Ehrmann et al. (2010), we obtain that the emerging countries contribute to the variance of the total transparency index twice as much as the advanced countries do (680%/334%, see the right panel of Table 1). And also, most of the sub-indices and components are more dispersed in the sample of 26 countries than in that of the 12 advanced economies. The excess variation that we gain by enlarging the sample with the emerging countries enables us to estimate the effect of each of the sub-indices on the degree of disagreement and the forecast accuracy. Moreover, it also allows us to assess the optimal weighting of the 15 components and to aggregate them to an economically meaningful composite index.

By comparing the cross-sectional variance and the time-series variance of the total transparency index, we find the former to be much larger than the latter. Based on a simple indicator,[11] the cross-sectional variance accounts for more than 90% of the overall variance in the total transparency index. The same is true for the 5 sub-indices. This suggests that empirical identification of any relationship between central bank transparency and quality of forecasts comes mainly from the heterogeneity of the countries and marginally from the dynamics over time.

3.2 DATA ON DEPENDENT VARIABLES

The dependent variable in Equation (1) measures either the degree of disagreement across individual forecasters, or the forecast accuracy. For the former, we use exclusively the survey data of the Consensus Economics. For the latter, we use historical data of the forecasted economic indicator in addition to the forecasts.

Consensus Economics surveys a large group of professional forecasters. It reports the arithmetic average and the standard deviation of the individual forecasts. The former is called the consensus forecast. We measure the *forecast accuracy by*

[11] First, we estimate the cross-sectional variance of the composite transparency index for each month. Then, we average them over the sample period between January 1998 and December 2009. Finally, we take the ratio of the average cross-sectional variance and the total variance.

the absolute forecast error of the consensus forecast,[12] while the *degree of disagreement* is measured by the *standard deviation of the individual forecasts* as this statistics is readily available to us.[13]

The list of economic indicators that are forecasted consists of the 3-month interest rates (in %),[14] 10-year government bond yields (in %), consumer price index (CPI, % change p.a.), real GDP growth (% change p.a.), consumption growth (% change p.a.), oil price (WTI price in USD), government budget balance (relative to GDP for emerging countries, in level for advanced countries) and current account balance (CA, in level, in local currency for advanced countries, in US dollar for emerging countries).[15]

As the government budget balance forecasts and the current account balance forecasts are reported in different terms for the emerging countries and the advanced countries, we cannot merge the samples of these two groups. Therefore, we present the estimation results for these two forecasted variables only as part of the robustness checks in Section 4.3.

We apply the following simple *transformation* to the oil price forecasts. We transform the forecasts and their standard deviations into percentage changes relative to the nominal oil price on the survey day. Without this transformation the uncertainty of oil price forecasts are not directly comparable across periods with substantially different nominal spot oil price, i.e., 1 dollar standard deviation reflects higher relative uncertainty if the price is 50 dollars per barrel than if it is 100 dollars.

The *sample* of survey forecasts spans between October 1989 and December 2009, but the time series are shorter for some countries in our unbalanced panel as it is summarized by Table 2.[16] Both the interest rates and the oil price are forecasted for more or less fixed horizons of 3 months and 12 months,[17] while all the other variables are forecasted for the end of the current year and the end of the following year.

The *frequency* of the survey data is monthly, except for the emerging countries prior to June 2007, when it was only bi-monthly. The data frequency of the sub-sample with non-overlapping forecast horizons is obviously lower than monthly. For instance, we sample every third observations from the 3-month forecasts, and every 12th observations from the 12-month forecasts and the end-of-year forecasts, and every 24th observations from the end-of-next-year forecasts. These non-overlapping samples usually start with the forecast round in January 1998 in the benchmark case.[18]

In order to assess forecast accuracy, we need *historical data* of the forecasted economic indicators. These data are mainly from the OECD's Main Economic Indicators database. For some non-OECD countries (Bulgaria, Croatia, Latvia, Lithuania, Romania) the historical data are from the AMECO database. We also used the IFS database to cross check the data, and expand the time series where possible. Short-term and long-term interest rates are from Bloomberg. The data source of the oil price is Thomson Reuters Datastream.

[12] In this respect we do not think to deviate from the methodology of Ehrmann et al. (2010), although they refer to the absolute forecast error as the *average absolute forecast error*. This terminology misleadingly suggests first taking the absolute forecast error of the individual survey respondents and then averaging them over the individuals. As their reported estimates are almost the same as ours carried out on identical sample, we have good reason to think that Ehrmann et al. (2010) construct their measure on forecast accuracy the same way as we do.

[13] An alternative measure is the inter-quartile range that is less sensitive to outliers. Ehrmann et al. (2010) use both measures on a sample partly overlapping with ours, and they find all of their results robust to the choice of the dispersion measure. Therefore, it seems sufficient to use only the standard deviation as a measure on the degree of disagreement.

[14] The forecasted short rate is the overnight interbank interest rate for Turkey, while it is the 3-month rate for all the other countries.

[15] In addition to these variables, Ehrmann et al. (2010) investigate also the impact of transparency on the unemployment forecasts. As the survey of Consensus Economics does not cover the unemployment rate in the emerging countries, we cannot replicate the analysis for unemployment on our broader sample. However, the set of variables that we investigate involves four extra elements: consumption, government budget, current account balance and oil price.

[16] Table 3 reports some descriptive statistics on the standard deviation of the individual forecasts and the absolute forecast error of the consensus forecast.

[17] The forecast horizons usually differ from 3 months, and 12 months by a few days, because the surveys do not take place exactly at the end of each month, while the forecasts refer to the end-of-month interest rates and oil price.

[18] The only exception is the case of the end-of-next-year forecasts, where we start the non-overlapping sample with the forecast round in January 1999 in order to maximize the sample size.

3.3 DATA ON CONTROL VARIABLES

In order to judge how transparency affects the quality of forecasts, we control for the overall difficulty of forecasting. In the benchmark model of (1), the control variables are the absolute change in oil prices in the previous month $|\Delta oil_{t-1}|$ and the conditional volatility of the forecasted variable $\sigma_{i,t}$ in addition to the fixed effects.

The control variables are constructed from the survey data and the historical data already introduced in Section 3.2. The *conditional volatility* is constructed by following the approach of Ehrmann et al. (2010), i.e., by estimating GARCH(1,1) models for the time series of each economic indicator separately. We include the first and the second lags of the variable in question into the mean equation. This way we handle the persistency of the time series. For estimating the conditional volatility of time t, we do not only use those data that are available at time t but historical data from the period between 1980 and 2009. As the frequency of most of the historical data is annual, so is that of the estimated conditional volatility. The exceptions are the interest rates and oil price changes where the frequency is monthly.

3.4 TESTING FOR UNIT ROOTS

Before choosing the estimation method, we test for a unit root in the time series. We use the Breitung panel unit root test and two versions of the Levin-Lin-Chu test (with trend and without trend) for this purpose.

Table 4 shows that at least two of the three tests reject the existence of common unit root for each of the 5 sub-indices and the total transparency index.[19] Similarly, almost all the dependent variables in the model can be considered I(0). There are only 3 exceptions among the 24 tested series. These are the standard deviation of the 1-year-ahead individual oil price forecasts, the absolute forecast error of next-year GDP and the absolute forecast error of next-year CPI. For these 3 variables, none of the three panel unit root tests can reject the null, however it can be solely due to the low power of these tests.[20] In general, the unit root tests suggest to estimate the model introduced in Section 2 in *levels*.

[19] We find no evidence for individual unit roots either.

[20] Before running the unit root tests, we adjust for seasonality the forecast quality indicators for CPI, GDP and consumption by regressing them on monthly dummy variables. Testing unit root on seasonally adjusted series results in reduced power of the tests, i.e., we can reject the null fewer times than we should (see Ghysels and Perron, 1993).

4 Empirical Analysis

This section estimates the benchmark model and some alternatives of it. All the regressions are estimated by the *least square dummy variable* (LSDV) estimator. Section 4.1 presents the estimation results obtained with the benchmark model. Section 4.2 presents the results obtained with the model and methodology of Ehrmann et al. (2010) and performs some tests that support deviating from Ehrmann et al. (2010). Section 4.3 checks the robustness of our benchmark estimates in a number of ways. Section 4.4 tests whether the estimated relationship between transparency and quality of forecasts is causal. Finally, Section 4.5 introduces the weighted transparency index.

4.1 ESTIMATION RESULTS WITH THE BENCHMARK MODEL

This section presents and interprets the results of 144 regressions run on 24 distinct dependent variables by using one of the 6 transparency indices as explanatory variable. As a reminder, the 6 transparency indices are the 5 sub-indices together with the total Eijffinger-Geraats index. There are 24 different dependent variables: 6 economic variables are forecasted for 2 different horizons each, and the forecasts are characterized either by their dispersion or by their accuracy.

Tables 24 and 25 in Appendix A report the regression results for the dispersion of forecasts and the forecast accuracy as the dependent variable, respectively.[21] In order to help the reader at processing the tremendously large amount of information presented in these tables, we summarize the results on the main parameter of our interest β in Table 5. This Table shows the sign and significance of the estimated coefficient capturing the effect of transparency.

We start the interpretation with the results of the *oil price regressions*. It is important to see that we estimate the oil price regressions with a completely *different motivation* than the other regressions with macro variables. We do not think that central bank transparency should affect oil price forecasts by any means as oil price is exogenous to monetary policy. However, its exogeneity helps us to detect if the model is *misspecified* or the *estimation method is not adequate* for the given model. The results of the oil price regressions are presented in the last two rows of Table 5. With the exception of one marginally significant coefficient estimates, our hypothesis of $\beta = 0$ cannot be rejected.[22] Therefore, model (1) with the applied estimation method (LSDV) is likely to be adequate to investigate the relationships between different aspects of central bank transparency and some macro forecasts.

Next, we interpret the results for the forecasted macro variables. In the first 10 rows in Table 5, there is at least one minus sign in each column. It means that each of the 5 sub-indices has significant negative coefficient in at least one model specification. If these estimates reflect causal relationship, then the interpretation of this finding is that each aspect of transparency can mitigate the uncertainty concerning at least one macro variable.

By comparing the number of minus signs in the first 10 rows of Table 5 *across columns*, we get an impression on which dimension of transparency matter the most for the quality of forecasts of the macro variables. The favorable effect of transparency is most robust in case of the *economic aspect of transparency*, as the economic sub-index is estimated to have significant negative coefficient in 11 specifications out of 20. The effect of economic transparency is significant not only statistically, but also in economic terms. Let us suppose that the sub-index of economic transparency increases by 1. It can

[21] Most of the estimates reported in Tables 24 and 25 support our hypotheses with secondary importance. These hypotheses are (i) the positive relationship between the volatility of the variable to be forecasted and the dependent variable ($\gamma_1 > 0$) and (ii) the positive relationship between the absolute changes in oil price and the dependent variable ($\gamma_2 > 0$).

[22] If we start the non-overlapping sub-sample with the forecast round in any other month than January, then the coefficient of the transparency measure is significant only in a few specifications of the oil price regressions.

be achieved by the central bank, for instance, by starting to publish its macroeconomic model used for policy decisions. Our estimates suggest that this measure decreases the standard deviation of the individual forecasts on the 3-months-ahead short rate by 0.02% (2 basis points) provided everything else remains unchanged. See the first panel (upper left) in Table 24. Though this effect is small, it is not negligible in relative terms, because the sample average of the standard deviation of the individual 3-months-ahead short rate forecasts is 0.23% as it is reported by Table 3.

The comparison of the results across sub-indices sheds also light on the *mechanism* that transparency presumably exerts on predictions. Central banks can have both direct and indirect impact on the private sector's forecasts. An example for the *indirect channel* is the following. Suppose the central bank enhances its transparency by prioritizing its objectives. Thereby, it makes it easier for the public to predict how it will respond to shocks in order to meet its objectives. Owing to better policy rate forecasts, macroeconomic variables become easier to be forecasted as well provided that market participants understand the transmission mechanism well. In contrast to the indirect channel, the *direct channel* works through directly providing the market by central bank forecasts on a number of macro variables. If the forecasts of the central bank are more precise than the private forecasts, then publishing predictions by the monetary authority is likely to improve the accuracy of private forecasts.[23]

Our estimates cannot tell with certainty whether the direct channel or the indirect one is at work. However, the direct channel seems to be more dominant as the economic transparency has the most robust favorable effect on the forecasts out of the 5 dimensions. Just to recall, the economic sub-index indicates whether the central bank publishes its own forecasts. If transparency affected the macroeconomic variables mostly indirectly, via better understanding of monetary policy decisions, we would see more coefficients with significantly negative sign for the sub-indices other than the economic sub-index.

The *total transparency index* has also significant negative coefficient for some of the specifications (5 out of 20) that is likely to be inherited from its most important sub-index, the economic one. The effects of the other 4 dimensions of transparency are less similar to that of the total transparency index as it is apparent from the comparisons of their columns in Table 5.

In general, we find no strong evidence against the null that higher transparency is associated with better forecast. Our one-sided test rejects the null $\beta < 0$ at the 10% significance level only 4 times out of 120 specifications presented in the upper part of Table 5. Given that the corresponding probability of the type I error is 10%, the expected number of rejections is 12 out of every 120 independent estimations. However, our 120 estimates are not independent for a number of reasons. By counting only those estimates among which there is no trivial linear dependence, we get 20 as a product of 5 (number of roughly independent sub-indices), 4 (number of roughly independent macro variables, the 2 real variables count 1), 1 (the 2 forecast horizons count 1) and 1 (number of independent measures on the quality of forecasts). As we obtained only 4 rejections out of 20 independent estimates, we do not have strong evidence against the hypothesis $\beta < 0$ even if we take into account the dependence between regressions.

Table 5 reveals also which macro forecast correlates with most of the dimensions of transparency. It is the *short-term interest rate* that can be forecasted with either significantly higher precision or significantly less disagreement or both if the central bank improves either on the political, or economic, or operational aspect of transparency. This finding is not surprising, because the short rate is the most closely related variable to monetary policy-making and communication as the policy instrument itself is a specific short-term rate at many central banks. In our sample, all countries use the short rate as policy instrument among those, where interest rate forecasts are available. Along these lines, central banks with higher degree of transparency tend to be those that reveal more information about their future monetary decisions and thereby make their policy rate more predictable.

[23] Higher transparency can also have unfavorable impact on the economy through the direct channel as it is suggested by the seminal paper of Morris and Shin (2002). They show the following. If central banks have only noisy information on the future evolution of some variables, and their noisy information is less precise than that of the market then achieving higher degree of transparency can crowd out valuable private information and increase forecast error of the private agents. Although this result of Morris and Shin (2002) is challanged by Svensson (2006), it is underpinned by alternative theories. For instance, Kool et al. (2011) show how greater transparency can reduce forecasting accuracy if market participants choose to refrain from investing in private information when they can get costless guidance on future rates from the central bank's public signal. Unlike Morris and Shin, this result does not rely on coordination effects and higher order expectations or what Svensson (2006) identifies as implausible calibration of the relative precisions of the public and private signals.

Regarding the forecasts on the other two nominal variables, the *10-year interest rate* and the *inflation rate*, much fewer estimates are significant than in case of the 3-month interest rate forecasts. This finding reflects that central banks are able to affect these variables only indirectly.

The effect of monetary policy on real variables is even less direct than those on the long rate and inflation rate as they are less tightly connected to the policy instrument along the monetary transmission mechanism. Finding significant relationship between central bank transparency and *GDP* forecasts or *consumption* forecasts could be interpreted as *indirect evidence for the effectiveness of monetary policy* that is often debated in the literature. An alternative interpretation attributes the significant relationship to the *direct channel* functioning through publishing central bank forecast on real variables. This alternative interpretation seems to be more plausible, as significant favorable impact of transparency on real variables is found mostly in those specifications, where transparency is measured by the economic sub-index. It is worth to mention that the economic sub-index of transparency, more precisely, its 2C component indicates whether the central bank publishes forecast, but the published forecast should not necessarily be on real variables. In order to have a clearer view on the relevance of the second interpretation, one needs to use detailed data on what variables are forecasted by central banks.

4.2 COMPARING OUR MODEL, METHODOLOGY AND ESTIMATION RESULTS WITH THOSE OF EHRMANN ET AL. (2010)

As we already indicated, our model of (1) and our empirical approach is similar to those of Ehrmann et al. (2010), however there are some remarkable differences.

First, our benchmark model is a *static model*, while the model of Ehrmann et al. (2010) is a *dynamic* one as they control also for the lagged dependent variable $y_{i,t-1}$. The reasons they include $y_{i,t-1}$ are that $y_{i,t-1}$ can capture the overall difficulty at predicting the economic indicators and the dependent variable is likely to be persistent. In contrast, we think that the other 3 control variables (the country fixed effects, the conditional volatility of the economic indicator to be forecasted and the absolute changes in oil price) can capture sufficiently well the overall difficulty of forecasting even without the lagged dependent variable. Moreover, the standard test presented by Ehrmann et al. (2010) on the persistency of forecast accuracy is not convincing for the following reasons. The forecast horizon of the dependent variable and that of the lagged dependent variable are overlapping that automatically leads to significantly positive estimates on the coefficient of $y_{i,t-1}$. In other words the persistency of the forecast errors is guaranteed by construction in the dynamic model of Ehrmann et al. (2010). In addition, we examined the specification, where the lag of the lagged dependent variable is chosen to be as long as the forecast horizon in order to have the forecast horizon of the dependent variable and that of the lagged dependent variable non-overlapping. Then, the coefficient of the lagged dependent variable is no more significant.

Our final theoretical reason for not working with the dynamic model of Ehrmann et al. (2010) is that the LSDV estimator provides consistent, but biased estimates for dynamic panel models with individual effects (see Judson and Owen, 1997).[24] In contrast to the dynamic model, the LSDV estimator, used also by Ehrmann et al. (2010), provides unbiased estimates for static models.

The second aspect at which we deviate from the approach of Ehrmann et al. (2010) is that we estimate the model on a sub-sample of forecasts with *non-overlapping forecast horizons*, while they estimate their model on data of monthly frequency with longer than monthly forecast horizons. The problem with overlapping observations is the following. If the forecast horizons of the consecutive monthly observations are overlapping, then the error term $\epsilon_{i,t}$ becomes autocorrelated and it results in biased parameter estimates (see Hansen and Hodrick, 1980). One should count with this source of bias on top of the previously discussed one (which is due to estimating a dynamic panel model with individual effects by LSDV), when following the methodology of Ehrmann et al. (2010).

Finally, our sample differs from that of Ehrmann et al. (2010) not only in its data frequency, but also in its sample period and cross-sectional dimension. Our sample covers 26 countries, while the sample of Ehrmann et al. (2010) includes only 12 countries. Regarding the sample period, our benchmark regressions are run on a short sample starting in 1998, while the benchmark estimations of Ehrmann et al. (2010) are carried out on a longer sample. Their sample starts in 1990, although

[24] It is important to remark that the coefficient of the lagged dependent variable is most exposed to the bias.

the time series of the transparency index starts only in 1998. Ehrmann et al. (2010) over-bridge the gap between 1990 and 1998 by assuming no change in central bank transparency during the years before 1998, and they assign the value of the transparency index taken in the year 1998 to the index before 1998. In this Section, we re-estimate the model of Ehrmann et al. (2010) on our short sample covering all 26 countries in order to make the results comparable with those obtained with our benchmark model.

The first two modifications make our benchmark model (1) deviate from that of Ehrmann et al. (2010) in two aspects. First, Equation (1) does not include the lagged dependent variable $y_{i,t-1}$. Second, nor does it include month fixed effects, while the benchmark model of Ehrmann et al. (2010) includes month fixed effects when the forecasts refer to the end of the current year, or the end of the next year figures of some macro variables. Their model can be formalized as follows:

$$y_{i,t} = \beta x_{i,t} + \alpha_i + \gamma_1 \sigma_{i,t} + \gamma_2 |\Delta \text{oil}_{t-1}| + \gamma_3 y_{i,t-1} + \sum_{m=1}^{11} \Theta_m I_{m,t} + \epsilon_{i,t} \quad , \tag{2}$$

where $I_{m,t}$ is an indicator function taking value 1 if time t is in month m and 0 otherwise. Accordingly, the term $\sum_{m=1}^{11} \Theta_m I_{m,t}$ stands for the month fixed effects. The notation of all the other variables is the same as before.

The *month fixed effects* capture how difficult it is to make a forecast in month m relative to making the same forecast in December in the same year. There would be no need to include month fixed effects if the forecast horizon was fixed. However, this is not the case for all of the variables of the overlapping sample with monthly frequency as the macro data are forecasted for the end of the current year and the end of the next year. In these instances, the closer we are to the end of the year, the easier it becomes to make prediction for that year or for the next year. For instance, forecasting the annual GDP in January requires forecasting the output in all the coming 4 quarters, while forecasting the same figure in December is a much easier task, as most of the quarterly data are already released. In contrast to the sample of overlapping observations, when working with the sub-sample of non-overlapping end-of-year and end-of-next-year macro forecasts, the data are sampled on an annual or bi-annual frequency so all the forecasts in the sub-sample are formed in the same month. Therefore, there is no need to include month fixed effects into our benchmark model.

We examine, whether the estimates on the effect of transparency is sensitive to the modifications of the model and the data frequency. First, we estimate the dynamic model (2) on overlapping observations. Second, we compare the estimates with those obtained by our benchmark static model (1) on non-overlapping observations. As we will see, we have not only theoretical reasons for deviating from Ehrmann et al. (2010), but also empirical.

First, we present the results of the *oil price* regressions that serve to check potential *misspecification*. In addition, these regressions are also useful at learning the direction of bias that is due to estimating a dynamic panel model with individual effect by the LSDV estimator on overlapping observations.

The sign and significance of the estimates on β in (2) are summarized by Table 6, while Tables 26 and 27 report some further statistics of the oil price regressions. The top panel of Table 6 signals that the empirical approach of Ehrmann et al. (2010) is problematic as the coefficient of each of the transparency sub-indices is significantly different from zero in the dynamic model when the dependent variable is the absolute forecast error. Although we cannot learn from this single exercise what makes the estimates deviate from zero, still, we can learn the direction of the bias. Transparency has a positive coefficient in the oil price regressions whenever it is significant. It means that the dynamic model with the LSDV estimation method applied on overlapping observations provide upward-biased estimates on β. Thus, in the benchmark regressions of Ehrmann et al. (2010), whenever they cannot reject the hypothesis that transparency has a favorable effect, then they would not be able to reject the same hypothesis with a correctly specified model estimated by an adequate method either. And also, whenever they can reject the hypothesis with the dynamic model, they might not be able to do so with a correct specification estimated by an adequate method.

It is also important to notice that $\beta = 0$ is rejected for the oil price forecast only if the goodness of forecasts is measured by the absolute forecast error. When the quality of forecast is measured by the dispersion of individual forecasts, we detect no problem of the dynamic model. This difference can be explained by the fact that working with overlapping forecast horizons is clearly a problem in case of forecast errors, but less so in case of the dispersion measure.

Let us recall that when estimation is carried out by our benchmark approach (without controlling for the lagged dependent variable, on a sub-sample of non-overlapping forecast horizons), the estimates on β is found to be significant only in one

of the 24 regressions. This is apparent both from the last two rows of Table 5 and the second panel of Table 6. The lack of significance suggests two things. First, our benchmark approach is more appealing empirically than that of Ehrmann et al. (2010) as it provides unbiased estimates on β. Second, at least one of the deviations of our benchmark approach from that of Ehrmann et al. (2010) is necessary. When we apply only one of the modifications then we keep on having significant β coefficient in the oil price regressions. See the last two panels in Table 6. This finding clearly suggests that both excluding the lagged dependent variable from the model and estimating the static model on non-overlapping observations improve upon the estimations.

There are obviously more sophisticated methods than ours applied in the benchmark regressions for avoiding bias caused by estimating dynamic model with individual effects on overlapping sample of panel data by LSDV. See Arellano and Bond (1991) on alternative estimators to LSDV for dynamic panel models with individual effects and Harri and Brorsen (2009) on solutions for the overlapping data problem. However, as the relative performance of competing estimators changes with the characteristics of the data, econometric theory cannot help much at choosing the most adequate estimator in a specific empirical exercise, like ours (see Judson and Owen, 1997). Therefore, we stick to the simplest approach, i.e., estimating the static model by the LSDV estimator on non-overlapping observations.

Finally, we compare the estimated effects of transparency on *macro forecasts* obtained by the approach of Ehrmann et al. (2010) and our approach. The parameter estimates of the *dynamic model* are reported by Tables 28 and 29 for the dispersion of forecasts and the forecast accuracy, respectively.[25] The results on the main parameter of our interest β are summarized in Table 7. When comparing Tables 5 and 7, we see that the hypothesis of $\beta < 0$ is rejected fewer times for the static model than for the dynamic model. The number of rejections is only 4 out of the 120 regressions of the static model estimated on non-overlapping sample, while it is 8 for the dynamic model estimated on overlapping observations. The latter finding gives further support to the view that the approach of Ehrmann et al. (2010) provides conservative estimates on β.

Although the regressions both on oil price forecasts and on macro forecasts support that the model and methodology of Ehrmann et al. (2010) give upward biased estimates on β, their benchmark estimates reported by their Tables 4 and 6 seemingly suggest just the contrary as they can reject the hypothesis of $\beta < 0$ for none of the investigated specifications (see Table 8).[26] Finding no rejections in Table 8, while finding 8 rejections in Table 7 can be explained partly by the fact that 3 rejections out of 8 are obtained when the forecasted variable is the consumption which is not investigated by Ehrmann et al. (2010). And partly by the differences in the samples. We examine in Section 4.3 how do our benchmark results change if we restrict the sample to those 12 countries examined also by Ehrmann et al. (2010), or if we lengthen the sample the same way as they do.

In addition to the qualitative differences between the results obtained by the approach of Ehrmann et al. (2010) and ours, there are remarkable quantitative differences as well. For instance, if the economic sub-index of transparency increases by 1, like in our previous example in Section 4.1, then the standard deviation of the individual forecasts on the 3-months-ahead short rate decreases by 2 basis points according to our point estimates (see the upper left panel in Table 24), while it is estimated to decrease by only 1 basis point (see the upper left panel in Table 28) with the approach of Ehrmann et al. (2010). The difference between the point estimates of this magnitude might matter when one aims at quantifying the impact of reforms in different aspects of transparency. An example of such an exercise is presented in Section 4.5 of this paper, where we construct a weighted transparency index by quantifying the relative importance of the 15 sub-indices of transparency. For that exercise, it is a natural choice to use our approach to estimate the weights.

4.3 FURTHER ROBUSTNESS CHECKS

This section provides a number of robustness checks on the results presented in Section 4.1. We investigate whether our estimates are sensitive to changes in model specification and sample.

[25] When estimating the dynamic model on the panel of 26 countries, we have to set the lag of the lagged dependent variable to 2 periods (2 months) instead of 1 period (1 month), because the survey forecasts for the emerging countries are available only at the bi-monthly frequency prior to June 2007.

[26] Table 8 summarizes the sign and significance of the estimates on the β coefficient for some of the specifications in Tables 4 and 6 of Ehrmann et al. (2010). It does not report the results on unemployment forecasts and some other specifications for which this paper does not have the corresponding estimates to compare with.

Whether *lengthening the sample* by the period preceding 1998 has any effect on the results is investigated by comparing our benchmark estimates summarized by Table 5 with the estimates summarized by Table 9.[27] It is apparent that the estimates on β is significantly negative in a lot more specifications when estimation is carried out on the longer sample. And the hypothesis of $\beta < 0$ cannot be rejected in any of the specifications.

When re-estimating Equation (1) on a restricted sample covering only the 12 *advanced countries*, we obtain similar qualitative results to those obtained on the broader sample. See Tables 10, 32 and 33. The number of significantly positive and negative estimates are more or less the same as in the benchmark case.

The above two sensitivity analyses are relevant for comparing our benchmark estimates with those of Ehrmann et al. (2010). Ehrmann et al. (2010) estimate their benchmark model on the sample of the 12 advanced economies and their sample period spans between January 1990 and December 2008. As we see, choosing the sample as Ehrmann et al. (2010) do, makes the hypothesis $\beta < 0$ harder to reject and the estimates on β is significantly negative in a lot more specifications. These findings resolve the contradiction (discussed in Section 4.2) between obtaining higher (upward biased) estimates on β with the model and methodology of Ehrmann et al. (2010) than with ours, and rejecting the hypothesis of $\beta < 0$ more often in our benchmark regressions than in theirs.

The forecasted three-month rate is the interbank rate for almost all countries except for Canada, Hungary and the United States. For these three countries, it is the 3-month treasury bill rate that is forecasted. This heterogeneity of the definition of the data does not matter as long as interbank rate and treasury bill rate move closely together. However, the recent financial crisis has loosened the connection between these rates. Interbank money market rates rose substantially due to credit and liquidity risk, while some government rates were driven lower by flight to safety flows. This calls for checking whether our results are robust to ending the sample before the outbreak of the financial crises. Table 11 suggests that our findings regarding the forecasted short rate are not sensitive to this kind of sample selection.[28]

Out of the 26 countries in our sample, 5 (France, Germany, Italy, the Netherlands and Spain) are members of the Economic and Monetary Union since its foundation. Although these countries are having *common monetary policy* in our entire sample period, their data are country-specific as the forecasted variables are country-specific. Moreover, the group of forecasters is country-specific as well. The reason is that the forecasters of a given country are mostly chosen from experts of domestic institutions by the Consensus Economics in order to better exploit the local knowledge. In contrast to the survey forecasts, the transparency index is thus identical across the euro area countries. For that reason the effect of transparency of the European Central Bank is represented multiple times in our benchmark panel analysis. In order to see how sensitive the results are to the multiple representation, we re-estimate the benchmark model on a narrower sample of 22 countries that includes only Germany out of the 5 countries.

Table 12 summarizes the results for the β coefficient, while Tables 36 and 37 report all the regression results for the degree of disagreement and the forecast accuracy, respectively. The qualitative findings obtained by our benchmark estimations seem to be robust to the single representation of the ECB: (i) We find no strong evidence against the null that higher transparency is associated with better forecast in general. (ii) The favorable effect of transparency is most robust in case of the economic aspect of transparency. (iii) Out of the predicted variables, it is the short-term interest rate, whose forecast can be significantly explained by most of the dimensions of transparency.

We have also tested the robustness of the results regarding the *specification of the econometric model*. The above 3 qualitative findings are robust to *omitting the conditional volatility* from the regression equation. See Tables 13, 38 and 39. And the first 2 qualitative findings are robust to *controlling for changes in the Value Added Tax* (VAT) that affects mostly the CPI and its forecasts. See Tables 14, 40 and 41. The first qualitative finding is robust to *omitting the absolute oil price change* $|\Delta \text{oil}_{t-1}|$. However, if we fail to control for the changes in the oil price, the estimates on β is significant in far fewer specifications than in the benchmark. See Tables 15, 42 and 43.

We test also whether the results are the same for additional real variables that we have forecasts on. These macro variables are the *government budget balance per GDP* and the *current account balance per GDP*. We treat these variables separately

[27] Tables 30 and 31 report the details of the regression results obtained on the long sample period.

[28] Tables 34 and 35 report the details of the regression results obtained on the pre-crisis period.

from the other forecasted variables, because the original forecasts on budget balance and current account in the Consensus Economics survey are different for the advanced economies and for the emerging countries. Government budget balance is forecasted in level for developed countries, while its ratio to GDP is forecasted for emerging countries. Current account balance is forecasted in level in all countries. However, it is in local currency for developed countries and in US dollar for emerging countries.

Before examining the impact of transparency on government budget forecasts and current account forecasts, we apply the following simple *transformation* to their original survey data. In the case of the government budget forecasts of developed countries, and the current account forecast of all countries, we divide both the consensus forecasts and the standard deviations of the individual forecasts by the consensus forecast of GDP (in level, denominated in the same currency as the variable in question).[29] As this transformation does not fully eliminate the inherent difference between the data on emerging countries and advanced countries, we still cannot merge the samples of these two groups.[30] However, the transformation allows us to run meaningful regressions on both of the sub-samples of coutries separately. The corresponding estimates are presented by Tables 16, 44 and 45.

Somewhat surprisingly, we found that higher transparency seems to have significantly favorable effect on *government budget balance forecasts* in advanced countries, while unfavorable effect in emerging countries.

The results contrast to our expectations in case of *current account balance*. Whenever the estimates on β is significant, it has a positive sign in most of the specifications both in the sub-sample of advanced countries and the emerging countries. We provide two explanations for the seemingly counter-intuitive behavior of the current account forecasts. First, for a long while the risk associated with global imbalances has been underestimated by the economists, especially in more developed countries like the member states and future entrants of EMU (see, e.g., Giavazzi and Spaventa, 2010). It is highly probable that at the same time less effort have been allocated by the private forecasters to prepare precise CA predictions for these countries. As more developed countries tend to have more transparent central banks in both of the country groups, the positive sign of the estimates on β is less surprising.

Another, although not independent explanation is based on the different importance of the current account in countries with different monetary and exchange rate regimes. Obviously, current account is more in the centre of interest (of both central bankers and private forecasters) in exchange rate targeting countries than in inflation targeters. And at the same time the exchange rate targeters tend to be less transparent according to the Eijffinger-Geraats index.[31]

We test also whether our findings are robust to an *alternative measure of monetary policy transparency*. For this exercise, we use the Minegishi and Cournéde (2009) index that quantifies the degree of transparency differently from the popular Eijffinger-Geraats index.[32] The sample of Minegishi and Cournéde (2009) covers the period between 1999 and 2009. It consists of 11 OECD countries out of which 8 overlap with our sample of 26 countries.[33] Our standard regressions confirm that greater Minegishi-Cournéde transparency index is associated with significantly lower dispersion of forecasts and higher forecast accuracy in general. See Tables 17, 46 and 47. Interestingly, the most robust results are obtained when transparency is measured either by the policy objective sub-index or by the economic analysis sub-index. These sub-indices correspond essentially to the political and economic sub-indices of the Eijffinger-Geraats index, respectively.[34]

[29] By following this methodology, we simply disregard the uncertainty concerning future GDP.

[30] For instance, if the standard deviation of the individual forecasts on budget divided by the consensus forecast on GDP tends to be lower than the standard deviation of the individual forecasts on the budget to GDP ratio, i.e., $\sigma(E_i(\text{budget}))/E(\text{GDP}) < \sigma(E_i(\text{budget/GDP}))$, then our transformation results in systematically negative measurement error in the degree of disagreement in the advanced countries. Moreover, as the central banks in advanced countries are more transparent on average than in emerging countries, the estimated effect of transparency β on the merged sample would be downward biased.

[31] Geraats (2009), Dincer and Eichengreen (2007) and Crowe and Meade (2008) find that flexibility of exchange rate regime correlates positively with monetary policy transparency.

[32] The estimated coefficients of the Minegishi-Cournéde total index and sub-indices cannot be directly compared with those of the Eijffinger-Geraats total index and sub-indices as the scale of the corresponding indices are different. The minimum value of the Minegishi-Cournéde total index is 0 and its maximum is 100, while the total Eijffinger-Geraats index can take values between 0 and 15.

[33] The 8 countries that are common in the samples are Canada, Germany (representing the Eurozone), Japan, Norway, Sweden, Switzerland, the United Kingdom and the United States.

[34] According to the content of the sub-indices, indicated by their components, the following correspondence can be made, showing the analogous Eijffinger-Geraats sub-index in parentheses: Policy objective (Political), Economic analysis (Economic), Decision-making process (Procedural), Policy decision (Policy).

In the benchmark estimations obtained with the Eijffinger-Geraats indices, the political aspect of transparency has not been found as important as the economic one. Another interesting difference between the estimates obtained with the Minegishi-Cournéde index and those obtained with the Eijffinger-Geraats index is that in the latter case, the most robust impact of enhanced transparency is found on the short rate forecasts out of the investigated forecasted variables. If we measure the degree of transparency by the Minegishi-Cournéde index, then it is the GDP forecast that most of the dimensions of transparency have significant favorable effect on. The two findings above contribute to our previous view on two related issues already touched in this paper. First, whether the forecasts are effected through the direct channel or the indirect one. Second, whether monetary policy is effective. The results obtained with the Minegishi-Cournéde indices point towards the functioning of the indirect channel and provide indirect evidence for the effectiveness of monetary policy.

4.4 TESTING FOR CAUSALITY

The finding that higher transparency is associated with lower degree of disagreement and higher precision of forecasts is consistent with at least two competing explanations leading to different policy recommendations. One of the explanations assumes a *causal relationship* between transparency and quality of forecasts. Based on the causal interpretation of the results in Section 4.1, central banks are advised without hesitation to improve upon their economic aspect of transparency. Another explanation is that there is merely *correlation* between the level of transparency and the quality of forecasts that cannot be exploited by policy reforms.

In this section we apply Granger causality test in order to see whether lagged values of transparency provide statistically significant information about current values on the quality of forecasts. If improvements in forecasts are typically preceded by reforms in transparency, then it is less likely that there is merely correlation between the level of transparency and the quality of forecasts, while the causal relationship is more probable.

For the Granger causality test it is crucial to record the exact timing of reforms in transparency, otherwise we do not know whether a change in transparency preceded or followed by a change in the quality of forecasts. For this purpose, we construct the time series of the Eijffinger-Geraats index and sub-indices on monthly frequency for the 12 advanced economies in our sample.[35] We use these new time series for all the regressions presented in this section.

We run the Granger causality tests for each country separately, thus there is no need for country dummies in the regressions. And unlike the LSDV estimates for the dynamic panel model with individual effects, the least square estimates for the dynamic time series model of the Granger test is unbiased. As we run the tests for each country separately, we have to work with the sample of overlapping observations, otherwise we would have too short time series. As it is shown by Section 4.2, the estimates are biased when they are carried out on the series of absolute forecast errors with overlapping forecast horizons. However, when the quality of forecasts is measured by the standard deviation of the individual forecasts, there is no evidence for the presence of bias. Therefore, our Granger causality tests are more reliable for the standard deviation of the individual forecasts.

We use the following model specification for the test. With the exception of the country fixed effects, we control for the same variables (conditional volatility of the economic indicator to be forecasted, the absolute changes in oil price) as in the benchmark specification. In addition, we control for the month fixed effects for those variables that are forecasted with changing forecast horizons. We use 3 information criteria (Akaike, Schwarz and Hannan-Quinn) to select the lag length for the Granger test. These criteria suggest to set the lag to 1 period (1 month). Accordingly, we estimate the following two equations:

$$y_{i,t} = \beta_{y,i} x_{i,t-1} + \gamma_{1,y,i}\sigma_{i,t} + \gamma_{2,y,i}\,|\Delta \mathrm{oil}_{t-1}| + \gamma_{3,y,i} y_{i,t-1} + \sum_{m=1}^{11} \Theta_{i,m} I_{m,t} + \epsilon_{y,i,t} \quad , \tag{3}$$

$$x_{i,t} = \beta_{x,i} y_{i,t-1} + \gamma_{1,x,i}\sigma_{i,t} + \gamma_{2,x,i}\,|\Delta \mathrm{oil}_{t-1}| + \gamma_{3,x,i} x_{i,t-1} + \epsilon_{x,i,t} \quad . \tag{4}$$

[35] The Supplementary Data Appendix of Eijffinger and Geraats (2004) and the notes written to the dataset of Siklos (2011) (available at http://www.central-bank-communication.net/links/) were at a great help at constructing the monthly time series for the advanced economies. As there is no similar detailed and comprehensive description of data on the emerging countries, constructing the monthly series of transparency sub-indices for these countries is a lot more cumbersome.

The notation of all variables is the same as before. When the forecasted variable is the interest rate, which is forecasted with a constant horizon, we do not include month fixed effects to Equation (3).

By testing the significance of $\beta_{x,i}$ and $\beta_{y,i}$, we learn which variable Granger-causes which. There are four possibilities: (i) transparency Granger-causes the quality of forecasts, but not the other way around, (ii) quality of forecasts Granger-causes transparency, but not the other way around, (iii) neither of the variables Granger-causes the other, and (iv) both of the variables Granger-cause the other.

Tables 18 and 19 summarize the results of Granger causality tests for the standard deviation of forecasts and the absolute forecast errors, respectively. The Tables report the number of countries falling into one of the above 4 categories among (i)–(iv). The tests are run on 6 different measures of transparency on one hand and on 5 forecasted variables with 2 forecast horizons on the other hand.

Unfortunately, the vast majority of these tests is not conclusive on the direction of causality, either because of finding causality in both directions or neither of the directions. However, in those specifications and for those countries where the causality points to one definite direction, it is dominantly the intuitive one: it is transparency that seems to cause quality of forecasts, and not vice versa. If the quality of forecast is measured by the dispersion of views, the total number of one-way causalities is 104, out of which 72 supports that transparency Granger-causes the degree of disagreement. If the quality of forecast is measured by the forecast accuracy, then the number of one-way causalities is 64, out of which 43 supports that transparency Granger-causes the forecast accuracy.

When we turn to less aggregated level, we see that the one-way causality pointing from transparency to quality of forecasts is more firmly supported in some specific cases. For instance, if looking only at the results of the absolute forecast error of the 12-months-ahead *short-term interest rate*, then all the one-way causalities are in line with our intuition. See top right panel of Table 19. In general, the vast majority of the one-way causalities point to the hypothesized direction when the forecasted variable is the short rate no matter how the quality of forecast is measured and what the forecast horizon is.

And also, when focusing on the relationship between the *economic aspect of transparency* and the degree of disagreement, then we find that out of 31 one-way causalities 22 support that transparency Granger-causes the standard deviation of forecasts. See the second and eighth columns of Table 18. Similarly, the results of the causality tests for the economic aspect of transparency and forecast accuracy are mostly in line with our intuition: out of 13 one-way causalities 10 supports that higher degree of economic transparency Granger-causes more accurate forecasts. See the second and eighth columns of Table 19.

Although we obtained mixed results from the Granger causality tests in general, for short term interest rates and economic dimension of transparency Granger causality tests mostly support the view that reforms in central bank transparency in the past contribute to better predictions in present.

4.5 WEIGHTED TRANSPARENCY INDEX

Composite indices are often used in social sciences. Some of these indices are calculated as the averages or sums of *equally weighted sub-indices*, while others use various *weighting schemes*. Choosing the weights is either based on the value judgments of experts, or on well documented and replicable methods, like factor analysis or regressions.

In this section we use the *regression method* in order to construct a weighted transparency index. In Section 4.1, we already identified the important sub-indices of transparency through their effects on uncertainty. Here, we apply a similar approach in order to assign weights to the components of Eijffinger-Geraats index. The weights are chosen so that the resulting composite index explains the maximum variation in the dependent variable. The method is demonstrated on the standard deviation of the individual short-rate forecasts with 3 month forecast horizon as the dependent variable, because many of the sub-indices of central bank transparency are estimated to have significantly negative effect on this variable (see the first two rows of Table 5). However, the method can be applied to alternative dependent variables as well, resulting in different weighting schemes.

Here, we are interested in the effect of each of the 15 components of the Eijffinger-Geraats index, not only those of the 5 sub-indices analyzed previously in Section 4.1. First, we run our workhorse regression (1) with the explanatory variable $x_{i,t}$ being one of the components and the dependent variable $y_{i,t}$ being the standard deviation of the individual short-rate forecasts with 3 month forecast horizon. Unfortunately, estimation is not possible in 2 out of 15 cases due to lack of sufficient variation in the time series of components 3A and 4A. Therefore, it is not possible either to estimate the weights of these components.[36] The coefficient of each of the remaining 13 components is estimated to be negative, whenever it is significant (see Table 20).

Second, we assign weights to the 13 components by estimating model (5) the same way as our benchmark model.

$$y_{i,t} = \beta \sum_{j=1}^{13} \lambda_j x_{i,t,j} + \alpha_i + \gamma_1 \sigma_{i,t} + \gamma_2 |\Delta \text{oil}_{t-1}| + \eta_{i,t} \ , \tag{5}$$

where $\sum_{j=1}^{13} \lambda_j = 1$. The explanatory variable $x_{i,t,j}$ denotes the jth component of the transparency index in country i at time t and λ_j is its weight. The weighted transparency index is then $\sum_{j=1}^{13} \lambda_j x_{i,t,j}$. In this model, β captures the effect of the weighted transparency index on the quality of forecast. $\eta_{i,t}$ is a Gaussian error term. The notation of all the other variables is the same as before.

It is worth noting that we do not rule out a priori to obtain negative weights. This is a principal difference relative to the Eijffinger-Geraats index, where the weights are not only equal, but restricted to be positive. Negative weights correspond to the case when higher transparency is associated with higher forecast dispersion given $\beta < 0$. The crosses in Tables 5 - 17 suggest that estimating negative weights does not only have theoretical possibility.

Once model (5) is estimated, we can check by the standard F-test how well the equally weighted Eijffinger-Geraats index performs. That is, we test the hypothesis $\lambda_j = \lambda$ for all $j \in \{1..13\}$. We can reject the equality of the weights at any meaningful significance level. This test indicates that the components have different impact on the dispersion of forecasts. Therefore, a weighted index may better reflect the actual degree of central bank transparency than the equally weighted one.

Table 21 reports the estimated weights λ_j and the estimates on the coefficient of the weighted transparency index β obtained with our benchmark approach. In addition, it also reports the weights estimated by an alternative approach. This alternative approach, similarly to the benchmark approach of Ehrmann et al. (2010), estimates a dynamic model on overlapping observation. The coefficient β is significantly negative in both of the regressions, suggesting that the higher the weighted transparency index the lower the degree of disagreement. There are two components to which high and significantly positive weights are assigned to by both of the approaches. These are 'central bank forecasts' (2C) and 'control errors' (5A). There are additional two components, 'quantitative targets' (1B) and 'evaluation of policy outcomes' (5C), that are also found to be important aspects of transparency by our benchmark approach. The rest of the components have either negative weights or positive, but insignificant. The lack of significance and the negative sign of these weights might reflect either that the components in question do not influence uncertainty in the economy substantially, or they take non-zero values for too few countries and too short period to identify their effects by the regressions,[37] or that these components are highly correlated with some others. High correlation can make not only the standard errors high, but it can also result in negative weights of some components whose role is partly taken over by a correlating component.

For instance, the component of 'institutional arrangements' (1C) is estimated to have significantly negative weight by the benchmark method. It does not necessarily mean that high degree of central bank independence leads automatically to higher disagreement across individual forecasters.[38] It is more likely that it is hard to disentangle empirically the effect

[36] At the same time, it is not important either to determine their weights, because the best practice of central banking with respect to the 3A (explicit monetary policy framework) and 4A (prompt announcement of policy decisions) aspects of transparency is likely to be the one that is maintained by almost all central banks in our sample. These two sub-indices score 1 for most of the central banks we investigate.

[37] For instance, the component for policy inclination (4C) takes non-zero value only for the Riksbank from 2002 on and for the Federal Reserve from 1999 on in our sample. Although our intuition suggests that official policy inclination is a great help for the private forecasters, its estimated coefficient is insignificant.

[38] Just the contrary is reflected by the estimates reported by Table 20, where the effect of 'institutional arrangements' (1C) on the degree of disagreement about future short rate is significantly negative.

of central bank independence and 'quantitative targets' (1B) as the two are strongly interrelated. As central banks have become more independent over time, the demand for their accountability has increased that enforced the announcement and codification of their quantitative targets. This is reflected also by the high correlation between components 1B and 1C. As it is reported by Table 22, the corresponding correlation is 0.43, while the estimated weight of 'quantitative targets' (1B) is 0.27 and significant at 10% (see Table 21).

There is even higher correlation (0.66) between the components of 'policy explanation' (4B) and 'control error' (5A) as those central banks tend to publish assessment on the accuracy of their past forecasts that provide explanation on their policy decisions. Probably, the significantly negative weight assigned to the component of 'policy explanation' (4B) by the benchmark method is best explained by the significantly positive weight of the 'control error' (5A) and the phenomenon of *multicollinearity*. Along the same lines, one can argue that the significant negative weight of the component of 'policy models' (2B) is due to the correlation (0.57) between the latter component and the component of 'central bank forecast' (2C).

Whether some components are assigned to significantly positive weights only because of being correlated with some other important aspects of transparency can be checked by looking at their effects on uncertainty. Among the four components with significantly positive weights, three are found to have favorable impact even in those specifications, where no other aspects of transparency are controlled for, as reported in Table 20. Based on this finding, central banks are advised to (i) prepare and publish own forecasts, (ii) assess the accuracy of these forecasts made in the past, and (iii) have quantitative target.

The estimated weighting scheme allows us to calculate the weighted composite transparency index characterizing each central bank. In addition, we can rank central banks based upon the weighted index. Although, there are 26 countries in our sample, these countries had only 20 central banks with independent monetary policy in the year 2009 as 7 countries have become already members of the European Monetary Union by the end of our sample period.[39]

Table 23 reports three rankings for the 20 central banks:[40] one is based on the equally weighted Eijffinger-Geraats index, the other two are based on the weighted indices obtained with our benchmark approach and the dynamic model estimated on overlapping observations. By comparing the latter two rankings, we can see some differences. For instance, the Sveriges Riksbank (the central bank of Sweden) is the most transparent central bank according to our benchmark method, while its first position is taken over by the Turkish central bank according to the alternative ranking. This example highlights that the ranking is not robust to how the weights are estimated and the bias in the estimates of the alternative approach are not negligible. Therefore, once one aims to estimate the weights, it is recommended to use the benchmark method introduced in this paper.

When comparing the ranking obtained by the benchmark method with the original one (that is based on the equally weighted Eijffinger-Geraats index), we find some similarities and differences as well. For instance, the Sveriges Riksbank holds its first position in both of the rankings. The Spearman rank-order correlation is 0.66 between the two rankings. And there are 7 central banks out of 20, whose relative position in the Eijffinger-Geraats ranking is out of the 90% confidence interval of the benchmark ranking. Both the Spearman rank-order correlation and the confidence bands suggest that the ranking of central banks is sensitive to whether we use the traditional Eijffinger-Geraats transparency index, or the weighted index.

[39] France, Germany, Italy, the Netherlands, Spain, Slovakia and Slovenia were already member states of the EMU by 2009 out of the 26 countries, while Estonia entered the Monetary Union one year later in 2010.

[40] Having detailed data on the components of transparency for 100 central banks would allow us to rank mechanically a larger group of countries according to our weighted transparency index. However, as there is large variation in the omitted 3A and 4A components of transparency across the comprehensive set of 100 central banks in the most recent Siklos (2011) dataset, such a ranking would not reflect the relative degree of transparency in these countries correctly.

5 Conclusions

This paper contributed to the debate on whether higher degree of central bank transparency can mitigate the uncertainty in the economy. This question is investigated also by Ehrmann et al. (2010). We come to the same conclusion as they do, i.e., our regression results mostly support the view that enhancing central bank transparency is favorable. However, our empirical approach is more rigorous than that of Ehrmann et al. (2010) as we provided evidence for the existence of a causal relationship between the degree of central bank transparency and the quality of forecasts. In addition, we applied a novel approach to test model specification. We regressed the quality of oil price forecasts on the measure of central bank transparency. As the oil price is considered to be exogenous to monetary policy, significant coefficient of transparency signals misspecification or inadequacy of the estimation method.

Another contribution is that we constructed a weighted index of central bank transparency. The index we propose aggregates the same 15 components as the composite Eijffinger-Geraats index. The weights we assign to the components are established empirically as they reflect the relative importance of the components in reducing uncertainty. We obtained the weights as follows. First, we analyzed how the quality of survey forecasts on different macro variables are related to transparency. We found that out of 5 forecasted macro variables in the Consensus Economics survey, it is the short rate forecast that has the expected significant relation with most of the dimensions of transparency. Then, we regressed a standard measure of dispersion of individual short rate forecasts on the components of the Eijffinger-Geraats index. Finally, we used the estimated coefficients as weights.

There are three components that are assigned to high and significantly positive weights out of those whose individual impact is also found to be favorable. Along these lines, the best practice of central banking involves (i) preparing and publishing own forecasts, (ii) assessing the accuracy of past forecasts and (iii) having quantitative target. The Granger-causality tests performed in this paper suggest that the strong empirical relationship found between some aspects of transparency and the quality of forecasts is not only due to correlation, but reflect causality. This causal relationship can be exploited by the central banks: they can reduce the uncertainty in the economy by enhancing transparency along the above three dimensions.

The composite index we propose in this paper, although being a weighted index, is still subject to some criticisms. First, it is a linear function of 15 components that do not necessarily complement each other on a linear way. For instance, releasing forecasts is a prerequisite of publishing assessment on the accuracy of the past forecasts. Second, there are certain aspects of central bank transparency that are captured neither by the components of the Eijffinger-Geraats index nor by our weighted composite index. Just to mention one of these aspects, it is not accounted for whether detailed information is provided about the views of the individual council members.[41] Third, while our regression method allows us to identify which aspects of transparency are effective, it does not allow us to conclude that some other newer or less employed aspects of transparency are ineffective. Our regression method might fail to recognize the importance of any type of transparency that has only been employed recently or by only a few countries. These points call for future research on measuring central bank transparency.

[41] This information can be shared by the central bank watchers by publishing attributed minutes. Attributed minutes are unique in the sense that one can learn from them not only the points raised in the council or board meetings, but also who made the given point during the discussion. The advantages of providing detailed information about individual committee members' views are discussed by Svensson (2009).

6 Tables

Table 1
Scoring system of the Eijffinger-Geraats transparency measures and the variance of the components, sub-indices and total Eijffinger-Geraats index by country groups

(Sample: January 1998 - December 2009, 26 countries)

	Theoretical scores			Sample variance		
	MIN	Intermediate value of components	MAX	Country groups		
				12 advanced	14 emerging	all 26
1A. Formal objectives	0	1/2	1	6%	4%	5%
1B. Quantitative targets	0		1	16%	21%	19%
1C. Institutional arrangements	0	1/2	1	3%	5%	4%
1. Political transparency	0		3	50%	46%	48%
2A. Economic data	0	1/2	1	4%	9%	14%
2B. Policy models	0		1	23%	16%	24%
2C. Central bank forecast	0	1/2	1	12%	16%	18%
2. Economic transparency	0		3	55%	66%	108%
3A. Explicit strategy	0		1	14%	21%	18%
3B. Minutes	0		1	22%	10%	17%
3C. Voting records	0	1/2	1	21%	5%	14%
3. Procedural transparency	0		3	53%	58%	64%
4A. Prompt announcement	0		1	0%	25%	19%
4B. Policy explanation	0	1/2	1	6%	10%	15%
4C. Policy inclination	0		1	11%	0%	6%
4. Policy transparency	0		3	22%	61%	75%
5A. Control errors	0	1/2	1	3%	8%	22%
5B. Transmission disturbances	0	1/2	1	8%	6%	8%
5C. Evaluation of policy outcomes	0	1/2	1	4%	6%	5%
5. Operational transparency	0		3	21%	29%	53%
Total Index	0		15	334%	680%	966%

Table 2
Coverage of the survey forecasts of the Consensus Economics

Country	Sample		Number of forecast rounds	Country	Sample		Number of forecast rounds
	Start	End			Start	End	
Canada	1989:10	2009:4	235	Bulgaria	2007:5	2009:12	32
France	1989:10	2009:4	235	Croatia	2007:5	2009:12	32
Germany	1989:10	2009:4	235	Czech Rep.	2003:1	2009:12	58
Italy	1989:10	2009:4	235	Estonia	2007:5	2009:12	32
Japan	1989:10	2009:4	235	Hungary	2003:1	2009:12	58
Netherlands	1995:1	2009:4	172	Latvia	2007:5	2009:12	32
Norway	1998:6	2009:4	131	Lithuania	2007:5	2009:12	32
Spain	1995:1	2009:4	172	Poland	2003:1	2009:12	58
Sweden	1995:1	2009:4	172	Romania	2003:1	2009:12	58
Switzerland	1998:6	2009:4	131	Russia	2003:1	2009:12	58
UK	1989:10	2009:4	235	Slovakia	2003:1	2009:12	58
US	1989:10	2009:4	235	Slovenia	2007:5	2009:12	32
				Turkey	2003:1	2009:12	58
				Ukraine	2003:1	2009:12	58
Subtotal	1989:10	2009:4	2423	**Subtotal**	2003:1	2009:12	656
Total	1989:10	2009:12	3079				

Table 3
Descriptive statistics of the dispersion measure and the forecast accuracy measure

(Sample: October 1989 - December 2009, 26 countries)

	Standard deviation of the individual forecasts					Absolute forecast error of the consensus forecast				
	Num. of Obs.	MEAN (in %)	STDEV (in %)	MIN (in %)	MAX (in %)	Num. of Obs.	MEAN (in %)	STDEV (in %)	MIN (in %)	MAX (in %)
SHORT RATE - 3M	2713	0.23	0.20	0.01	5.90	2681	0.45	0.57	0.00	6.43
SHORT RATE - 1Y	2713	0.43	0.31	0.01	7.50	2674	1.16	1.06	0.00	8.49
LONG RATE - 3M	2583	0.24	0.12	0.05	2.91	2543	0.46	0.38	0.00	4.45
LONG RATE - 1Y	2583	0.37	0.14	0.08	1.47	2524	0.85	0.68	0.00	5.33
CPI - CY	3079	0.28	0.33	0.00	3.80	3079	0.39	0.64	0.00	10.73
CPI - NY	3079	0.45	0.38	0.06	4.70	2863	1.06	1.51	0.00	17.03
GDP - CY	3079	0.36	0.32	0.03	3.10	3009	0.97	1.12	0.00	11.76
GDP - NY	3079	0.48	0.28	0.05	2.30	2805	2.05	2.89	0.00	24.02
CONSUMPTION - CY	3079	0.54	0.66	0.02	6.50	3009	1.06	1.41	0.00	13.58
CONSUMPTION - NY	3079	0.65	0.58	0.12	5.00	2805	1.90	3.22	0.00	28.35
OIL - 3M	235	0.07	0.03	0.03	0.23	235	0.17	0.15	0.00	1.02
OIL - 1Y	235	0.09	0.03	0.05	0.33	235	0.27	0.21	0.00	0.81
BUDGET - CY	1824	0.50	0.50	0.00	4.06	1796	1.04	1.13	0.00	7.90
BUDGET - NY	1813	0.60	0.51	0.00	3.80	1625	1.83	1.87	0.00	9.83
CURRENT ACCOUNT - CY	3028	0.68	0.70	0.00	16.54	3016	1.32	1.63	0.00	16.61
CURRENT ACCOUNT - NY	3028	0.94	0.87	0.00	15.77	2800	2.08	2.74	0.00	26.30

Notes: The forecast horizons are abbreviated as follows: 3M = 3 month, 1Y = 1 year, CY = current year, NY = next year. Source: Consensus Economics survey data.

Table 4
Panel unit root tests of the sub-indices, the total Eijffinger-Geraats index and the quality of forecast variables

(Sample: October 1989 - December 2009, 26 countries)

Unit root test	Levin-Lin-Chu (intercept, no trend)	Levin-Lin-Chu (intercept and trend)	Breitung (intercept and trend)
Transparency sub-indices and total index			
Political	-7.27***	-5.51***	-0.37
Economic	-10.0***	-7.93***	-0.34
Procedural	-2.35***	-3.64***	-0.84
Policy	-2.13**	-1.86**	-2.49***
Operational	-2.18**	-2.02**	-1.22
Total	-13.9***	-13.7***	0.589
STDEV			
SHORT RATE - 3M	-11.1***	-9.37***	0.531
SHORT RATE - 1Y	-11.3***	-13.5***	-5.92***
LONG RATE - 3M	-11.6***	-14.9***	-3.76***
LONG RATE - 1Y	-8.82***	-10.4***	-4.52***
CPI - CY	-9.55***	-10.4***	-0.62***
CPI - NY	-9.50***	-10.9***	-5.90***
GDP - CY	-4.19***	-3.11***	0.913
GDP - NY	-4.83***	-5.85***	-2.16***
CONSUMPTION - CY	-5.60***	-8.52***	0.491
CONSUMPTION - NY	-7.93***	-11.5***	-3.62***
OIL - 3M	-18.4***	-20.0***	-12.5***
OIL - 1Y	6.829	4.309	5.556
ABSFE			
SHORT RATE - 3M	-15.2***	-17.3***	-8.17***
SHORT RATE - 1Y	-2.29***	-1.01***	-3.76***
LONG RATE - 3M	-21.1***	-23.7***	-13.4***
LONG RATE - 1Y	-4.70***	-3.81***	-5.52***
CPI - CY	-7.22***	-7.09***	-6.36***
CPI - NY	1.045	4.08	2.017
GDP - CY	-2.94***	-2.26***	-2.78***
GDP - NY	1.886	4.438	0.85
CONSUMPTION - CY	-3.13***	-1.44***	-5.81***
CONSUMPTION - NY	-1.17***	0.882	-1.62***
OIL - 3M	-27.0***	-32.1***	-18.9***
OIL - 1Y	-10.2***	-10.8***	-12.6***

*Notes: This table reports the t-statistics of three unit root tests on 30 series. The null hypothesis is the existence of a common unit root process (common across countries). Schwarz information criterion is used to select the lag length. The forecast horizons are abbreviated as follows: 3M = 3 month, 1Y = 1 year, CY = current year, NY = next year. The quality of forecast is characterized either by the absolute forecast error of the consensus forecast (ABSFE), or by the standard deviation of the individual forecasts (STDEV). *, ** and *** indicate positive estimates at the 10%, 5% and 1% significance levels, respectively. The frequency of data on transparency indices is annual, while it is monthly for the rest of the variables.*

Table 5

Sign and significance of the estimated effect of transparency on the quality of forecasts - summary of 144 regressions with different specifications of the benchmark model (1)

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency index:	Political		Economic		Procedural		Policy		Operational		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
SHORT RATE - 3M	− − −	−		− − −					− −	− −		− − −
SHORT RATE - 1Y	−		−								−	
LONG RATE - 3M					+ + +							
LONG RATE - 1Y			− −	−								
CPI - CY			− −	−							− −	
CPI - NY		+ +	− − −				− − −			+ +	− − −	
GDP - CY	−		− −	− − −								
GDP - NY	−		− − −							− −		
CONSUMPTION - CY				− −		− −						− − −
CONSUMPTION - NY		− −						−	+	− − −		
OIL - 3M												
OIL - 1Y					+							

Notes: This table reports the sign and significance of the estimated β parameter for different model specifications. Each row corresponds to a set of specifications, where the forecasted variable and the forecast horizon are identical. The forecast horizons are abbreviated as follows: 3M = 3 month, 1Y = 1 year, CY = current year, NY = next year. Each column corresponds to a set of specifications, where the transparency is captured by the same index or sub-index and the forecast is characterized either by the absolute forecast error of the consensus forecast (ABSFE), or by the standard deviation of the individual forecasts (STDEV). −, −− and − − −, indicate negative estimates at the 10%, 5% and 1% significance levels, respectively. +, ++ and +++ indicate positive estimates at the 10%, 5% and 1% significance levels, respectively. Empty cells correspond to insignificant estimates.

Table 6

Sign and significance of the estimated effect of transparency on the quality of oil price forecasts - summary of 96 regressions with different model specifications

(Sample: January 1998 - December 2009, 26 countries)

Transparency index:	Political		Economic		Procedural		Policy		Operational		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
	Dynamic Model: With Lagged Dependent Variable, Overlapping Sample											
OIL - 3M												
OIL - 1Y		+		+		++		++		+		++
	Benchmark Model: Without Lagged Dependent Variable, Non-overlapping Sample											
OIL - 3M												
OIL - 1Y					+							
	With Lagged Dependent Variable, Non-overlapping Sample											
OIL - 3M												
OIL - 1Y	+		+				++		+		+ + +	
	Without Lagged Dependent Variable, Overlapping Sample											
OIL - 3M												
OIL - 1Y	+	++	++	+ + +	++	+ + +	+	+ + +	+	++	++	+ + +

Notes: The same as below Table 5.

Table 7
Sign and significance of the estimated effect of transparency on the quality of forecasts - summary of 120 regressions with different specifications of the dynamic model (2)

(Sample: January 1998 - December 2009, 26 countries, overlapping forecast horizons)

Transparency index:	Political		Economic		Procedural		Policy		Operational		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
SHORT RATE - 3M	−−		−	− − −		−		−−	−	−−	−−	− − −
SHORT RATE - 1Y												
LONG RATE - 3M					+							
LONG RATE - 1Y	++											
CPI - CY				− − −								−−
CPI - NY			−−			+						
GDP - CY				−−	++			−		−−		−−
GDP - NY			− − −			+	− − −				− − −	
CONSUMPTION - CY	++	− − −		−−		−−	+	−−		− − −		− − −
CONSUMPTION - NY						++						

Notes: The same as below Table 5.

Table 8
Sign and significance of the estimated effect of transparency on the quality of forecasts - summary of some results reported by Tables 4 and 6 in Ehrmann et al. (2010)

(Sample: January 1990 - December 2008, 12 advanced countries, overlapping forecast horizons)

Transparency index:	Economic		Total	
	dispersion	forecast accuracy	dispersion	forecast accuracy
SHORT RATE - 3M	− − −			
SHORT RATE - 1Y	− − −		−−	
LONG RATE - 3M	− − −	− − −	− − −	−−
LONG RATE - 1Y	− − −	− − −	− − −	−−
CPI - CY	−	−		− − −
CPI - NY	−−			
GDP - CY	− − −		−	
GDP - NY	− − −			

Notes: The same as below Table 5.

Table 9

Sign and significance of the estimated effect of transparency on the quality of forecasts - summary of 120 regressions with different specifications of the benchmark model (1), longer sample period

(Sample: October 1989 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency index:	Political		Economic		Procedural		Policy		Operational		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
SHORT RATE - 3M	– – –	– –	– – –	– – –			–	–	– – –	– – –	– – –	– – –
SHORT RATE - 1Y	–		– – –						–		– – –	
LONG RATE - 3M				– –					–			–
LONG RATE - 1Y			– – –	– – –			– –		– – –		– – –	– –
CPI - CY			– – –	– –			– –	–			– – –	–
CPI - NY			– – –				– –				– – –	
GDP - CY	– – –		– – –	– – –					– – –		– – –	–
GDP - NY	– – –		– – –				–				– – –	
CONSUMPTION - CY				– – –	– –	– –						– – –
CONSUMPTION - NY		– –	– –							– – –		

Notes: The same as below Table 5.

Table 10

Sign and significance of the estimated effect of transparency on the quality of forecasts - summary of 120 regressions with different specifications of the benchmark model (1), the sample covers only the advanced countries

(Sample: January 1998 - December 2009, 12 advanced countries, non-overlapping forecast horizons)

Transparency index:	Political		Economic		Procedural		Policy		Operational		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
SHORT RATE - 3M	– – –	– –		– –					– –	– – –		– –
SHORT RATE - 1Y	– –											
LONG RATE - 3M												
LONG RATE - 1Y			– –	–					– –			
CPI - CY	+ +			–								
CPI - NY		+ +	– – –			+ + +	– –	+			– –	+
GDP - CY	– –	–		– – –				–	– –	– – –	– –	– – –
GDP - NY	– – –		– – –			+ +	– – –				– – –	
CONSUMPTION - CY		– – –						–		–		–
CONSUMPTION - NY			– – –								– –	

Notes: The same as below Table 5.

Table 11
Sign and significance of the estimated effect of transparency on the quality of short rate forecasts before the outbreak of the recent financial crisis - summary of 24 regressions with different specifications of the benchmark model (1)

(Sample: January 1998 - September 2008, 26 countries, non-overlapping forecast horizons)

Transparency index:	Political		Economic		Procedural		Policy		Operational		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
SHORT RATE - 3M	−−	−		− − −					−	−−		−−
SHORT RATE - 1Y												

Notes: The same as below Table 5.

Table 12
Sign and significance of the estimated effect of transparency on the quality of forecasts - summary of 120 regressions with different specifications of the benchmark model (1), the sample covers only Germany among the EMU founding members

(Sample: January 1998 - December 2009, 22 countries, non-overlapping forecast horizons)

Transparency index:	Political		Economic		Procedural		Policy		Operational		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
SHORT RATE - 3M	− − −	−	−	− − −					−−	−−	−	− − −
SHORT RATE - 1Y	−		−−								−−	
LONG RATE - 3M					+ + +		+					
LONG RATE - 1Y												
CPI - CY			−−								−	
CPI - NY	−	++	−−							+ + +	−−	+
GDP - CY	−−											
GDP - NY	−	−	−	+						−−		
CONSUMPTION - CY				−−		−−						− − −
CONSUMPTION - NY		−−						−−		− − −		−

Notes: The same as below Table 5.

Table 13

Sign and significance of the estimated effect of transparency on the quality of forecasts - summary of 120 regressions with different specifications of the modified benchmark model (1), where not controlling for the conditional volatility $\sigma_{i,t}$

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency index:	Political		Economic		Procedural		Policy		Operational		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
SHORT RATE - 3M	– – –	– –	– –	– – –				–	– – –	– – –	– – –	– – –
SHORT RATE - 1Y	– –		–								– –	
LONG RATE - 3M					++							
LONG RATE - 1Y			– – –	–							–	
CPI - CY			– –								–	
CPI - NY		++	–				–			++	–	
GDP - CY	–		–	– –								
GDP - NY	– –	–	– – –							– –		
CONSUMPTION - CY				– –	–	– –						– – –
CONSUMPTION - NY		–				–			+	– – –		

Notes: The same as below Table 5.

Table 14

Sign and significance of the estimated effect of transparency on the quality of CPI forecasts - summary of 24 regressions with different specifications of the modified benchmark model (1), where changes in VAT are controlled for

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency index:	Political		Economic		Procedural		Policy		Operational		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
CPI - CY			– –	– –							– –	
CPI - NY		++	– – –								– – –	

Notes: The same as below Table 5. The VAT variable is the absolute change in the Value Added Tax in percentage points. The data on VAT are from the databases of the European Commission and the OECD.

Table 15

Sign and significance of the estimated effect of transparency on the quality of forecasts - summary of 120 regressions with different specifications of the modified benchmark model (1), where not controlling for $|\Delta oil_{t-1}|$

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency index:	Political		Economic		Procedural		Policy		Operational		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
SHORT RATE - 3M	− − −								−			
SHORT RATE - 1Y	−											
LONG RATE - 3M					+ + +							
LONG RATE - 1Y				−−				−		−		−−
CPI - CY				−	+							
CPI - NY			−				−−				−−	
GDP - CY												
GDP - NY		−								− − −		
CONSUMPTION - CY				−		−−						−−
CONSUMPTION - NY		− − −						−	++	− − −		

Notes: The same as below Table 5.

Table 16

Sign and significance of the estimated effect of transparency on the quality of current account and budget forecasts - summary of 96 regressions with different specifications of the benchmark model (1)

(Sample: January 1998 - December 2009, non-overlapping forecast horizons)

Transparency index:	Political		Economic		Procedural		Policy		Operational		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
	12 Advanced Countries											
BUDGET - CY	NA	NA		−	NA	NA						
BUDGET - NY	NA	NA			NA	NA		− − −				−−
CURRENT ACCOUNT - CY				+ + +	+ + +		+ + +				++	
CURRENT ACCOUNT - NY		− − −			+ + +	+ + +	+			− − −		
	14 Emerging Countries											
BUDGET - CY	NA	NA				+	NA	NA	NA	NA		
BUDGET - NY	NA	NA	++		++	+ + +	NA	NA	NA	NA	++	+ + +
CURRENT ACCOUNT - CY	++	+ + +				− − −	++	+ + +		− − −		
CURRENT ACCOUNT - NY		+ + +						+ + +	− − −	− − −	+	

Notes: The same as below Table 5. NA means estimation is not possible due to insufficient number of observations.

Table 17
Sign and significance of the estimated effect of the Minegishi-Cournéde transparency index and sub-indices on the quality of forecasts - summary of 100 regressions with different specifications of the benchmark model (1)

(Sample: January 1999 - December 2009, 8 OECD countries, non-overlapping forecast horizons)

Transparency index:	Policy objective		Policy decision		Economic analysis		Decision-making process		Total	
	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE	STDEV	ABSFE
SHORT RATE - 3M	– – –	–				– –				– –
SHORT RATE - 1Y					– –				–	
LONG RATE - 3M										
LONG RATE - 1Y										
CPI - CY							++			
CPI - NY		+	– –		– –			++		
GDP - CY	– –	– –	– –	– –	– – –		– –		– – –	–
GDP - NY	– – –									
CONSUMPTION - CY		– – –		– –				– –		– – –
CONSUMPTION - NY	– – –			– –						

Notes: The same as below Table 5.

Table 18
Summary of the Granger causality tests between transparency and dispersion of forecasts

(Sample: January 1998 - December 2009, 12 advanced countries)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Quality of forecast	Standard deviation of the individual **3-months-ahead short rate** forecasts						Standard deviation of the individual **12-months-ahead short rate** forecasts					
TR → QF	1	2	0	2	3	2	0	3	0	2	1	3
TR ← QF	1	2	0	1	0	1	0	0	0	1	0	1
TR ↔ QF	0	0	0	0	0	1	0	0	0	1	0	0
TR QF	1	7	1	6	2	8	3	8	1	5	4	8
Num. of countries	3	11	1	9	5	12	3	11	1	9	5	12
Quality of forecast	Standard deviation of the individual **3-months-ahead long rate** forecasts						Standard deviation of the individual **12-months-ahead long rate** forecasts					
TR → QF	0	1	0	1	0	2	0	3	0	1	0	3
TR ← QF	0	2	0	0	0	1	0	1	0	0	1	2
TR ↔ QF	1	1	0	0	0	2	0	0	0	0	1	0
TR QF	2	6	1	7	5	6	3	6	1	7	3	6
Num. of countries	3	10	1	8	5	11	3	10	1	8	5	11
Quality of forecast	Standard deviation of the individual **current year CPI** forecasts						Standard deviation of the individual **next year CPI** forecasts					
TR → QF	1	2	0	2	1	2	0	1	0	2	1	3
TR ← QF	0	1	0	0	2	1	0	0	0	0	0	0
TR ↔ QF	0	0	0	0	1	1	1	0	0	0	0	0
TR QF	2	8	1	7	1	8	2	10	1	7	4	9
Num. of countries	3	11	1	9	5	12	3	11	1	9	5	12
Quality of forecast	Standard deviation of the individual **current year GDP** forecasts						Standard deviation of the individual **next year GDP** forecasts					
TR → QF	0	2	0	1	0	2	0	3	0	0	0	3
TR ← QF	1	1	0	0	1	1	1	2	0	2	2	0
TR ↔ QF	0	0	0	0	0	0	0	1	0	2	0	1
TR QF	2	8	1	8	4	9	2	5	1	5	3	8
Num. of countries	3	11	1	9	5	12	3	11	1	9	5	12
Quality of forecast	Standard deviation of the individual **current year consumption** forecasts						Standard deviation of the individual **next year consumption** forecasts					
TR → QF	0	2	0	2	0	3	0	3	0	2	0	4
TR ← QF	0	0	0	0	1	0	0	0	0	2	0	0
TR ↔ QF	0	0	0	0	0	0	1	0	0	1	0	0
TR QF	3	9	1	7	4	9	2	8	1	4	5	8
Num. of countries	3	11	1	9	5	12	3	11	1	9	5	12

Notes: This table reports the number of countries with different results of the Granger causality test. The significance level for the Granger causality tests is set to 10%. TR → QF means one-way causality, i.e., we can reject the hypothesis that transparency does not Granger-causes the quality of forecast, but we cannot reject the hypothesis that quality of forecast Granger-causes transparency. TR ← QF means one-way causality to the opposite direction. TR ↔ QF means two-ways causality. TR QF means no causal relationship. Num. of countries indicate the total number of countries for which we could run the causality test. Central bank transparency is measured by the Eijffinger-Geraats index on monthly frequency.

Table 19
Summary of the Granger causality tests between transparency and absolute forecast error

(Sample: January 1998 - December 2009, 12 advanced countries)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Quality of forecast	Absolute forecast error of the average **3-months-ahead short rate** forecasts						Absolute forecast error of the average **12-months-ahead short rate** forecasts					
TR → QF	1	2	0	1	0	2	1	1	0	1	2	2
TR ← QF	0	0	0	2	0	0	0	0	0	0	0	0
TR ↔ QF	0	0	0	0	1	0	0	0	0	0	0	0
TR QF	2	9	1	6	4	10	2	10	1	8	3	10
Num. of countries	3	11	1	9	5	12	3	11	1	9	5	12
Quality of forecast	Absolute forecast error of the average **3-months-ahead long rate** forecasts						Absolute forecast error of the average **12-months-ahead long rate** forecasts					
TR → QF	3	0	0	0	0	0	0	2	0	0	0	0
TR ← QF	0	0	0	0	1	1	0	1	0	0	1	2
TR ↔ QF	0	0	0	0	0	0	0	0	0	0	0	0
TR QF	7	1	8	0	4	2	3	7	1	8	4	9
Num. of countries	10	1	8	0	5	3	3	10	1	8	5	11
Quality of forecast	Absolute forecast error of the average **current year CPI** forecasts						Absolute forecast error of the average **next year CPI** forecasts					
TR → QF	0	1	0	0	0	0	1	1	1	2	1	2
TR ← QF	1	1	0	1	1	2	0	0	0	0	0	0
TR ↔ QF	0	0	0	0	0	0	0	1	0	1	0	2
TR QF	2	9	1	8	4	10	2	9	0	6	4	8
Num. of countries	3	11	1	9	5	12	3	11	1	9	5	12
Quality of forecast	Absolute forecast error of the average **current year GDP** forecasts						Absolute forecast error of the average **next year GDP** forecasts					
TR → QF	1	1	0	2	1	2	0	1	0	3	0	2
TR ← QF	1	0	0	0	1	0	0	0	0	0	0	0
TR ↔ QF	0	1	0	0	0	1	0	0	0	0	0	0
TR QF	1	9	1	7	3	9	3	10	1	6	5	10
Num. of countries	3	11	1	9	5	12	3	11	1	9	5	12
Quality of forecast	Absolute forecast error of the average **current year consumption** forecasts						Absolute forecast error of the average **next year consumption** forecasts					
TR → QF	0	1	0	0	1	1	0	0	0	0	0	0
TR ← QF	0	1	0	1	1	1	0	0	0	1	0	0
TR ↔ QF	1	1	0	1	1	1	0	0	0	0	0	0
TR QF	2	8	1	7	2	9	3	11	1	8	5	12
Num. of countries	3	11	1	9	5	12	3	11	1	9	5	12

Notes: The same as below Table 18.

Table 20
Components of the central bank transparency index and dispersion of short rate forecasts - benchmark model

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

	Political			Economic			Procedural			Policy			Operational		
Transparency is measured by the component	Formal objectives 1A	Quantitative targets 1B	Institutional arrangements 1C	Economic data 2A	Policy models 2B	Central bank forecast 2C	Explicit strategy 3A	Minutes 3B	Voting records 3C	Prompt announcement 4A	Policy explanation 4B	Policy inclination 4C	Control errors 5A	Transmission disturbances 5B	Evaluation of policy outcomes 5C
Dependent variable	Standard deviation of the individual **3-months-ahead short rate** forecasts														
Transparency	-0.05	-0.14***	-0.15**	0.02	0.01	-0.07**	-	-0.01	0	-	-0.01	-0.01	-0.11***	0.05	0
(t-stat)	(-1.31)	(-3.34)	(-2.48)	(0.51)	(0.53)	(-2.46)	-	(-0.14)	(-0.07)	-	(-0.41)	(-0.36)	(-2.95)	(1.49)	(0.07)
Cond. volatility	0.16*	0.16*	0.16*	0.16*	0.16*	0.15*	-	0.16*	0.16*	-	0.16*	0.16*	0.16*	0.16*	0.16*
(t-stat)	(1.71)	(1.69)	(1.69)	(1.72)	(1.69)	(1.72)	-	(1.68)	(1.69)	-	(1.69)	(1.72)	(1.68)	(1.72)	(1.72)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0.01	-	0	0	-	0	0	0	0	0
(t-stat)	(1.04)	(1.11)	(1.1)	(0.99)	(0.89)	(1.53)	-	(1)	(0.99)	-	(1.01)	(1.01)	(1.12)	(0.97)	(1.01)
Number of Obs.	624	624	624	624	624	624	-	624	624	-	624	624	624	624	624
R^2	47.05%	47.94%	47.47%	47%	47.02%	48.49%	-	46.99%	46.99%	-	47.01%	46.99%	47.72%	47.08%	46.99%

Notes: To save space, the regression coefficients for the country fixed effects are not reported.

Table 21
Estimated weights of the weighted transparency index

(Sample: January 1998 - December 2009, 26 countries)

	Benchmark: Non-overlapping Sample, Without Lagged Dependent Variable		Alternative: Overlapping Sample, With Lagged Dependent Variable	
	Relative weights	**t-stat**	**Relative weights**	**t-stat**
1A. Formal objectives	-0.10	(-0.85)	-0.00	(-0.01)
1B. Quantitative targets	0.27*	(1.89)	0.21	(1.39)
1C. Institutional arrangements	-0.41**	(-2.21)	-0.41**	(-2.04)
1. Political transparency	-0.24		-0.20	
2A. Economic data	-0.15	(-0.87)	0.42	(0.71)
2B. Policy models	-0.24***	(-2.96)	-0.34***	(-3.47)
2C. Central bank forecast	0.49***	(3.58)	0.58***	(3.32)
2. Economic transparency	0.10		0.66	
3A. Explicit strategy	-	-	-	-
3B. Minutes	0.03	(0.21)	0.09	(0.79)
3C. Voting records	0.11	(0.69)	-0.01	(-0.06)
3. Procedural transparency	0.14		0.08	
4A. Prompt announcement	-	-	-	-
4B. Policy explanation	-0.25**	(-2.01)	-0.17	(-1.42)
4C. Policy inclination	0.18	(1.55)	0.39***	(2.6)
4. Policy transparency	-0.07		0.22	
5A. Control errors	0.49***	(3.32)	0.43***	(3.12)
5B. Transmission disturbances	-0.17	(-1.44)	-0.28*	(-1.96)
5C. Evaluation of policy outcome	0.76**	(2.12)	0.10	(0.19)
5. Operational transparency	1.08		0.25	
Weighted transparency	-0.44***	(-3.97)	-0.24***	(-3.28)
Number of Obs.	624		1748	
R^2	53.31%		53.34%	

Notes: This table reports the λ_j weights and the β coefficient of the weighted transparency index estimated both by the benchmark approach and the alternative approach. The benchmark model is Equation (5), while the alternative model is $y_{i,t} = \beta \sum_{j=1}^{13} \lambda_j x_{i,t,j} + \alpha_i + \gamma_1 \sigma_{i,t} + \gamma_2 |\Delta oil_{t-1}| + \gamma_3 y_{i,t-1} + \sum_{m=1}^{11} \Theta_m l_{m,t} + \eta_{i,t}$. *The dependent variable is the standard deviation of the individual 3-months-ahead short rate forecast. The weight assigned to each of the sub-index is calculated as the sum of weights of its components.*

Table 22
Pairwise correlations among the components, sub-indices and the total Eijffinger-Geraats index

(Sample: January 1998 - December 2009, 26 countries)

	Formal objectives	Quantitative targets	Institutional arrangements	**Political transparency**	Economic data	Policy models	Central bank forecast	**Economic transparency**	Explicit strategy	Minutes	Voting records	**Procedural transparency**	Prompt announcement	Policy explanation	Policy inclination	**Policy transparency**	Control errors	Transmission disturbances	Evaluation of policy outcomes	**Operational transparency**	**Total index**
	1A	1B	1C	**1**	2A	2B	2C	**2**	3A	3B	3C	**3**	4A	4B	4C	**4**	5A	5B	5C	**5**	
1A	1.00																				
1B	0.45	1.00																			
1C	0.44	0.43	1.00																		
1	0.74	0.90	0.70	1.00																	
2A	-0.20	0.15	0.19	0.08	1.00																
2B	0.14	0.21	0.09	0.20	0.44	1.00															
2C	0.13	0.28	0.31	0.31	0.41	0.57	1.00														
2	0.05	0.27	0.24	0.25	0.73	0.86	0.82	1.00													
3A	0.37	0.84	0.35	0.74	0.21	0.19	0.31	0.29	1.00												
3B	-0.26	-0.13	-0.01	-0.17	0.19	0.38	0.38	0.40	-0.16	1.00											
3C	-0.26	-0.21	-0.03	-0.23	0.22	0.41	0.32	0.40	-0.24	0.91	1.00										
3	-0.06	0.28	0.17	0.21	0.31	0.49	0.51	0.55	0.34	0.85	0.81	1.00									
4A	0.09	0.18	0.20	0.20	0.32	0.44	0.50	0.52	0.08	0.30	0.28	0.33	1.00								
4B	-0.05	0.22	0.14	0.16	0.52	0.54	0.53	0.66	0.09	0.20	0.21	0.25	0.78	1.00							
4C	-0.30	-0.19	-0.26	-0.29	0.26	0.31	0.14	0.30	-0.20	0.48	0.56	0.40	0.15	0.30	1.00						
4	-0.06	0.14	0.09	0.09	0.47	0.55	0.53	0.64	0.02	0.37	0.39	0.39	0.89	0.93	0.49	1.00					
5A	-0.09	0.16	0.24	0.14	0.75	0.48	0.45	0.68	0.16	0.25	0.28	0.34	0.58	0.66	0.26	0.66	1.00				
5B	0.21	0.30	0.19	0.31	0.33	0.40	0.39	0.47	0.22	0.32	0.32	0.43	0.45	0.41	0.05	0.42	0.37	1.00			
5C	0.03	0.20	0.17	0.18	0.14	0.33	0.33	0.34	0.14	0.45	0.35	0.47	0.39	0.24	0.28	0.38	0.12	0.48	1.00		
5	0.03	0.28	0.28	0.26	0.65	0.56	0.54	0.72	0.23	0.42	0.41	0.53	0.66	0.66	0.27	0.70	0.82	0.77	0.57	1.00	
Total	0.16	0.46	0.37	0.45	0.63	0.74	0.75	0.88	0.41	0.52	0.50	0.72	0.71	0.73	0.34	0.78	0.72	0.64	0.51	0.87	1.00

Table 23
Country rankings based on the degree of transparency of their central banks in the year 2009

	Benchmark: Non-overlapping Sample, Without Lagged Dependent Variable				Alternative: Overlapping Sample, With Lagged Dependent Variable				Eijffinger-Geraats index	
Country name	Score	Ranking	5th percentile of the ranking	95th percentile of the ranking	Score	Ranking	5th percentile of the ranking	95th percentile of the ranking	Score	Ranking
Sweden	1.01	1	1	2	1.01	2	1	6	15	1
Turkey	0.76	2	1	7	1.06	1	1	9	9.5	10
UK	0.65	3	2	11	0.45	10	4	13	12.5	2
Czech Rep.	0.63	4	2	11	0.21	13	2	17	11.5	3
Norway	0.6	5	3	9	0.61	8	4	10	8	12
Estonia	0.56	6	3	13	0.64	5	3	11	6	15
US	0.54	7	2	15	0.95	3	1	12	10	7
Hungary	0.49	8	4	14	0.37	11	7	14	11.5	3
Poland	0.47	9	4	13	0.52	9	4	12	10	7
Canada	0.4	10	6	13	0.63	6	4	14	11	5
EMU	0.4	10	6	13	0.63	6	4	14	11	5
Romania	0.26	12	6	16	0.06	15	5	17	6.5	14
Switzerland	0.26	13	5	18	0.92	4	1	18	9.5	10
Russia	0.21	14	9	18	0.13	14	11	18	3	20
Ukraine	0.12	15	9	19	-0.15	18	10	19	4	19
Japan	0.07	16	7	20	0.21	12	7	20	10	7
Bulgaria	-0.02	17	13	18	-0.08	17	14	18	5.5	17
Latvia	-0.11	18	12	20	-0.51	20	12	20	7	13
Croatia	-0.2	19	15	20	-0.46	19	11	20	6	15
Lithuania	-0.32	20	17	20	0.01	16	11	20	4.5	18

Notes: This table reports three rankings of 20 central banks based on the Eijffinger-Geraats index and two weighted indices. The 10% confidence band of the ranking is calculated by simulation. First, we generate 1000 independent random vector of weights from multivariate Gaussian distribution with expected value being the vector of point estimates of the weights and covariance being the estimated covariance matrix of the weights. Second, for each of the 1000 vector of weights we determine the corresponding ranking of countries and the 5th and 95th percentile of the distribution of the relative position of each country.

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Appendix A

Table 24
Central bank transparency and dispersion of forecasts - benchmark model

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Standard deviation of the individual **3-months-ahead short rate** forecasts						Standard deviation of the individual **12-months-ahead short rate** forecasts					
Transparency	-0.07***	-0.02	0	-0.01	-0.05**	-0.01	-0.11*	-0.06*	-0.02	0.01	-0.05	-0.03*
(t-stat)	(-3.1)	(-1.42)	(-0.11)	(-0.44)	(-2.12)	(-1.63)	(-1.74)	(-1.69)	(-0.41)	(0.24)	(-0.78)	(-1.94)
Cond. volatility	0.16*	0.16*	0.16*	0.16*	0.16*	0.16*	0.13	0.1	0.12	0.13	0.13	0.11
(t-stat)	(1.68)	(1.69)	(1.67)	(1.7)	(1.69)	(1.66)	(0.75)	(0.59)	(0.69)	(0.73)	(0.71)	(0.61)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0.01	0	0.01	0	0	0	0
(t-stat)	(1.17)	(1.18)	(0.99)	(1.01)	(1.08)	(1.21)	(0.27)	(0.63)	(0.19)	(0.13)	(0.2)	(0.5)
Number of Obs.	624	624	624	624	624	624	170	170	170	170	170	170
R^2	47.8%	47.24%	46.99%	47.01%	47.21%	47.39%	54.31%	54.61%	54.05%	54.04%	54.08%	54.41%
Dependent variable	Standard deviation of the individual **3-months-ahead long rate** forecasts						Standard deviation of the individual **12-months-ahead long rate** forecasts					
Transparency	0.01	0	0.06***	0.02	0.02	0	0.02	-0.02**	0	0	-0.04	-0.01
(t-stat)	(0.66)	(-0.14)	(3.07)	(1.11)	(0.94)	(0.77)	(0.72)	(-2.08)	(0.02)	(-0.03)	(-1.55)	(-0.96)
Cond. volatility	0.6***	0.59***	0.6***	0.61***	0.6***	0.61***	1.25***	1.19***	1.24***	1.24***	1.24***	1.22***
(t-stat)	(5.61)	(5.83)	(5.44)	(5.65)	(5.58)	(5.74)	(8.07)	(8.26)	(8.01)	(8.19)	(7.84)	(8.34)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	0.01*	0.01**	0.01*	0.01*	0.01*	0.01**
(t-stat)	(1.08)	(1.14)	(1.01)	(0.98)	(1.07)	(0.98)	(1.69)	(2.08)	(1.72)	(1.75)	(1.92)	(1.99)
Number of Obs.	554	554	554	554	554	554	146	146	146	146	146	146
R^2	27.71%	27.63%	28.68%	27.84%	27.75%	27.78%	53.42%	53.9%	53.35%	53.35%	53.65%	53.56%
Dependent variable	Standard deviation of the individual **current year CPI** forecasts						Standard deviation of the individual **next year CPI** forecasts					
Transparency	-0.1	-0.1**	-0.03	-0.1	-0.02	-0.05**	-0.13	-0.19***	-0.05	-0.21***	-0.06	-0.08***
(t-stat)	(-0.87)	(-2.55)	(-0.44)	(-1.4)	(-0.54)	(-2.18)	(-1.58)	(-2.77)	(-0.7)	(-2.64)	(-0.77)	(-3.98)
Cond. volatility	0.11	0.12	0.11	0.11	0.11	0.12	0.18	0.19	0.18	0.17	0.18	0.18
(t-stat)	(1.48)	(1.59)	(1.45)	(1.5)	(1.46)	(1.57)	(1.23)	(1.34)	(1.22)	(1.23)	(1.22)	(1.29)
$\lvert\Delta oil_{t-1}\rvert$	0.02***	0.03***	0.02***	0.02***	0.02***	0.03***	0.01	0.01***	0.01	0.01	0.01	0.01**
(t-stat)	(4.37)	(5.38)	(4.38)	(4.51)	(4.64)	(4.56)	(1.07)	(3.31)	(0.97)	(1.29)	(1.02)	(2.54)
Number of Obs.	210	210	210	210	210	210	110	110	110	110	110	110
R^2	76.06%	77.14%	75.94%	76.2%	75.93%	76.71%	75.11%	76.86%	75.01%	75.54%	75.01%	76.13%
Dependent variable	Standard deviation of the individual **current year GDP** forecasts						Standard deviation of the individual **next year GDP** forecasts					
Transparency	-0.1*	-0.05**	0.05	-0.02	-0.08	-0.02	-0.1*	-0.08***	0.04	-0.03	0	-0.03
(t-stat)	(-1.8)	(-2.25)	(0.79)	(-0.25)	(-1.34)	(-1.27)	(-1.72)	(-4.06)	(0.85)	(-0.39)	(-0.04)	(-1.31)
Cond. volatility	0.01	0.02	0	0	0.01	0.01	0.02	0.04	0.01	0.02	0.02	0.03
(t-stat)	(0.18)	(0.45)	(0.06)	(0.15)	(0.18)	(0.33)	(0.82)	(1.28)	(0.53)	(0.64)	(0.65)	(0.89)
$\lvert\Delta oil_{t-1}\rvert$	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.02***	0.02***	0.02**	0.02***	0.02**	0.02***
(t-stat)	(3.34)	(3.46)	(3.25)	(3.12)	(3.3)	(3.42)	(2.75)	(3.26)	(2.54)	(2.61)	(2.44)	(3.11)
Number of Obs.	202	202	202	202	202	202	105	105	105	105	105	105
R^2	58.22%	58.61%	57.97%	57.81%	58.03%	58.24%	80.53%	81.61%	80.28%	80.25%	80.2%	80.73%
Dependent variable	Standard deviation of the individual **current year consumption** forecasts						Standard deviation of the individual **next year consumption** forecasts					
Transparency	0.04	-0.02	-0.11	0.13	0.05	0	0.18	-0.01	0.12	0.24	0.1*	0.03
(t-stat)	(0.29)	(-0.7)	(-1.51)	(1.28)	(0.69)	(0.04)	(0.98)	(-0.2)	(1.08)	(1.41)	(1.71)	(1.03)
Cond. volatility	-0.03	-0.03	-0.02	-0.03	-0.03	-0.03	-0.1	-0.11	-0.12	-0.09*	-0.11	-0.11*
(t-stat)	(-0.6)	(-0.58)	(-0.43)	(-0.59)	(-0.6)	(-0.59)	(-1.61)	(-1.5)	(-1.47)	(-1.79)	(-1.61)	(-1.68)
$\lvert\Delta oil_{t-1}\rvert$	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.01***	0.02***	0.01***	0.01***	0.01***	0.01***
(t-stat)	(3.12)	(2.72)	(2.99)	(2.76)	(2.98)	(2.84)	(6)	(3.59)	(3.85)	(5.28)	(3.45)	(4.82)
Number of Obs.	202	202	202	202	202	202	105	105	105	105	105	105
R^2	78.7%	78.72%	78.91%	79.09%	78.72%	78.68%	83.77%	83.32%	83.57%	84.57%	83.47%	83.68%
Dependent variable	Standard deviation of the individual **3-months-ahead oil price** forecasts						Standard deviation of the individual **12-months-ahead oil price** forecasts					
Transparency	0	0	0	0	0	0	0.01	0.02	0.03*	0.04	0.02	0.01
(t-stat)	(-0.41)	(-0.06)	(1.27)	(0.17)	(0.08)	(0.07)	(0.8)	(1.29)	(1.93)	(1.28)	(1.5)	(1.43)
Cond. volatility	0.1***	0.1***	0.1***	0.1***	0.1***	0.1***	0.34***	0.38***	0.34***	0.38***	0.34***	0.4***
(t-stat)	(2.97)	(2.85)	(3.03)	(2.95)	(2.97)	(2.87)	(4.52)	(4.78)	(4.65)	(5.22)	(4.69)	(5.28)
$\lvert\Delta oil_{t-1}\rvert$	0***	0***	0***	0***	0***	0***	0	0	0	0	0	0
(t-stat)	(3.96)	(3.89)	(3.9)	(3.85)	(3.96)	(3.81)	(0.97)	(0.11)	(1)	(0.26)	(0.87)	(-0.17)
Number of Obs.	790	790	790	790	790	790	242	242	242	242	242	242
R^2	66.56%	66.55%	66.62%	66.56%	66.55%	66.55%	79.85%	80.68%	80.26%	81.08%	79.99%	81.36%

*Notes: To save space, the country fixed effects are not reported. Regressions are estimated by LSDV estimator; the standard errors are calculated by White cross-section method that is designed to accommodate arbitrary heteroskedasticity and robust to contemporaneous correlation across countries. The data frequency of the non-overlapping sample is 3 months for the 3-month-ahead forecasts, annual for the 12-month-ahead forecasts and the end-of-year forecasts and bi-annual for the end-of-next-year forecasts. *, ** and *** indicate significant estimates at the 10%, 5% and 1% significance levels, respectively.*

Table 25
Central bank transparency and forecast accuracy - benchmark model

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Absolute forecast error of the average **3-months-ahead short rate** forecasts						Absolute forecast error of the average **12-months-ahead short rate** forecasts					
Transparency	-0.19*	-0.1***	0.04	-0.11	-0.24**	-0.06***	-0.31	-0.14	-0.62	-0.14	-0.39	-0.13
(t-stat)	(-1.94)	(-2.62)	(0.4)	(-1.35)	(-2.48)	(-2.58)	(-0.84)	(-1.07)	(-1.22)	(-0.71)	(-1.08)	(-1.53)
Cond. volatility	0.31	0.3	0.32	0.31	0.31	0.29	-0.04	-0.12	-0.18	-0.05	-0.07	-0.16
(t-stat)	(1.26)	(1.26)	(1.28)	(1.27)	(1.26)	(1.22)	(-0.12)	(-0.33)	(-0.56)	(-0.14)	(-0.17)	(-0.46)
$\lvert\Delta oil_{t-1}\rvert$	0.03	0.04	0.03	0.03	0.03	0.04	0.05	0.05*	0.05**	0.05	0.05	0.06**
(t-stat)	(1.33)	(1.44)	(1.22)	(1.31)	(1.32)	(1.44)	(1.54)	(1.69)	(1.98)	(1.63)	(1.58)	(2.04)
Number of Obs.	624	624	624	624	624	624	170	170	170	170	170	170
R^2	24.03%	24.59%	23.38%	23.63%	24%	24.55%	23.68%	23.95%	25.74%	23.46%	23.79%	24.8%
Dependent variable	Absolute forecast error of the average **3-months-ahead long rate** forecasts						Absolute forecast error of the average **12-months-ahead long rate** forecasts					
Transparency	0	-0.04	0.04	-0.03	-0.03	-0.01	-0.08	-0.33*	-0.13	-0.39	-0.39	-0.15
(t-stat)	(0.05)	(-1.28)	(0.6)	(-0.43)	(-0.38)	(-0.74)	(-0.28)	(-1.77)	(-0.52)	(-1.35)	(-1.15)	(-1.48)
Cond. volatility	0.84**	0.78**	0.85**	0.82**	0.84**	0.8**	0.88	0.08	0.89	0.63	0.9	0.36
(t-stat)	(2.21)	(2.12)	(2.2)	(2.2)	(2.21)	(2.15)	(0.73)	(0.07)	(0.72)	(0.54)	(0.75)	(0.32)
$\lvert\Delta oil_{t-1}\rvert$	0.01**	0.01**	0.01**	0.01**	0.01**	0.01**	-0.04**	-0.03	-0.04**	-0.04**	-0.04**	-0.03
(t-stat)	(2.18)	(2.56)	(2.17)	(2.24)	(2.24)	(2.39)	(-2.48)	(-1.46)	(-2.54)	(-2.05)	(-2.53)	(-1.47)
Number of Obs.	554	554	554	554	554	554	146	146	146	146	146	146
R^2	15.45%	16.11%	15.51%	15.53%	15.48%	15.7%	25.59%	34.24%	25.66%	28.68%	27.12%	31.67%
Dependent variable	Absolute forecast error of the average **current year CPI** forecasts						Absolute forecast error of the average **next year CPI** forecasts					
Transparency	-0.23	-0.16*	0.2	-0.18	-0.08	-0.06	1.1**	0.1	0.03	0.56	1.85**	0.21
(t-stat)	(-0.96)	(-1.94)	(0.9)	(-0.89)	(-0.26)	(-0.94)	(2.08)	(0.64)	(0.08)	(0.83)	(2.56)	(1.51)
Cond. volatility	0.38***	0.39***	0.38***	0.38***	0.38***	0.39***	0.86***	0.84***	0.84***	0.86***	0.85***	0.85***
(t-stat)	(4.4)	(4.52)	(4.39)	(4.37)	(4.44)	(4.47)	(4.05)	(4.13)	(4.32)	(3.83)	(4.47)	(3.84)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.01	0.01	0.01	0.01	0.01	-0.22	-0.21	-0.21	-0.21	-0.23*	-0.22*
(t-stat)	(0.8)	(1)	(0.41)	(0.84)	(0.69)	(0.87)	(-1.64)	(-1.55)	(-1.48)	(-1.51)	(-1.73)	(-1.67)
Number of Obs.	210	210	210	210	210	210	84	84	84	84	84	84
R^2	51.76%	52.12%	51.8%	51.79%	51.66%	51.88%	57.46%	56.74%	56.69%	57.08%	59.32%	57.38%
Dependent variable	Absolute forecast error of the average **current year GDP** forecasts						Absolute forecast error of the average **next year GDP** forecasts					
Transparency	0.03	-0.27***	0.09	-0.2	-0.56	-0.11	-0.31	0.16	0.13	-0.37	-0.86**	-0.04
(t-stat)	(0.06)	(-3.52)	(0.32)	(-0.52)	(-1.15)	(-1.22)	(-1.61)	(0.95)	(0.38)	(-0.74)	(-2.44)	(-0.36)
Cond. volatility	0.25**	0.31**	0.25**	0.26**	0.26**	0.29**	-0.05	-0.12	-0.07	-0.04	0.01	-0.03
(t-stat)	(2.17)	(2.38)	(2.16)	(2.16)	(2.09)	(2.27)	(-0.26)	(-0.53)	(-0.38)	(-0.24)	(0.05)	(-0.16)
$\lvert\Delta oil_{t-1}\rvert$	0.13***	0.14***	0.13***	0.13***	0.14***	0.14***	-0.09	-0.1*	-0.09*	-0.09**	-0.08	-0.09
(t-stat)	(4.45)	(4.85)	(4.15)	(4.34)	(4.62)	(5.2)	(-1.62)	(-1.7)	(-1.67)	(-2)	(-1.54)	(-1.63)
Number of Obs.	202	202	202	202	202	202	81	81	81	81	81	81
R^2	71.3%	71.73%	71.31%	71.36%	71.56%	71.55%	29.61%	29.81%	29.41%	30.1%	31.8%	29.42%
Dependent variable	Absolute forecast error of the average **current year consumption** forecasts						Absolute forecast error of the average **next year consumption** forecasts					
Transparency	-0.31	-0.4**	-0.97**	-0.16	-0.61	-0.23***	-0.86**	0.14	-0.79	-1.12*	-1.61***	-0.2
(t-stat)	(-0.91)	(-2.4)	(-2.38)	(-0.35)	(-1.4)	(-3.41)	(-2.23)	(0.44)	(-1.45)	(-1.8)	(-4.57)	(-1.01)
Cond. volatility	0.77**	0.8**	0.87***	0.77**	0.77**	0.8**	0.42	0.4	0.55	0.29	0.43	0.48
(t-stat)	(2.09)	(2.24)	(2.69)	(2.08)	(2.08)	(2.21)	(1.48)	(1.07)	(1.35)	(1.6)	(1.64)	(1.51)
$\lvert\Delta oil_{t-1}\rvert$	0.03	0.04	0.03	0.03	0.03	0.05*	-0.02	-0.04	-0.03	-0.03	-0.01	-0.02
(t-stat)	(1.08)	(1.62)	(1.15)	(1.03)	(1.25)	(1.8)	(-0.43)	(-0.56)	(-0.77)	(-1.2)	(-0.3)	(-0.42)
Number of Obs.	202	202	202	202	202	202	81	81	81	81	81	81
R^2	77.5%	78.11%	78.2%	77.47%	77.65%	78.17%	59.45%	58.82%	59.62%	61.04%	61.99%	59.74%
Dependent variable	Absolute forecast error of the average **3-months-ahead oil price** forecasts						Absolute forecast error of the average **12-months-ahead oil price** forecasts					
Transparency	-0.02	-0.02	0.01	-0.03	-0.06	-0.01	-0.03	-0.03	0.03	-0.01	-0.06	-0.01
(t-stat)	(-0.77)	(-0.86)	(0.22)	(-0.64)	(-1.19)	(-0.78)	(-0.61)	(-0.58)	(0.66)	(-0.11)	(-1.05)	(-0.51)
Cond. volatility	-0.47*	-0.49*	-0.46*	-0.47*	-0.47*	-0.49*	-0.2	-0.26	-0.18	-0.19	-0.22	-0.25
(t-stat)	(-1.67)	(-1.7)	(-1.65)	(-1.66)	(-1.7)	(-1.7)	(-0.2)	(-0.26)	(-0.18)	(-0.19)	(-0.22)	(-0.24)
$\lvert\Delta oil_{t-1}\rvert$	0.03**	0.03**	0.03**	0.03**	0.03**	0.03**	0	0	-0.01	0	0	0
(t-stat)	(2.5)	(2.51)	(2.48)	(2.48)	(2.55)	(2.49)	(-0.1)	(-0.02)	(-0.13)	(-0.11)	(-0.08)	(-0.04)
Number of Obs.	790	790	790	790	790	790	242	242	242	242	242	242
R^2	34.8%	35.22%	34.69%	34.87%	35.06%	35.23%	6.28%	6.5%	6.27%	6.19%	6.46%	6.4%

Notes: The same as below Table 24.

Table 26
Central bank transparency and dispersion of oil price forecasts - different model specifications

(Sample: January 1998 - December 2009, 26 countries)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
	Dynamic Model: With Lagged Dependent Variable, Overlapping Sample											
Dependent variable	Standard deviation of the individual **3-months-ahead oil price** forecasts						Standard deviation of the individual **12-months-ahead oil price** forecasts					
Transparency	0	0	0	0	0	0	0	0	0	0	0	0
(t-stat)	(-1.3)	(-1.48)	(-1.54)	(-0.94)	(-1.17)	(-1.33)	(-0.27)	(-0.02)	(-0.36)	(-0.24)	(-0.01)	(-0.15)
Own lag	0.33***	0.33***	0.33***	0.33***	0.33***	0.34***	0.65***	0.65***	0.65***	0.65***	0.65***	0.65***
(t-stat)	(4.29)	(4.4)	(4.25)	(4.34)	(4.3)	(4.45)	(7.07)	(7.08)	(7.05)	(7.08)	(7.08)	(7.11)
Cond. volatility	0.06***	0.06***	0.06***	0.06***	0.06***	0.06***	0.05*	0.05	0.05*	0.05	0.05*	0.05
(t-stat)	(3.43)	(3.18)	(3.48)	(3.35)	(3.41)	(3.12)	(1.68)	(1.59)	(1.72)	(1.61)	(1.68)	(1.53)
$\lvert\Delta oil_{t-1}\rvert$	0***	0***	0***	0***	0***	0***	0***	0***	0***	0***	0***	0***
(t-stat)	(3.73)	(3.76)	(3.72)	(3.7)	(3.71)	(3.74)	(5.79)	(6.04)	(5.7)	(5.97)	(5.81)	(6.17)
Number of Obs.	3504	3504	3504	3504	3504	3504	3504	3504	3504	3504	3504	3504
R^2	54.23%	54.39%	54.19%	54.23%	54.21%	54.4%	68.9%	68.9%	68.9%	68.9%	68.9%	68.9%
	Benchmark Model: Without Lagged Dependent Variable, Non-overlapping Sample											
Dependent variable	Standard deviation of the individual **3-months-ahead oil price** forecasts						Standard deviation of the individual **12-months-ahead oil price** forecasts					
Transparency	0	0	0	0	0	0	0.01	0.02	0.03*	0.04	0.02	0.01
(t-stat)	(-0.41)	(-0.06)	(1.27)	(0.17)	(0.08)	(0.07)	(0.8)	(1.29)	(1.93)	(1.28)	(1.5)	(1.43)
Cond. volatility	0.1***	0.1***	0.1***	0.1***	0.1***	0.1***	0.34***	0.38***	0.34***	0.38***	0.34***	0.4***
(t-stat)	(2.97)	(2.85)	(3.03)	(2.95)	(2.97)	(2.87)	(4.52)	(4.78)	(4.65)	(5.22)	(4.69)	(5.28)
$\lvert\Delta oil_{t-1}\rvert$	0***	0***	0***	0***	0***	0***	0	0	0	0	0	0
(t-stat)	(3.96)	(3.89)	(3.9)	(3.85)	(3.96)	(3.81)	(0.97)	(0.11)	(1)	(0.26)	(0.87)	(-0.17)
Number of Obs.	790	790	790	790	790	790	242	242	242	242	242	242
R^2	66.56%	66.55%	66.62%	66.56%	66.55%	66.55%	79.85%	80.68%	80.26%	81.08%	79.99%	81.36%
	With Lagged Dependent Variable, Non-overlapping Sample											
Dependent variable	Standard deviation of the individual **3-months-ahead oil price** forecasts						Standard deviation of the individual **12-months-ahead oil price** forecasts					
Transparency	0	0	0	0	0	0	0.03*	0.02*	0.02	0.04**	0.03*	0.01***
(t-stat)	(-1.25)	(-1.33)	(0.56)	(-1.15)	(-1.09)	(-1.2)	(1.71)	(1.93)	(1.63)	(2.56)	(1.95)	(2.58)
Own lag	0.31***	0.32***	0.3***	0.31***	0.31***	0.32***	1.32***	1.31***	1.31***	1.31***	1.33***	1.31***
(t-stat)	(2.61)	(2.68)	(2.58)	(2.69)	(2.62)	(2.7)	(4.84)	(5.16)	(4.74)	(6.59)	(5.02)	(6.25)
Cond. volatility	0.05*	0.04	0.05*	0.05*	0.05*	0.04	0.15***	0.18***	0.14***	0.18***	0.15***	0.2***
(t-stat)	(1.87)	(1.61)	(1.96)	(1.81)	(1.86)	(1.6)	(2.86)	(4.4)	(2.67)	(4.75)	(2.88)	(5.67)
$\lvert\Delta oil_{t-1}\rvert$	0***	0***	0***	0***	0***	0***	0**	-0.01**	0*	-0.01**	0**	-0.01***
(t-stat)	(3.42)	(3.51)	(3.36)	3.4	3.43	(3.46)	(-1.98)	(-2.14)	(-1.77)	-2.37	-1.98	(-2.64)
Number of Obs.	788	788	788	788	788	788	240	240	240	240	240	240
R^2	73.29%	73.52%	73.24%	73.36%	73.28%	73.48%	91.04%	91.5%	90.95%	91.82%	91.08%	92.3%
	Without Lagged Dependent Variable, Overlapping Sample											
Dependent variable	Standard deviation of the individual **3-months-ahead oil price** forecasts						Standard deviation of the individual **12-months-ahead oil price** forecasts					
Transparency	0	0	0	0	0	0	0.01*	0.01**	0.01**	0.01*	0.01*	0.01**
(t-stat)	(-0.28)	(-0.17)	(-0.07)	(0.22)	(-0.02)	(-0.06)	(1.69)	(2.21)	(2.18)	(1.92)	(1.88)	(2.08)
Cond. volatility	0.1***	0.1***	0.1***	0.1***	0.1***	0.1***	0.15***	0.16***	0.15***	0.15***	0.15***	0.16***
(t-stat)	(4.44)	(4.21)	(4.52)	(4.4)	(4.42)	(4.19)	(2.71)	(2.83)	(2.72)	(2.75)	(2.73)	(2.83)
$\lvert\Delta oil_{t-1}\rvert$	0***	0***	0***	0***	0***	0***	0***	0**	0***	0***	0***	0**
(t-stat)	(3.96)	(3.74)	(3.98)	(3.78)	(3.9)	(3.64)	(3.27)	(2.51)	(3.38)	(2.98)	(3.19)	(2.38)
Number of Obs.	3536	3536	3536	3536	3536	3536	3536	3536	3536	3536	3536	3536
R^2	46.62%	46.62%	46.61%	46.62%	46.61%	46.61%	38.78%	40.45%	38.68%	39.42%	39.02%	40.59%

Notes: The same as below Table 24.

Table 27
Central bank transparency and accuracy of oil price forecasts - different model specifications

(Sample: January 1998 - December 2009, 26 countries)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
	Dynamic Model: With Lagged Dependent Variable, Overlapping Sample											
Dependent variable	Absolute forecast error of the average **3-months-ahead oil price** forecasts						Absolute forecast error of the average **12-months-ahead oil price** forecasts					
Transparency	-0.01	0	0.01	0	-0.01	0	0.03*	0.03*	0.03**	0.04**	0.04*	0.02**
(t-stat)	(-0.47)	(-0.07)	(1.05)	(-0.11)	(-0.55)	(-0.12)	(1.65)	(1.81)	(2.5)	(2.28)	(1.81)	(2.02)
Own lag	0.33*	0.33*	0.33*	0.33*	0.33*	0.33*	0.69***	0.69***	0.69***	0.68***	0.69***	0.68***
(t-stat)	(1.77)	(1.77)	(1.78)	(1.77)	(1.77)	(1.77)	(12.06)	(11.91)	(12.08)	(11.82)	(12.07)	(11.83)
Cond. volatility	-0.16	-0.16	-0.15	-0.16	-0.16	-0.16	-0.01	0.01	-0.02	0.01	-0.01	0.03
(t-stat)	(-1.06)	(-1)	(-1.04)	(-1.02)	(-1.06)	(-0.99)	(-0.09)	(0.14)	(-0.19)	(0.13)	(-0.06)	(0.29)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.01	0.01	0.01	0.01	0.01	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01***
(t-stat)	(1.12)	(1.06)	(1.07)	(1.09)	(1.13)	(1.06)	(-2.21)	(-2.57)	(-2.14)	(-2.49)	(-2.25)	(-2.77)
Number of Obs.	3504	3504	3504	3504	3504	3504	3504	3504	3504	3504	3504	3504
R^2	17.71%	17.68%	17.74%	17.69%	17.73%	17.69%	48.62%	48.9%	48.56%	49.02%	48.64%	49.18%
	Benchmark Model: Without Lagged Dependent Variable, Non-overlapping Sample											
Dependent variable	Absolute forecast error of the average **3-months-ahead oil price** forecasts						Absolute forecast error of the average **12-months-ahead oil price** forecasts					
Transparency	-0.02	-0.02	0.01	-0.03	-0.06	-0.01	-0.03	-0.03	0.03	-0.01	-0.06	-0.01
(t-stat)	(-0.77)	(-0.86)	(0.22)	(-0.64)	(-1.19)	(-0.78)	(-0.61)	(-0.58)	(0.66)	(-0.11)	(-1.05)	(-0.51)
Cond. volatility	-0.47*	-0.49*	-0.46*	-0.47*	-0.47*	-0.49*	-0.2	-0.26	-0.18	-0.19	-0.22	-0.25
(t-stat)	(-1.67)	(-1.7)	(-1.65)	(-1.66)	(-1.7)	(-1.7)	(-0.2)	(-0.26)	(-0.18)	(-0.19)	(-0.22)	(-0.24)
$\lvert\Delta oil_{t-1}\rvert$	0.03**	0.03**	0.03**	0.03**	0.03**	0.03**	0	0	-0.01	0	0	0
(t-stat)	(2.5)	(2.51)	(2.48)	(2.48)	(2.55)	(2.49)	(-0.1)	(-0.02)	(-0.13)	(-0.11)	(-0.08)	(-0.04)
Number of Obs.	790	790	790	790	790	790	242	242	242	242	242	242
R^2	34.8%	35.22%	34.69%	34.87%	35.06%	35.23%	6.28%	6.5%	6.27%	6.19%	6.46%	6.4%
	With Lagged Dependent Variable, Non-overlapping Sample											
Dependent variable	Absolute forecast error of the average **3-months-ahead oil price** forecasts						Absolute forecast error of the average **12-months-ahead oil price** forecasts					
Transparency	-0.03	-0.02	0.01	-0.02	-0.05	-0.01	-0.08	-0.03	0.04	0	-0.08	-0.01
(t-stat)	(-0.99)	(-0.88)	(0.35)	(-0.62)	(-1.38)	(-0.82)	(-1.19)	(-0.63)	(0.91)	(-0.05)	(-1.23)	(-0.61)
Own lag	-0.36	-0.29	-0.39	-0.34	-0.34	-0.28	-2.07	-2.05	-2.08	-2.06	-2.09	-2.05
(t-stat)	(-0.34)	(-0.28)	(-0.37)	(-0.32)	(-0.32)	(-0.27)	(-0.94)	(-0.93)	(-0.95)	(-0.94)	(-0.94)	(-0.93)
Cond. volatility	-0.41	-0.44	-0.39	-0.42	-0.42	-0.45	0.08	0.05	0.14	0.12	0.09	0.05
(t-stat)	(-1.48)	(-1.54)	(-1.44)	(-1.47)	(-1.53)	(-1.54)	(0.08)	(0.05)	(0.13)	(0.11)	(0.08)	(0.05)
$\lvert\Delta oil_{t-1}\rvert$	0.03**	0.03**	0.03**	0.03**	0.03**	0.03**	0.01	0.01	0	0.01	0.01	0.01
(t-stat)	(2.54)	(2.52)	2.52	2.51	2.56	(2.5)	(0.18)	(0.21)	0.12	0.13	0.19	(0.21)
Number of Obs.	788	788	788	788	788	788	240	240	240	240	240	240
R^2	35.13%	35.39%	34.99%	35.1%	35.32%	35.42%	10.26%	10.18%	10.04%	9.89%	10.3%	10.13%
	Without Lagged Dependent Variable, Overlapping Sample											
Dependent variable	Absolute forecast error of the average **3-months-ahead oil price** forecasts						Absolute forecast error of the average **12-months-ahead oil price** forecasts					
Transparency	-0.01	0	0.01	0	-0.01	0	0.04**	0.05***	0.05***	0.09***	0.06**	0.03***
(t-stat)	(-0.65)	(-0.25)	(1.2)	(-0.14)	(-0.79)	(-0.25)	(2.11)	(2.61)	(3.4)	(3.79)	(2.1)	(2.87)
Cond. volatility	-0.08	-0.08	-0.07	-0.08	-0.08	-0.08	0.04	0.09	0.03	0.1	0.05	0.12
(t-stat)	(-0.58)	(-0.56)	(-0.53)	(-0.55)	(-0.6)	(-0.56)	(0.31)	(0.65)	(0.21)	(0.71)	(0.34)	(0.82)
$\lvert\Delta oil_{t-1}\rvert$	0.01**	0.01**	0.01**	0.01**	0.01**	0.01**	-0.01	-0.01*	0	-0.01*	-0.01	-0.01**
(t-stat)	(2.52)	(2.47)	(2.48)	(2.48)	(2.54)	(2.46)	(-1.19)	(-1.71)	(-1.12)	(-1.72)	(-1.23)	(-1.96)
Number of Obs.	3536	3536	3536	3536	3536	3536	3536	3536	3536	3536	3536	3536
R^2	10.73%	10.71%	10.75%	10.69%	10.77%	10.71%	1.19%	2.28%	1.09%	3.37%	1.21%	3.14%

Notes: The same as below Table 24.

Table 28
Central bank transparency and dispersion of forecasts - dynamic model

(Sample: January 1998 - December 2009, 26 countries, overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Standard deviation of the individual **3-months-ahead short rate** forecasts						Standard deviation of the individual **12-months-ahead short rate** forecasts					
Transparency	-0.03**	-0.01*	0	-0.01	-0.02*	-0.01**	0	0	0	0	0.01	0
(t-stat)	(-2.46)	(-1.69)	(-0.14)	(-1.1)	(-1.76)	(-2.18)	(-0.17)	(-0.49)	(-0.14)	(-0.04)	(0.33)	(-0.3)
Own lag	0.5***	0.5***	0.5***	0.5***	0.5***	0.5***	0.73***	0.73***	0.73***	0.73***	0.73***	0.73***
(t-stat)	(5.88)	(5.87)	(5.83)	(5.85)	(5.85)	(5.88)	(6.29)	(6.28)	(6.29)	(6.24)	(6.27)	(6.26)
Cond. volatility	0.11***	0.11**	0.12***	0.12***	0.12***	0.11**	0.12*	0.12*	0.12*	0.12*	0.13*	0.12*
(t-stat)	(2.64)	(2.55)	(2.62)	(2.63)	(2.64)	(2.55)	(1.93)	(1.87)	(1.94)	(1.92)	(1.94)	(1.86)
$\lvert\Delta oil_{t-1}\rvert$	0	0*	0	0	0	0*	0	0	0	0	0	0
(t-stat)	(1.59)	(1.71)	(1.47)	(1.52)	(1.52)	(1.72)	(0.91)	(0.94)	(0.92)	(0.87)	(0.87)	(0.9)
Number of Obs.	1842	1842	1842	1842	1842	1842	1842	1842	1842	1842	1842	1842
R^2	52.48%	52.51%	52.4%	52.41%	52.41%	52.5%	79.41%	79.42%	79.41%	79.41%	79.41%	79.41%
Dependent variable	Standard deviation of the individual **3-months-ahead long rate** forecasts						Standard deviation of the individual **12-months-ahead long rate** forecasts					
Transparency	0	0	0.02*	0	0	0	0.02**	-0.01	0.01	-0.01	0.01	0
(t-stat)	(-0.55)	(-0.49)	(1.92)	(-0.1)	(-0.28)	(-0.23)	(2.09)	(-1.5)	(0.55)	(-0.84)	(0.5)	(-0.34)
Own lag	0.4***	0.4***	0.4***	0.4***	0.4***	0.4***	0.44***	0.45***	0.44***	0.45***	0.44***	0.44***
(t-stat)	(5.98)	(6.03)	(5.86)	(6.03)	(5.98)	(6.06)	(11.09)	(11.69)	(11.38)	(11.59)	(11.38)	(11.59)
Cond. volatility	0.36***	0.36***	0.37***	0.37***	0.37***	0.36***	0.29***	0.28***	0.29***	0.28***	0.29***	0.28***
(t-stat)	(3.08)	(3)	(3.16)	(3.05)	(3.09)	(3.03)	(3.14)	(3.06)	(3.12)	(3.06)	(3.12)	(3.1)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	0	0	0	0	0	0
(t-stat)	(1.14)	(1.17)	(1.03)	(1.1)	(1.12)	(1.11)	(0.52)	(0.86)	(0.63)	(0.77)	(0.62)	(0.72)
Number of Obs.	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634	1634
R^2	37.9%	37.91%	38.01%	37.89%	37.9%	37.9%	44.45%	44.36%	44.28%	44.3%	44.28%	44.27%
Dependent variable	Standard deviation of the individual **current year CPI** forecasts						Standard deviation of the individual **next year CPI** forecasts					
Transparency	0.01	0	0.01	0.01	0.02	0	0.01	-0.01**	-0.01	0	0.02	0
(t-stat)	(1.05)	(-0.4)	(0.88)	(0.62)	(1.17)	(0.26)	(1.02)	(-2.31)	(-0.6)	(-0.28)	(1.37)	(-1.09)
Own lag	0.52***	0.52***	0.52***	0.52***	0.52***	0.52***	0.6***	0.59***	0.6***	0.6***	0.6***	0.6***
(t-stat)	(8.38)	(8.36)	(8.38)	(8.38)	(8.37)	(8.39)	(15.6)	(15.66)	(15.62)	(15.63)	(15.6)	(15.65)
Cond. volatility	0.01	0.01	0.01	0.01	0.01	0.01	0	0.01	0	0	0	0
(t-stat)	(1.2)	(1.21)	(1.2)	(1.2)	(1.2)	(1.19)	(0.39)	(0.45)	(0.4)	(0.39)	(0.39)	(0.41)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	0***	0***	0***	0***	0***	0***
(t-stat)	(0.36)	(0.41)	(0.36)	(0.34)	(0.35)	(0.34)	(2.65)	(2.78)	(2.68)	(2.64)	(2.62)	(2.68)
Number of Obs.	2246	2246	2246	2246	2246	2246	2246	2246	2246	2246	2246	2246
R^2	76.67%	76.67%	76.67%	76.67%	76.67%	76.66%	82.83%	82.85%	82.83%	82.83%	82.84%	82.84%
Dependent variable	Standard deviation of the individual **current year GDP** forecasts						Standard deviation of the individual **next year GDP** forecasts					
Transparency	0	0	0.03**	0	-0.01	0	-0.01	-0.02***	-0.01	-0.03***	-0.02	-0.01***
(t-stat)	(-0.25)	(-0.64)	(1.97)	(0.26)	(-0.4)	(-0.01)	(-1.06)	(-2.71)	(-1.07)	(-2.71)	(-1.22)	(-2.61)
Own lag	0.57***	0.57***	0.57***	0.57***	0.57***	0.57***	0.62***	0.62***	0.62***	0.62***	0.62***	0.62***
(t-stat)	(9.59)	(9.58)	(9.5)	(9.56)	(9.59)	(9.59)	(19.36)	(19.64)	(19.44)	(19.58)	(19.39)	(19.69)
Cond. volatility	0.04***	0.04***	0.04***	0.04***	0.04***	0.04***	0.01	0.01**	0.01	0.01*	0.01	0.01**
(t-stat)	(2.92)	(3.04)	(2.89)	(2.96)	(2.94)	(2.99)	(1.56)	(2.03)	(1.56)	(1.8)	(1.56)	(1.99)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
(t-stat)	(0.25)	(0.29)	(0.16)	(0.22)	(0.26)	(0.24)	(3.18)	(3.42)	(3.2)	(3.39)	(3.21)	(3.45)
Number of Obs.	2178	2178	2178	2178	2178	2178	2178	2178	2178	2178	2178	2178
R^2	69.92%	69.92%	69.96%	69.92%	69.92%	69.92%	74.28%	74.37%	74.27%	74.36%	74.28%	74.37%
Dependent variable	Standard deviation of the individual **current year consumption** forecasts						Standard deviation of the individual **next year consumption** forecasts					
Transparency	0.04**	0	-0.04	0.04*	0.04	0	0.02	0	-0.02	0	0.01	0
(t-stat)	(2.03)	(0.18)	(-1.64)	(1.94)	(1.49)	(1.04)	(1.14)	(-0.36)	(-1.22)	(0.06)	(0.49)	(-0.07)
Own lag	0.5***	0.5***	0.5***	0.5***	0.5***	0.5***	0.5***	0.5***	0.5***	0.5***	0.5***	0.5***
(t-stat)	(11.2)	(11.24)	(11.25)	(11.28)	(11.21)	(11.22)	(14.75)	(14.88)	(14.79)	(14.8)	(14.7)	(14.81)
Cond. volatility	0.08***	0.08***	0.09***	0.08***	0.08***	0.08***	0	0	0.01	0	0	0
(t-stat)	(4.4)	(4.45)	(4.67)	(4.44)	(4.43)	(4.41)	(0.3)	(0.36)	(0.45)	(0.34)	(0.33)	(0.34)
$\lvert\Delta oil_{t-1}\rvert$	0**	0**	0**	0**	0**	0**	0*	0*	0**	0*	0*	0*
(t-stat)	(-2.28)	(-2.1)	(-2.05)	(-2.3)	(-2.26)	(-2.22)	(1.91)	(1.95)	(2.06)	(1.93)	(1.95)	(1.9)
Number of Obs.	2178	2178	2178	2178	2178	2178	2178	2178	2178	2178	2178	2178
R^2	80.85%	80.82%	80.84%	80.85%	80.84%	80.83%	83.96%	83.95%	83.95%	83.95%	83.95%	83.95%

*Notes: To save space, the month fixed effects and the country fixed effects are not reported. Regressions are estimated by LSDV estimator; the standard errors are calculated by White cross-section method that is designed to accommodate arbitrary heteroskedasticity and robust to contemporaneous correlation across countries. *, ** and *** indicate significant estimates at the 10%, 5% and 1% significance levels, respectively.*

Table 29
Central bank transparency and forecast accuracy - dynamic model

(Sample: January 1998 - December 2009, 26 countries, overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Absolute forecast error of the average **3-months-ahead short rate** forecasts						Absolute forecast error of the average **12-months-ahead short rate** forecasts					
Transparency	-0.04	-0.07***	-0.16*	-0.08**	-0.1**	-0.04***	0	-0.06	0.01	-0.01	-0.06	-0.02
(t-stat)	(-0.86)	(-3.47)	(-1.85)	(-2)	(-2.12)	(-3.35)	(-0.02)	(-1.34)	(0.14)	(-0.17)	(-0.78)	(-0.89)
Own lag	0.39***	0.39***	0.39***	0.39***	0.39***	0.39***	0.82***	0.82***	0.82***	0.82***	0.82***	0.82***
(t-stat)	(5.94)	(5.86)	(5.88)	(5.94)	(5.91)	(5.85)	(24.51)	(24.3)	(24.52)	(24.47)	(24.47)	(24.4)
Cond. volatility	0.07	0.05	0.06	0.07	0.07	0.05	-0.45***	-0.47***	-0.45***	-0.45***	-0.45***	-0.47***
(t-stat)	(0.4)	(0.32)	(0.33)	(0.38)	(0.4)	(0.29)	(-3.04)	(-3.23)	(-3.02)	(-3.06)	(-3.1)	(-3.15)
$\lvert\Delta oil_{t-1}\rvert$	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0	0	0	0	0	0
(t-stat)	(2.69)	(3.09)	(2.79)	(2.82)	(2.73)	(3.16)	(0.23)	(0.49)	(0.21)	(0.24)	(0.27)	(0.41)
Number of Obs.	1842	1842	1842	1842	1842	1842	1814	1814	1814	1814	1814	1814
R^2	37.97%	38.49%	38.33%	38.08%	38.05%	38.53%	74.03%	74.13%	74.03%	74.03%	74.04%	74.07%
Dependent variable	Absolute forecast error of the average **3-months-ahead long rate** forecasts						Absolute forecast error of the average **12-months-ahead long rate** forecasts					
Transparency	0.02	-0.03	0.02	-0.04	-0.02	-0.01	0.02	-0.04	0.04	-0.02	-0.04	-0.01
(t-stat)	(0.63)	(-1.56)	(0.53)	(-0.92)	(-0.48)	(-0.95)	(0.66)	(-0.95)	(0.64)	(-0.3)	(-0.6)	(-0.56)
Own lag	0.2***	0.2***	0.2***	0.2***	0.2***	0.2***	0.64***	0.63***	0.64***	0.64***	0.64***	0.64***
(t-stat)	(4.53)	(4.56)	(4.54)	(4.59)	(4.57)	(4.59)	(14.59)	(13.63)	(14.62)	(14.67)	(14.46)	(14.18)
Cond. volatility	0.81**	0.77**	0.81**	0.79**	0.81**	0.78**	-0.25	-0.31	-0.25	-0.26	-0.26	-0.29
(t-stat)	(2.39)	(2.28)	(2.39)	(2.33)	(2.38)	(2.32)	(-0.82)	(-1.07)	(-0.82)	(-0.89)	(-0.86)	(-0.97)
$\lvert\Delta oil_{t-1}\rvert$	0	0.01	0	0	0	0	-0.01**	-0.01*	-0.01**	-0.01*	-0.01**	-0.01*
(t-stat)	(1.33)	(1.63)	(1.34)	(1.51)	(1.39)	(1.54)	(-2.03)	(-1.76)	(-2.02)	(-1.95)	(-1.97)	(-1.86)
Number of Obs.	1634	1634	1634	1634	1634	1634	1606	1606	1606	1606	1606	1606
R^2	17.95%	18.25%	17.94%	18.04%	17.94%	18.06%	49.04%	49.22%	49.05%	49.04%	49.05%	49.09%
Dependent variable	Absolute forecast error of the average **current year CPI** forecasts						Absolute forecast error of the average **next year CPI** forecasts					
Transparency	-0.04	-0.04***	0.01	-0.05	-0.02	-0.02**	0.05	0.01	0.11*	0.07	0.05	0.02
(t-stat)	(-1.38)	(-2.65)	(0.15)	(-1.42)	(-0.4)	(-1.97)	(1.62)	(0.54)	(1.73)	(1.6)	(0.79)	(1.22)
Own lag	0.53***	0.53***	0.53***	0.53***	0.53***	0.53***	0.83***	0.83***	0.83***	0.83***	0.83***	0.83***
(t-stat)	(6.98)	(6.89)	(7.01)	(6.96)	(7)	(6.92)	(17.58)	(17.62)	(17.54)	(17.51)	(17.51)	(17.6)
Cond. volatility	0.09**	0.09**	0.09**	0.09**	0.09**	0.09**	0.02	0.02	0.02	0.02	0.02	0.02
(t-stat)	(2.47)	(2.52)	(2.46)	(2.47)	(2.46)	(2.5)	(0.67)	(0.62)	(0.64)	(0.65)	(0.67)	(0.59)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0*	0	0*	0	0	0	0	0	0	0
(t-stat)	(-1.64)	(-1.18)	(-1.72)	(-1.47)	(-1.69)	(-1.25)	(0.09)	(0.07)	(0)	(-0.01)	(0.09)	(-0.08)
Number of Obs.	2246	2246	2246	2246	2246	2246	2030	2030	2030	2030	2030	2030
R^2	57.55%	57.64%	57.54%	57.56%	57.54%	57.6%	86.09%	86.09%	86.11%	86.1%	86.09%	86.1%
Dependent variable	Absolute forecast error of the average **current year GDP** forecasts						Absolute forecast error of the average **next year GDP** forecasts					
Transparency	-0.08	-0.08**	-0.06	-0.11*	-0.19**	-0.05**	0.06	0.03	0.35*	0.05	0.03	0.04
(t-stat)	(-1.4)	(-2.15)	(-0.87)	(-1.66)	(-2.55)	(-2.23)	(0.63)	(0.7)	(1.84)	(0.46)	(0.26)	(1)
Own lag	0.57***	0.57***	0.57***	0.57***	0.57***	0.57***	0.83***	0.83***	0.82***	0.83***	0.83***	0.83***
(t-stat)	(9.21)	(9.17)	(9.21)	(9.2)	(9.2)	(9.2)	(12.82)	(12.88)	(12.6)	(12.87)	(12.81)	(12.94)
Cond. volatility	0.06	0.07	0.06	0.06	0.06	0.07	0.34**	0.33**	0.33**	0.34**	0.34**	0.33**
(t-stat)	(0.91)	(1.12)	(0.9)	(0.96)	(0.96)	(1.17)	(1.97)	(1.97)	(1.96)	(1.98)	(1.97)	(1.97)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.01	0.01	0.01	0.01	0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
(t-stat)	(0.96)	(1.03)	(0.96)	(0.99)	(1)	(1.05)	(-0.69)	(-0.73)	(-0.83)	(-0.7)	(-0.67)	(-0.82)
Number of Obs.	2178	2178	2178	2178	2178	2178	1974	1974	1974	1974	1974	1974
R^2	58.01%	58.09%	58%	58.04%	58.07%	58.11%	88.49%	88.49%	88.53%	88.49%	88.48%	88.49%
Dependent variable	Absolute forecast error of the average **current year consumption** forecasts						Absolute forecast error of the average **next year consumption** forecasts					
Transparency	-0.19***	-0.11**	-0.22**	-0.17**	-0.24***	-0.08***	-0.01	0.02	0.28**	-0.08	-0.18	0.01
(t-stat)	(-3.2)	(-2.24)	(-2.03)	(-2.34)	(-3)	(-2.76)	(-0.13)	(0.58)	(2.26)	(-0.92)	(-1.33)	(0.29)
Own lag	0.54***	0.54***	0.54***	0.54***	0.54***	0.54***	0.77***	0.78***	0.77***	0.77***	0.77***	0.78***
(t-stat)	(6.85)	(6.77)	(6.77)	(6.86)	(6.84)	(6.71)	(8.34)	(8.36)	(8.37)	(8.31)	(8.22)	(8.35)
Cond. volatility	0.24*	0.24*	0.25*	0.24*	0.23*	0.25*	0.16	0.16	0.14	0.16	0.16	0.16
(t-stat)	(1.71)	(1.74)	(1.74)	(1.7)	(1.7)	(1.76)	(1.48)	(1.47)	(1.38)	(1.49)	(1.49)	(1.47)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
(t-stat)	(0.11)	(0.34)	(0.14)	(0.2)	(0.14)	(0.43)	(-0.77)	(-0.85)	(-1)	(-0.65)	(-0.64)	(-0.8)
Number of Obs.	2178	2178	2178	2178	2178	2178	1974	1974	1974	1974	1974	1974
R^2	64.92%	65%	64.93%	64.93%	64.94%	65.06%	90.56%	90.56%	90.58%	90.56%	90.57%	90.56%

Notes: The same as below Table 28.

Table 30
Central bank transparency and dispersion of forecasts - benchmark model, longer sample period

(Sample: October 1989 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Standard deviation of the individual **3-months-ahead short rate** forecasts						Standard deviation of the individual **12-months-ahead short rate** forecasts					
Transparency	-0.07***	-0.03***	-0.01	-0.02*	-0.05***	-0.02***	-0.13*	-0.09***	-0.03	-0.06	-0.12*	-0.05***
(t-stat)	(-3.59)	(-2.91)	(-0.43)	(-1.88)	(-2.71)	(-3.09)	(-1.87)	(-3.67)	(-0.7)	(-1.54)	(-1.82)	(-3.85)
Cond. volatility	0.17***	0.16***	0.17***	0.17***	0.17***	0.17***	0.17***	0.13***	0.16***	0.16***	0.17***	0.14***
(t-stat)	(3.92)	(3.62)	(3.9)	(3.88)	(3.92)	(3.69)	(3.41)	(2.76)	(3.35)	(3.2)	(3.32)	(2.93)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	0	0	0	0	0	0
(t-stat)	(0.38)	(0.93)	(0.22)	(0.41)	(0.33)	(0.92)	(-0.81)	(0.63)	(-0.98)	(-0.67)	(-0.8)	(0.34)
Number of Obs.	873	873	873	873	873	873	230	230	230	230	230	230
R^2	45.52%	46.05%	44.84%	45.04%	45.11%	46.02%	50.43%	52.01%	50.07%	50.29%	50.36%	51.6%
Dependent variable	Standard deviation of the individual **3-months-ahead long rate** forecasts						Standard deviation of the individual **12-months-ahead long rate** forecasts					
Transparency	-0.01	-0.01	0.01	-0.01	-0.03*	0	-0.01	-0.03***	-0.04	-0.04**	-0.09***	-0.02***
(t-stat)	(-0.39)	(-1.28)	(0.44)	(-0.57)	(-1.74)	(-1.03)	(-0.29)	(-2.71)	(-0.88)	(-1.97)	(-3.53)	(-2.65)
Cond. volatility	0.48***	0.46***	0.49***	0.48***	0.47***	0.46***	0.93***	0.83***	0.92***	0.89***	0.91***	0.84***
(t-stat)	(6.78)	(6.36)	(6.78)	(6.76)	(6.77)	(6.48)	(5.7)	(4.97)	(5.71)	(5.4)	(5.66)	(4.98)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	0.01	0.01*	0.01	0.01	0.01	0.01*
(t-stat)	(0.9)	(1.08)	(0.85)	(0.94)	(0.99)	(1.08)	(1.34)	(1.79)	(1.36)	(1.57)	(1.62)	(1.94)
Number of Obs.	792	792	792	792	792	792	203	203	203	203	203	203
R^2	27.68%	27.87%	27.68%	27.7%	27.99%	27.85%	48%	49.08%	48.13%	48.72%	49.46%	49.42%
Dependent variable	Standard deviation of the individual **current year CPI** forecasts						Standard deviation of the individual **next year CPI** forecasts					
Transparency	-0.11	-0.09***	-0.04	-0.1**	-0.07	-0.05***	-0.08	-0.17***	-0.03	-0.16**	-0.06	-0.08***
(t-stat)	(-1.06)	(-3.23)	(-0.72)	(-2.13)	(-1.34)	(-2.9)	(-1.05)	(-3.44)	(-0.46)	(-2.03)	(-0.87)	(-3.11)
Cond. volatility	0.1	0.11	0.1	0.1	0.1	0.1	0.15	0.16	0.15	0.15	0.15	0.15
(t-stat)	(1.46)	(1.6)	(1.44)	(1.51)	(1.44)	(1.6)	(1.16)	(1.29)	(1.16)	(1.19)	(1.16)	(1.24)
$\lvert\Delta oil_{t-1}\rvert$	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0	0.01**	0	0	0	0.01
(t-stat)	(3.02)	(4.48)	(2.94)	(3.47)	(3.23)	(3.96)	(0.13)	(2.24)	(0.07)	(0.52)	(0.13)	(1.54)
Number of Obs.	275	275	275	275	275	275	144	144	144	144	144	144
R^2	73.87%	75.36%	73.74%	74.2%	73.79%	75.03%	71.03%	73.47%	70.99%	71.66%	71.02%	72.58%
Dependent variable	Standard deviation of the individual **current year GDP** forecasts						Standard deviation of the individual **next year GDP** forecasts					
Transparency	-0.15***	-0.07***	0.01	-0.09	-0.14***	-0.04***	-0.14***	-0.09***	-0.01	-0.11*	-0.09	-0.05***
(t-stat)	(-2.75)	(-2.91)	(0.17)	(-1.62)	(-2.72)	(-3.03)	(-2.88)	(-4.48)	(-0.1)	(-1.78)	(-1.43)	(-3.45)
Cond. volatility	0.01	0.02	0.01	0.01	0.01	0.02	0.04	0.05**	0.04	0.04	0.04	0.05*
(t-stat)	(0.44)	(0.87)	(0.41)	(0.57)	(0.4)	(0.75)	(1.45)	(2.13)	(1.24)	(1.35)	(1.52)	(1.88)
$\lvert\Delta oil_{t-1}\rvert$	0.03***	0.03***	0.02**	0.03**	0.03***	0.03***	0.01*	0.02***	0.01	0.01**	0.01*	0.02***
(t-stat)	(2.64)	(3.12)	(2.53)	(2.56)	(2.65)	(3.1)	(1.79)	(2.81)	(1.57)	(2.07)	(1.71)	(2.96)
Number of Obs.	267	267	267	267	267	267	139	139	139	139	139	139
R^2	51.27%	52.85%	50.45%	51.38%	51.33%	52.8%	72.24%	74.21%	71.56%	72.8%	71.92%	74.02%
Dependent variable	Standard deviation of the individual **current year consumption** forecasts						Standard deviation of the individual **next year consumption** forecasts					
Transparency	-0.04	-0.03	-0.15**	0.03	-0.07	-0.02	0.09	-0.06**	0.03	0.06	0.01	-0.01
(t-stat)	(-0.3)	(-1.19)	(-2.16)	(0.5)	(-0.8)	(-1.14)	(0.58)	(-2.13)	(0.3)	(0.58)	(0.07)	(-0.37)
Cond. volatility	-0.03	-0.03	-0.01	-0.03	-0.03	-0.03	-0.08	-0.08	-0.09	-0.08	-0.09	-0.08
(t-stat)	(-0.59)	(-0.61)	(-0.33)	(-0.61)	(-0.62)	(-0.56)	(-1.47)	(-1.46)	(-1.29)	(-1.49)	(-1.44)	(-1.4)
$\lvert\Delta oil_{t-1}\rvert$	0.02**	0.02**	0.02**	0.01**	0.02**	0.02**	0.01	0.01**	0.01	0.01	0.01*	0.01**
(t-stat)	(2.46)	(2.29)	(2.4)	(2.01)	(2.52)	(2.49)	(1.57)	(2.5)	(1.5)	(1.32)	(1.74)	(2.06)
Number of Obs.	267	267	267	267	267	267	139	139	139	139	139	139
R^2	76.36%	76.51%	76.79%	76.39%	76.42%	76.5%	77.69%	78.08%	77.58%	77.71%	77.56%	77.6%

Notes: The same as below Table 24.

Table 31
Central bank transparency and forecast accuracy - benchmark model, longer sample period

(Sample: October 1989 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Absolute forecast error of the average **3-months-ahead short rate** forecasts						Absolute forecast error of the average **12-months-ahead short rate** forecasts					
Transparency	-0.18**	-0.11***	0.03	-0.09*	-0.19***	-0.06***	-0.29	-0.21	-0.46	-0.12	-0.27	-0.13
(t-stat)	(-2.02)	(-3.12)	(0.37)	(-1.7)	(-2.65)	(-3.12)	(-0.77)	(-1.58)	(-0.92)	(-0.64)	(-0.8)	(-1.64)
Cond. volatility	0.46***	0.42***	0.46***	0.45***	0.46***	0.43***	0.4**	0.3*	0.37**	0.38**	0.39**	0.32*
(t-stat)	(3.1)	(2.87)	(3.1)	(3.06)	(3.1)	(2.91)	(2.29)	(1.77)	(2.19)	(2.22)	(2.23)	(1.93)
$\lvert\Delta oil_{t-1}\rvert$	0.02	0.03	0.02	0.02	0.02	0.03	0.01	0.03	0.02	0.01	0.01	0.03
(t-stat)	(0.96)	(1.23)	(0.87)	(0.98)	(0.97)	(1.21)	(0.45)	(0.87)	(0.55)	(0.51)	(0.45)	(0.97)
Number of Obs.	873	873	873	873	873	873	230	230	230	230	230	230
R^2	21.49%	22.44%	21.07%	21.35%	21.44%	22.24%	14.55%	15.83%	15.36%	14.45%	14.53%	15.88%
Dependent variable	Absolute forecast error of the average **3-months-ahead long rate** forecasts						Absolute forecast error of the average **12-months-ahead long rate** forecasts					
Transparency	0.02	-0.07**	0.07	-0.07	-0.02	-0.03*	-0.05	-0.33***	-0.15	-0.23	-0.32	-0.15**
(t-stat)	(0.44)	(-2.42)	(0.92)	(-1.64)	(-0.38)	(-1.65)	(-0.19)	(-2.83)	(-0.78)	(-1.37)	(-1.46)	(-2.2)
Cond. volatility	1.66***	1.44***	1.67***	1.6***	1.65***	1.53***	3.51***	2.45*	3.49***	3.31***	3.44***	2.82**
(t-stat)	(4.75)	(4.22)	(4.74)	(4.7)	(4.71)	(4.41)	(2.77)	(1.91)	(2.74)	(2.65)	(2.75)	(2.2)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.01**	0.01	0.01**	0.01	0.01**	-0.06***	-0.04**	-0.06***	-0.05***	-0.06***	-0.04**
(t-stat)	(1.54)	(2.44)	(1.53)	(1.96)	(1.62)	(2.12)	(-4.41)	(-2.31)	(-4.54)	(-3.81)	(-4.44)	(-2.47)
Number of Obs.	792	792	792	792	792	792	203	203	203	203	203	203
R^2	17.92%	19.05%	17.98%	18.33%	17.92%	18.49%	37.69%	43.59%	37.79%	38.77%	38.46%	41.53%
Dependent variable	Absolute forecast error of the average **current year CPI** forecasts						Absolute forecast error of the average **next year CPI** forecasts					
Transparency	-0.33	-0.14**	0.1	-0.18*	-0.15	-0.08*	0.49	0.16	-0.21	0.28	1.02	0.13
(t-stat)	(-1.51)	(-2.07)	(0.46)	(-1.8)	(-0.67)	(-1.66)	(0.85)	(1.36)	(-0.59)	(0.78)	(1.25)	(1.21)
Cond. volatility	0.35***	0.36***	0.35***	0.35***	0.35***	0.36***	0.75***	0.74***	0.74***	0.75***	0.75***	0.75***
(t-stat)	(4.4)	(4.54)	(4.37)	(4.48)	(4.4)	(4.53)	(3.65)	(3.62)	(3.74)	(3.56)	(3.8)	(3.55)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.02	0	0.01	0.01	0.01	-0.19*	-0.2*	-0.18*	-0.19*	-0.2*	-0.2*
(t-stat)	(0.8)	(1.04)	(0.36)	(0.89)	(0.68)	(1.03)	(-1.91)	(-1.83)	(-1.88)	(-1.78)	(-1.91)	(-1.84)
Number of Obs.	275	275	275	275	275	275	118	118	118	118	118	118
R^2	50.72%	51.03%	50.49%	50.7%	50.52%	50.94%	54.64%	54.67%	54.52%	54.66%	55.51%	54.87%
Dependent variable	Absolute forecast error of the average **current year GDP** forecasts						Absolute forecast error of the average **next year GDP** forecasts					
Transparency	0.16	-0.24***	0.18	-0.22	-0.37	-0.11*	-0.15	0.24	0.25	0.08	-0.42	0.07
(t-stat)	(0.32)	(-3.34)	(0.63)	(-1.22)	(-0.93)	(-1.83)	(-0.45)	(1.59)	(0.97)	(0.2)	(-1.54)	(0.72)
Cond. volatility	0.25**	0.28***	0.25**	0.26**	0.25**	0.27**	-0.05	-0.11	-0.06	-0.05	-0.04	-0.08
(t-stat)	(2.47)	(2.6)	(2.44)	(2.48)	(2.25)	(2.48)	(-0.49)	(-1.07)	(-0.69)	(-0.5)	(-0.32)	(-0.73)
$\lvert\Delta oil_{t-1}\rvert$	0.12***	0.14***	0.12***	0.13***	0.13***	0.13***	-0.05	-0.08	-0.05	-0.05	-0.04	-0.06
(t-stat)	(4.52)	(5.28)	(4.32)	(4.41)	(4.76)	(5.52)	(-0.98)	(-1.63)	(-0.99)	(-1.02)	(-0.92)	(-1.25)
Number of Obs.	267	267	267	267	267	267	115	115	115	115	115	115
R^2	69.73%	70.28%	69.75%	69.84%	69.85%	70.02%	27%	28.52%	27.2%	27%	27.6%	27.41%
Dependent variable	Absolute forecast error of the average **current year consumption** forecasts						Absolute forecast error of the average **next year consumption** forecasts					
Transparency	-0.32	-0.36***	-0.9**	-0.3	-0.49	-0.22***	-0.73**	0.11	-0.61	-0.53	-1.04***	-0.12
(t-stat)	(-1.04)	(-3.19)	(-2.44)	(-1.13)	(-1.54)	(-3.9)	(-2)	(0.58)	(-1.37)	(-1.24)	(-4.12)	(-0.79)
Cond. volatility	0.75**	0.74**	0.83***	0.75**	0.74**	0.76***	0.39**	0.38*	0.47*	0.38**	0.4**	0.41**
(t-stat)	(2.47)	(2.55)	(3.11)	(2.43)	(2.45)	(2.59)	(2.16)	(1.8)	(1.76)	(2.43)	(2.27)	(2)
$\lvert\Delta oil_{t-1}\rvert$	0.02	0.04*	0.02	0.02	0.02	0.04**	0	-0.03	-0.01	0.01	0	0.01
(t-stat)	(0.87)	(1.82)	(1.01)	(0.99)	(1.02)	(2.02)	(-0.06)	(-0.55)	(-0.24)	(0.17)	(0.11)	(0.24)
Number of Obs.	267	267	267	267	267	267	115	115	115	115	115	115
R^2	75.58%	76.39%	76.21%	75.68%	75.69%	76.47%	57.73%	57.28%	57.72%	58.28%	58.89%	57.62%

Notes: The same as below Table 24.

Table 32
Central bank transparency and dispersion of forecasts - benchmark model, the sample covers only the advanced countries

(Sample: January 1998 - December 2009, 12 advanced countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Standard deviation of the individual **3-months-ahead short rate** forecasts						Standard deviation of the individual **12-months-ahead short rate** forecasts					
Transparency	-0.06***	0	-0.01	0	-0.04**	0	-0.12**	-0.01	-0.1	0	-0.07	-0.01
(t-stat)	(-3.11)	(0.5)	(-0.36)	(-0.12)	(-2.07)	(-0.85)	(-2.06)	(-0.47)	(-1.56)	(0.01)	(-1.6)	(-1.2)
Cond. volatility	0.22***	0.24***	0.23***	0.23***	0.23***	0.23***	0	-0.01	0	0	-0.01	-0.01
(t-stat)	(3.94)	(3.8)	(3.84)	(3.78)	(3.77)	(3.67)	(-0.04)	(-0.14)	(0.05)	(-0.02)	(-0.15)	(-0.25)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	0.01*	0.01	0.01	0.01	0.01	0.01
(t-stat)	(1)	(0.69)	(0.77)	(0.76)	(0.87)	(0.85)	(1.71)	(1.37)	(1.3)	(1.21)	(1.43)	(1.56)
Number of Obs.	548	548	548	548	548	548	142	142	142	142	142	142
R^2	41.81%	39.41%	39.38%	39.37%	39.89%	39.54%	43.13%	40%	40.89%	39.87%	40.78%	40.71%
Dependent variable	Standard deviation of the individual **3-months-ahead long rate** forecasts						Standard deviation of the individual **12-months-ahead long rate** forecasts					
Transparency	-0.01	-0.01	0.01	0.01	-0.02	0	0	-0.03**	0	-0.01	-0.07**	-0.01
(t-stat)	(-0.69)	(-1.05)	(0.65)	(0.62)	(-1.27)	(-0.65)	(-0.11)	(-2.41)	(-0.02)	(-0.32)	(-2.52)	(-1.63)
Cond. volatility	0.65***	0.63***	0.66***	0.67***	0.65***	0.64***	1.02***	0.94***	1.02***	1.02***	1.02***	0.97***
(t-stat)	(8.33)	(8.23)	(8.27)	(8.56)	(8.25)	(8.06)	(5.44)	(4.8)	(5.41)	(5.48)	(4.99)	(5.03)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	0.01	0.01**	0.01	0.01	0.01*	0.01*
(t-stat)	(1.37)	(1.49)	(1.29)	(1.19)	(1.38)	(1.4)	(1.53)	(1.97)	(1.52)	(1.57)	(1.76)	(1.86)
Number of Obs.	502	502	502	502	502	502	130	130	130	130	130	130
R^2	18.96%	19.12%	18.89%	18.95%	19.04%	18.97%	30.6%	32.59%	30.6%	30.64%	32.16%	31.84%
Dependent variable	Standard deviation of the individual **current year CPI** forecasts						Standard deviation of the individual **next year CPI** forecasts					
Transparency	0.08**	-0.02	0.07	0.04	0.03	0	0.01	-0.05***	0.05	-0.05**	0.03	-0.02**
(t-stat)	(2.41)	(-1.12)	(1.25)	(0.79)	(0.82)	(0.22)	(0.16)	(-5.4)	(0.97)	(-1.99)	(0.87)	(-2.49)
Cond. volatility	0	0.01	0	0	0	0	-0.05*	-0.03	-0.05*	-0.04	-0.05*	-0.04*
(t-stat)	(0.02)	(0.4)	(0.11)	(0)	(0.17)	(0.15)	(-1.91)	(-1.36)	(-1.79)	(-1.57)	(-1.73)	(-1.67)
$\lvert\Delta oil_{t-1}\rvert$	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
(t-stat)	(2.68)	(2.9)	(2.93)	(2.8)	(2.79)	(2.68)	(2.99)	(4.49)	(3.16)	(3.46)	(2.83)	(3.76)
Number of Obs.	142	142	142	142	142	142	72	72	72	72	72	72
R^2	42.72%	42.02%	41.79%	41.78%	41.42%	41.25%	38.72%	42.02%	38.94%	39.47%	38.86%	39.88%
Dependent variable	Standard deviation of the individual **current year GDP** forecasts						Standard deviation of the individual **next year GDP** forecasts					
Transparency	-0.11**	-0.03	-0.07	-0.01	-0.11**	-0.02**	-0.12***	-0.09***	-0.13	-0.12***	-0.05	-0.05***
(t-stat)	(-2.04)	(-1.59)	(-1.46)	(-0.28)	(-2.49)	(-2.25)	(-3.23)	(-3.6)	(-1.44)	(-4.29)	(-0.57)	(-4.7)
Cond. volatility	0.04	0.05	0.05	0.05	0.04	0.05	0.05**	0.07***	0.06*	0.07**	0.05**	0.07**
(t-stat)	(1.37)	(1.59)	(1.37)	(1.39)	(1.33)	(1.56)	(2.05)	(2.71)	(1.88)	(2.06)	(2.02)	(2.53)
$\lvert\Delta oil_{t-1}\rvert$	0.01*	0.01*	0.01*	0.01*	0.01*	0.01**	0.01**	0.01***	0.01*	0.01**	0.01	0.01***
(t-stat)	(1.94)	(1.96)	(1.69)	(1.66)	(1.96)	(2)	(2.14)	(3.88)	(1.65)	(1.99)	(1.57)	(3.59)
Number of Obs.	142	142	142	142	142	142	72	72	72	72	72	72
R^2	46.81%	45.42%	44.92%	44.47%	46.34%	46.2%	57.43%	61.18%	56.57%	58.11%	55.84%	61.06%
Dependent variable	Standard deviation of the individual **current year consumption** forecasts						Standard deviation of the individual **next year consumption** forecasts					
Transparency	-0.08	0	-0.03	0.04	-0.09	0	0	-0.05***	0.03	-0.01	-0.02	-0.02**
(t-stat)	(-0.72)	(-0.01)	(-0.39)	(0.89)	(-1.59)	(-0.35)	(-0.07)	(-3.95)	(0.58)	(-0.21)	(-0.23)	(-2.13)
Cond. volatility	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	0.01	0.02	0.01	0.01	0.01	0.01
(t-stat)	(-0.64)	(-0.74)	(-0.76)	(-0.89)	(-0.76)	(-0.73)	(0.19)	(0.55)	(0.19)	(0.24)	(0.17)	(0.38)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.01	0.01	0.01	0.01	0.01	0.01***	0.01***	0.01***	0.01**	0.01***	0.01***
(t-stat)	(1.64)	(1.33)	(1.5)	(1.35)	(1.63)	(1.41)	(2.76)	(3.13)	(2.64)	(2.35)	(2.63)	(2.82)
Number of Obs.	142	142	142	142	142	142	72	72	72	72	72	72
R^2	33.35%	32.35%	32.44%	32.8%	33.5%	32.43%	49.75%	51.59%	49.81%	49.78%	49.79%	50.43%

Notes: The same as below Table 24.

Table 33

Central bank transparency and forecast accuracy - benchmark model, the sample covers only the advanced countries

(Sample: January 1998 - December 2009, 12 advanced countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Absolute forecast error of the average **3-months-ahead short rate** forecasts						Absolute forecast error of the average **12-months-ahead short rate** forecasts					
Transparency	-0.2**	-0.08**	-0.04	-0.11	-0.25***	-0.06**	-0.33	-0.13	0.11	-0.16	-0.43	-0.08
(t-stat)	(-2.02)	(-2.01)	(-0.52)	(-1.44)	(-2.61)	(-2.49)	(-0.95)	(-1.01)	(0.3)	(-0.92)	(-1.24)	(-1.1)
Cond. volatility	0.27	0.26	0.32	0.29	0.27	0.24	-0.1	-0.2	-0.11	-0.12	-0.14	-0.18
(t-stat)	(1.39)	(1.3)	(1.51)	(1.42)	(1.35)	(1.22)	(-0.24)	(-0.54)	(-0.24)	(-0.3)	(-0.34)	(-0.49)
$\lvert\Delta oil_{t-1}\rvert$	0.03	0.04	0.03	0.03	0.03	0.04	0.05	0.06	0.05	0.05	0.06	0.06*
(t-stat)	(1.28)	(1.32)	(1.17)	(1.25)	(1.27)	(1.39)	(1.44)	(1.61)	(1.37)	(1.54)	(1.49)	(1.68)
Number of Obs.	548	548	548	548	548	548	142	142	142	142	142	142
R^2	16.35%	16.42%	15.12%	15.59%	16.3%	16.98%	18.97%	19.07%	18.26%	18.56%	19.22%	19.32%
Dependent variable	Absolute forecast error of the average **3-months-ahead long rate** forecasts						Absolute forecast error of the average **12-months-ahead long rate** forecasts					
Transparency	-0.03	-0.05	-0.01	-0.03	-0.08	-0.02	-0.11	-0.34*	-0.51	-0.38	-0.48	-0.17
(t-stat)	(-0.56)	(-1.32)	(-0.2)	(-0.38)	(-1.12)	(-1.01)	(-0.35)	(-1.75)	(-1.46)	(-1.34)	(-1.3)	(-1.6)
Cond. volatility	0.61*	0.46	0.62*	0.59*	0.6*	0.5	0.34	-0.61	0.34	0.07	0.38	-0.35
(t-stat)	(1.74)	(1.4)	(1.79)	(1.73)	(1.71)	(1.47)	(0.3)	(-0.64)	(0.32)	(0.07)	(0.35)	(-0.4)
$\lvert\Delta oil_{t-1}\rvert$	0	0.01	0	0	0	0.01	-0.06***	-0.04**	-0.06***	-0.05***	-0.05***	-0.04**
(t-stat)	(0.69)	(1.06)	(0.64)	(0.71)	(0.78)	(0.99)	(-3.27)	(-2.3)	(-3.27)	(-2.82)	(-3.45)	(-2.24)
Number of Obs.	502	502	502	502	502	502	130	130	130	130	130	130
R^2	4.45%	5.57%	4.39%	4.48%	4.81%	5.21%	25.19%	35.38%	26.73%	28.65%	27.6%	33.81%
Dependent variable	Absolute forecast error of the average **current year CPI** forecasts						Absolute forecast error of the average **next year CPI** forecasts					
Transparency	-0.36	-0.1*	-0.44	-0.24	-0.31	-0.09	0.62**	0.14	0.96***	0.45*	0.5	0.15*
(t-stat)	(-1.6)	(-1.65)	(-0.95)	(-1.27)	(-0.94)	(-1.5)	(2.44)	(1.2)	(2.99)	(1.72)	(1.13)	(1.93)
Cond. volatility	-0.03	-0.02	-0.04	-0.02	-0.05	-0.01	-0.03	-0.06	-0.03	-0.07	-0.01	-0.09
(t-stat)	(-0.65)	(-0.63)	(-0.87)	(-0.42)	(-1.05)	(-0.21)	(-0.28)	(-0.94)	(-0.25)	(-0.92)	(-0.05)	(-1.19)
$\lvert\Delta oil_{t-1}\rvert$	0.02***	0.02***	0.02***	0.02***	0.02***	0.03***	-0.06*	-0.06	-0.05	-0.05	-0.06	-0.07*
(t-stat)	(4.21)	(4.71)	(3.21)	(3.46)	(4.42)	(4.13)	(-1.67)	(-1.55)	(-1.33)	(-1.39)	(-1.56)	(-1.84)
Number of Obs.	142	142	142	142	142	142	60	60	60	60	60	60
R^2	18.91%	17.62%	17.82%	18.34%	17.48%	20.68%	36.99%	31.79%	37.82%	35.12%	33.47%	38.5%
Dependent variable	Absolute forecast error of the average **current year GDP** forecasts						Absolute forecast error of the average **next year GDP** forecasts					
Transparency	-0.46*	-0.23***	-0.43	-0.46*	-0.83***	-0.17***	-0.18	0.11	0.94**	-0.27	-0.48	0.01
(t-stat)	(-1.87)	(-2.67)	(-0.8)	(-1.87)	(-3.13)	(-2.91)	(-0.64)	(0.6)	(2.07)	(-0.43)	(-1.04)	(0.06)
Cond. volatility	0.23	0.28	0.24	0.28	0.22	0.29	0.29	0.23	0.25	0.32	0.32	0.27
(t-stat)	(1.24)	(1.54)	(1.23)	(1.5)	(1.09)	(1.56)	(1.22)	(0.93)	(0.98)	(1.49)	(1.35)	(1.14)
$\lvert\Delta oil_{t-1}\rvert$	0.07***	0.08***	0.07***	0.07***	0.08***	0.08***	-0.1	-0.11	-0.1	-0.1	-0.1	-0.11
(t-stat)	(3.19)	(3.64)	(2.92)	(3.25)	(3.61)	(4.25)	(-1.42)	(-1.46)	(-1.39)	(-1.6)	(-1.31)	(-1.36)
Number of Obs.	142	142	142	142	142	142	60	60	60	60	60	60
R^2	24.66%	25.75%	23.95%	25.59%	26.52%	27.27%	18.7%	18.9%	20.46%	19.06%	19.43%	18.56%
Dependent variable	Absolute forecast error of the average **current year consumption** forecasts						Absolute forecast error of the average **next year consumption** forecasts					
Transparency	-0.55***	-0.14	-0.79	-0.48*	-0.78*	-0.15*	-0.14	0.31	-0.26	-0.15	-0.81	0.04
(t-stat)	(-3.01)	(-0.91)	(-1.41)	(-1.94)	(-1.9)	(-1.93)	(-0.37)	(0.96)	(-0.33)	(-0.24)	(-1.57)	(0.2)
Cond. volatility	0.51***	0.5***	0.48**	0.53***	0.48**	0.52***	0.3	0.17	0.28	0.3	0.3	0.26
(t-stat)	(2.73)	(2.66)	(2.39)	(2.97)	(2.39)	(2.99)	(0.58)	(0.28)	(0.54)	(0.55)	(0.54)	(0.44)
$\lvert\Delta oil_{t-1}\rvert$	-0.01	0	-0.01	0	0	0	-0.08	-0.1	-0.08	-0.08	-0.06	-0.08
(t-stat)	(-0.32)	(-0.22)	(-0.45)	(-0.24)	(-0.25)	(0.1)	(-1.14)	(-1.19)	(-1.28)	(-1.31)	(-0.98)	(-1.11)
Number of Obs.	142	142	142	142	142	142	60	60	60	60	60	60
R^2	15.18%	14.22%	15.13%	15.94%	16.38%	16.72%	18.84%	21.67%	18.9%	18.92%	21.44%	18.88%

Notes: The same as below Table 24.

Table 34
Central bank transparency and dispersion of short rate forecasts before the outbreak of the recent financial crisis - benchmark model

(Sample: January 1998 - September 2008, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Standard deviation of the individual **3-months-ahead short rate** forecasts						Standard deviation of the individual **12-months-ahead short rate** forecasts					
Transparency	-0.06**	-0.02	-0.02	0	-0.04*	-0.01	-0.05	-0.05	0.01	0.04	-0.01	-0.02
(t-stat)	(-2.53)	(-1.54)	(-0.54)	(-0.1)	(-1.7)	(-1.52)	(-1.03)	(-1.57)	(0.06)	(0.76)	(-0.09)	(-1.14)
Cond. volatility	0.15	0.15	0.15	0.15	0.15	0.15	0.3	0.26	0.3	0.31	0.3	0.27
(t-stat)	(1.38)	(1.41)	(1.34)	(1.41)	(1.4)	(1.36)	(0.97)	(0.89)	(0.84)	(0.99)	(0.97)	(0.86)
$\lvert\Delta oil_{t-1}\rvert$	0**	0**	0**	0**	0**	0*	0	0	0	0	0	0
(t-stat)	(-2.06)	(-1.98)	(-2.27)	(-2.29)	(-2.24)	(-1.68)	(-0.28)	(0.06)	(-0.36)	(-0.39)	(-0.34)	(-0.13)
Number of Obs.	568	568	568	568	568	568	154	154	154	154	154	154
R^2	47.53%	47.08%	46.86%	46.76%	46.92%	47.23%	55.49%	55.92%	55.43%	55.48%	55.43%	55.59%

Notes: The same as below Table 24.

Table 35
Central bank transparency and accuracy of the short rate forecasts before the outbreak of the recent financial crisis - benchmark model

(Sample: January 1998 - September 2008, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Absolute forecast error of the average **3-months-ahead short rate** forecasts						Absolute forecast error of the average **12-months-ahead short rate** forecasts					
Transparency	-0.17*	-0.1***	0.08	-0.08	-0.19**	-0.05**	-0.32	-0.18	-0.11	-0.09	-0.43	-0.11
(t-stat)	(-1.65)	(-2.64)	(0.7)	(-1.14)	(-2.03)	(-2.39)	(-0.87)	(-1.52)	(-0.19)	(-0.37)	(-1.25)	(-1.43)
Cond. volatility	0.36	0.35	0.38	0.36	0.36	0.34	1.36	1.25	1.32*	1.37	1.35	1.2
(t-stat)	(1.31)	(1.34)	(1.32)	(1.33)	(1.32)	(1.28)	(1.56)	(1.41)	(1.73)	(1.55)	(1.54)	(1.33)
$\lvert\Delta oil_{t-1}\rvert$	0	0.01	0	0	0	0.01	0.15***	0.16***	0.15***	0.15***	0.15***	0.16***
(t-stat)	(0.14)	(0.65)	(-0.19)	(0.12)	(0.14)	(0.62)	(3.12)	(3.2)	(2.96)	(3.08)	(3.16)	(3.3)
Number of Obs.	568	568	568	568	568	568	154	154	154	154	154	154
R^2	22.34%	23.31%	21.73%	21.83%	22.22%	22.97%	37.77%	38.53%	37.44%	37.44%	37.96%	38.46%

Notes: The same as below Table 24.

Table 36
Central bank transparency and dispersion of forecasts - benchmark model, the sample covers only Germany among the EMU founding members

(Sample: January 1998 - December 2009, 22 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Standard deviation of the individual **3-months-ahead short rate** forecasts						Standard deviation of the individual **12-months-ahead short rate** forecasts					
Transparency	-0.07***	-0.03*	0	-0.01	-0.05**	-0.01*	-0.11*	-0.12**	-0.02	0	-0.05	-0.04**
(t-stat)	(-2.94)	(-1.81)	(-0.08)	(-0.38)	(-1.96)	(-1.94)	(-1.71)	(-2.1)	(-0.33)	(0.05)	(-0.67)	(-2.45)
Cond. volatility	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.09	0.12	0.13	0.12	0.1
(t-stat)	(1.56)	(1.58)	(1.54)	(1.59)	(1.57)	(1.55)	(0.66)	(0.5)	(0.61)	(0.65)	(0.63)	(0.55)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	0	0.01	0	0	0	0
(t-stat)	(1.02)	(1.05)	(0.79)	(0.79)	(0.9)	(1.06)	(0.17)	(0.63)	(0.07)	(0.02)	(0.08)	(0.43)
Number of Obs.	440	440	440	440	440	440	122	122	122	122	122	122
R^2	49.15%	48.7%	48.28%	48.29%	48.5%	48.76%	53.28%	54.42%	53.03%	53.01%	53.05%	53.59%
Dependent variable	Standard deviation of the individual **3-months-ahead long rate** forecasts						Standard deviation of the individual **12-months-ahead long rate** forecasts					
Transparency	0.01	0	0.07***	0.02*	0.02	0.01	0.02	-0.01	0.01	0.01	-0.04	0
(t-stat)	(0.85)	(0.42)	(3.26)	(1.67)	(1.15)	(1.54)	(0.85)	(-0.65)	(0.16)	(0.7)	(-1.17)	(-0.06)
Cond. volatility	0.62***	0.62***	0.63***	0.63***	0.62***	0.63***	1.34***	1.31***	1.33***	1.33***	1.32***	1.33***
(t-stat)	(5.9)	(5.82)	(5.74)	(5.83)	(5.88)	(5.81)	(8.2)	(7.97)	(8.27)	(8.11)	(8.15)	(8.14)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	0.01**	0.01**	0.01**	0.01**	0.01***	0.01**
(t-stat)	(0.41)	(0.45)	(0.29)	(0.32)	(0.39)	(0.25)	(2.23)	(2.27)	(2.23)	(2.17)	(2.72)	(2.39)
Number of Obs.	416	416	416	416	416	416	110	110	110	110	110	110
R^2	34%	33.82%	35.41%	34.2%	34.07%	34.29%	60.56%	60.47%	60.43%	60.49%	60.68%	60.43%
Dependent variable	Standard deviation of the individual **current year CPI** forecasts						Standard deviation of the individual **next year CPI** forecasts					
Transparency	-0.12	-0.15**	-0.04	-0.11	-0.04	-0.05*	-0.14*	-0.21**	-0.05	-0.15	-0.08	-0.07**
(t-stat)	(-1.02)	(-2.53)	(-0.6)	(-1.51)	(-1.13)	(-1.92)	(-1.93)	(-2.31)	(-0.67)	(-1.04)	(-1.06)	(-2.46)
Cond. volatility	0.14	0.13*	0.14	0.13	0.14	0.13*	0.21	0.21	0.21	0.2	0.21	0.21
(t-stat)	(1.63)	(1.65)	(1.6)	(1.62)	(1.6)	(1.67)	(1.33)	(1.37)	(1.31)	(1.26)	(1.32)	(1.34)
$\lvert\Delta oil_{t-1}\rvert$	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.01	0.02***	0.01	0.01	0.01	0.01**
(t-stat)	(6.64)	(6.52)	(6.8)	(6.94)	(7.73)	(5.86)	(1.41)	(2.78)	(1.26)	(1.32)	(1.36)	(2.34)
Number of Obs.	162	162	162	162	162	162	86	86	86	86	86	86
R^2	75.84%	77.1%	75.66%	75.91%	75.65%	76.45%	75.57%	76.92%	75.45%	75.64%	75.47%	76.16%
Dependent variable	Standard deviation of the individual **current year GDP** forecasts						Standard deviation of the individual **next year GDP** forecasts					
Transparency	-0.13**	-0.06	0.04	-0.03	-0.1	-0.02	-0.12*	-0.06*	0.03	-0.01	-0.02	-0.02
(t-stat)	(-2.2)	(-1.6)	(0.59)	(-0.5)	(-1.56)	(-1.21)	(-1.69)	(-1.8)	(0.65)	(-0.08)	(-0.27)	(-0.82)
Cond. volatility	0.01	0.01	0	0	0.01	0.01	0.03	0.03	0.02	0.02	0.02	0.03
(t-stat)	(0.24)	(0.39)	(0.06)	(0.15)	(0.23)	(0.32)	(0.81)	(0.95)	(0.51)	(0.58)	(0.64)	(0.72)
$\lvert\Delta oil_{t-1}\rvert$	0.04***	0.04***	0.03***	0.04***	0.04***	0.04***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
(t-stat)	(4.01)	(3.98)	(3.82)	(3.71)	(3.96)	(4.06)	(3.17)	(2.99)	(2.98)	(2.89)	(2.85)	(3.08)
Number of Obs.	154	154	154	154	154	154	81	81	81	81	81	81
R^2	56.7%	56.49%	56.05%	56.01%	56.39%	56.38%	80.43%	80.28%	79.89%	79.84%	79.85%	80.04%
Dependent variable	Standard deviation of the individual **current year consumption** forecasts						Standard deviation of the individual **next year consumption** forecasts					
Transparency	0.03	-0.05	-0.11	0.13	0.04	0	0.18	0.02	0.13	0.28	0.09	0.05
(t-stat)	(0.21)	(-1.22)	(-1.4)	(1.07)	(0.58)	(-0.25)	(0.9)	(0.42)	(1.15)	(1.42)	(1.37)	(1.47)
Cond. volatility	-0.04	-0.04	-0.03	-0.04	-0.04	-0.04	-0.12*	-0.13*	-0.14*	-0.1*	-0.12*	-0.13*
(t-stat)	(-0.72)	(-0.67)	(-0.54)	(-0.7)	(-0.72)	(-0.7)	(-1.84)	(-1.76)	(-1.65)	(-1.93)	(-1.83)	(-1.95)
$\lvert\Delta oil_{t-1}\rvert$	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***	0.01***	0.02***	0.02***	0.01***	0.02***	0.01***
(t-stat)	(3.23)	(2.9)	(3.01)	(2.89)	(3.05)	(3.07)	(7.55)	(3.76)	(4.59)	(9.93)	(3.69)	(7.01)
Number of Obs.	154	154	154	154	154	154	81	81	81	81	81	81
R^2	77.37%	77.5%	77.62%	77.72%	77.39%	77.37%	83.01%	82.58%	82.91%	83.98%	82.7%	83.17%
Dependent variable	Standard deviation of the individual **3-months-ahead oil price** forecasts						Standard deviation of the individual **12-months-ahead oil price** forecasts					
Transparency	0	0	0	0	0	0	0.01	0.02*	0.03*	0.03	0.02	0.01
(t-stat)	(-0.36)	(0.08)	(1.18)	(-0.06)	(0.14)	(0.12)	(0.77)	(1.66)	(1.9)	(1.22)	(1.42)	(1.52)
Cond. volatility	0.11***	0.11***	0.11***	0.11***	0.11***	0.11***	0.36***	0.39***	0.36***	0.37***	0.37***	0.4***
(t-stat)	(3.22)	(3.21)	(3.3)	(3.22)	(3.23)	(3.19)	(4.75)	(5.53)	(5.02)	(5.13)	(4.99)	(5.65)
$\lvert\Delta oil_{t-1}\rvert$	0***	0***	0***	0***	0***	0***	0	0	0	0	0	0
(t-stat)	(4.05)	(3.96)	(3.99)	(3.99)	(4.03)	(3.9)	(0.61)	(0.08)	(0.65)	(0.37)	(0.47)	(-0.17)
Number of Obs.	606	606	606	606	606	606	194	194	194	194	194	194
R^2	70.16%	70.15%	70.22%	70.15%	70.15%	70.15%	81.88%	82.95%	82.35%	82.42%	82.08%	83.28%

Notes: The same as below Table 24.

Table 37
Central bank transparency and forecast accuracy - benchmark model, the sample covers only Germany among the EMU founding members

(Sample: January 1998 - December 2009, 22 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Absolute forecast error of the average **3-months-ahead short rate** forecasts						Absolute forecast error of the average **12-months-ahead short rate** forecasts					
Transparency	-0.19*	-0.13***	0.04	-0.08	-0.24**	-0.06***	-0.26	-0.17	-0.62	-0.02	-0.36	-0.13
(t-stat)	(-1.93)	(-2.78)	(0.41)	(-1.29)	(-2.47)	(-2.96)	(-0.69)	(-1.08)	(-1.24)	(-0.13)	(-0.92)	(-1.45)
Cond. volatility	0.28	0.27	0.29	0.29	0.28	0.27	-0.13	-0.18	-0.29	-0.13	-0.16	-0.21
(t-stat)	(1.11)	(1.13)	(1.13)	(1.14)	(1.1)	(1.1)	(-0.36)	(-0.5)	(-0.95)	(-0.35)	(-0.41)	(-0.64)
$\lvert\Delta oil_{t-1}\rvert$	0.03	0.04	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.04	0.04	0.05
(t-stat)	(1.41)	(1.48)	(1.25)	(1.33)	(1.4)	(1.49)	(1.13)	(1.24)	(1.6)	(1.13)	(1.17)	(1.48)
Number of Obs.	440	440	440	440	440	440	122	122	122	122	122	122
R^2	24.5%	24.74%	23.74%	23.84%	24.47%	24.62%	22.97%	23.17%	25.32%	22.69%	23.11%	23.9%
Dependent variable	Absolute forecast error of the average **3-months-ahead long rate** forecasts						Absolute forecast error of the average **12-months-ahead long rate** forecasts					
Transparency	-0.01	-0.04	0.03	-0.02	-0.04	-0.01	-0.14	-0.29	-0.19	-0.34	-0.46	-0.12
(t-stat)	(-0.13)	(-1.31)	(0.47)	(-0.4)	(-0.53)	(-0.65)	(-0.47)	(-1.5)	(-0.66)	(-1.58)	(-1.27)	(-1.35)
Cond. volatility	0.85**	0.8**	0.85**	0.84**	0.84**	0.83**	0.33	-0.09	0.36	0.18	0.34	0.04
(t-stat)	(2.2)	(2.13)	(2.19)	(2.19)	(2.2)	(2.16)	(0.29)	(-0.08)	(0.31)	(0.16)	(0.3)	(0.04)
$\lvert\Delta oil_{t-1}\rvert$	0.01***	0.02***	0.01***	0.01***	0.01***	0.02***	-0.03*	-0.02	-0.03*	-0.03	-0.03	-0.02
(t-stat)	(3.2)	(3.56)	(3.17)	(3.25)	(3.28)	(3.37)	(-1.79)	(-1.26)	(-1.84)	(-1.6)	(-1.61)	(-1.12)
Number of Obs.	416	416	416	416	416	416	110	110	110	110	110	110
R^2	18.67%	19.04%	18.71%	18.72%	18.74%	18.8%	27.12%	30.97%	27.18%	29.44%	29.66%	30.76%
Dependent variable	Absolute forecast error of the average **current year CPI** forecasts						Absolute forecast error of the average **next year CPI** forecasts					
Transparency	-0.24	-0.13	0.2	-0.08	-0.09	-0.03	1.25**	0.26	0.04	1.18	1.93***	0.33*
(t-stat)	(-0.91)	(-0.87)	(0.85)	(-0.29)	(-0.28)	(-0.36)	(2.17)	(0.72)	(0.09)	(1.4)	(2.73)	(1.81)
Cond. volatility	0.44***	0.44***	0.44***	0.44***	0.44***	0.44***	1.03***	1.02***	1.01***	1.08***	1.01***	1.06***
(t-stat)	(5.07)	(4.94)	(5.08)	(4.9)	(5.2)	(5.01)	(6.96)	(7.44)	(7.78)	(5.24)	(7.92)	(6.02)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.01	0	0.01	0.01	0.01	-0.27	-0.25	-0.25	-0.25	-0.28*	-0.26
(t-stat)	(0.61)	(0.61)	(0.26)	(0.53)	(0.52)	(0.52)	(-1.56)	(-1.42)	(-1.33)	(-1.42)	(-1.67)	(-1.59)
Number of Obs.	162	162	162	162	162	162	64	64	64	64	64	64
R^2	51.86%	51.88%	51.89%	51.75%	51.74%	51.77%	59.45%	58.61%	58.44%	59.78%	61.38%	59.83%
Dependent variable	Absolute forecast error of the average **current year GDP** forecasts						Absolute forecast error of the average **next year GDP** forecasts					
Transparency	-0.05	-0.14	0.04	-0.09	-0.64	-0.07	-0.25*	0.25*	0.11	-0.02	-0.81**	-0.01
(t-stat)	(-0.1)	(-0.87)	(0.14)	(-0.21)	(-1.36)	(-0.65)	(-1.77)	(1.88)	(0.37)	(-0.06)	(-2.06)	(-0.1)
Cond. volatility	0.28**	0.3**	0.28**	0.28**	0.3**	0.3**	-0.07	-0.13	-0.1	-0.08	-0.01	-0.08
(t-stat)	(2.15)	(2.1)	(2.17)	(2.12)	(2.1)	(2.17)	(-0.43)	(-0.7)	(-0.6)	(-0.51)	(-0.03)	(-0.46)
$\lvert\Delta oil_{t-1}\rvert$	0.15***	0.15***	0.15***	0.15***	0.15***	0.15***	-0.12***	-0.12***	-0.12***	-0.12***	-0.1***	-0.12***
(t-stat)	(4.8)	(4.56)	(4.37)	(4.56)	(4.98)	(5.15)	(-3.99)	(-3.37)	(-3.93)	(-4.29)	(-3.67)	(-4.14)
Number of Obs.	154	154	154	154	154	154	61	61	61	61	61	61
R^2	71.5%	71.56%	71.5%	71.51%	71.86%	71.58%	34.71%	35.3%	34.56%	34.5%	37.16%	34.5%
Dependent variable	Absolute forecast error of the average **current year consumption** forecasts						Absolute forecast error of the average **next year consumption** forecasts					
Transparency	-0.31	-0.54**	-1.04**	0.02	-0.61	-0.24***	-0.86**	-0.04	-0.86	-1.49**	-1.62***	-0.32*
(t-stat)	(-0.87)	(-2.42)	(-2.54)	(0.04)	(-1.38)	(-3.19)	(-2.06)	(-0.11)	(-1.51)	(-2.29)	(-4.35)	(-1.7)
Cond. volatility	0.85*	0.9**	0.97**	0.86**	0.85*	0.89**	0.48*	0.5	0.63	0.27	0.5*	0.54*
(t-stat)	(1.93)	(2.12)	(2.51)	(1.97)	(1.92)	(2.04)	(1.7)	(1.38)	(1.49)	(1.52)	(1.9)	(1.77)
$\lvert\Delta oil_{t-1}\rvert$	0.03	0.04	0.03	0.02	0.03	0.04	-0.01	-0.03	-0.03	-0.04	0	-0.02
(t-stat)	(0.79)	(1.08)	(0.91)	(0.62)	(0.96)	(1.25)	(-0.18)	(-0.32)	(-0.44)	(-1.07)	(0)	(-0.38)
Number of Obs.	154	154	154	154	154	154	61	61	61	61	61	61
R^2	78.39%	78.96%	79.24%	78.34%	78.55%	78.94%	62.1%	61.29%	62.47%	64.61%	64.87%	63.53%
Dependent variable	Absolute forecast error of the average **3-months-ahead oil price** forecasts						Absolute forecast error of the average **12-months-ahead oil price** forecasts					
Transparency	-0.03	-0.02	0	-0.02	-0.07	-0.01	-0.04	-0.03	0.02	-0.01	-0.08	-0.01
(t-stat)	(-0.87)	(-0.61)	(0.08)	(-0.57)	(-1.26)	(-0.71)	(-0.73)	(-0.64)	(0.61)	(-0.23)	(-1.12)	(-0.65)
Cond. volatility	-0.53*	-0.53*	-0.52*	-0.53*	-0.54*	-0.54*	-0.32	-0.34	-0.28	-0.3	-0.35	-0.35
(t-stat)	(-1.82)	(-1.79)	(-1.79)	(-1.79)	(-1.87)	(-1.81)	(-0.3)	(-0.32)	(-0.26)	(-0.28)	(-0.33)	(-0.33)
$\lvert\Delta oil_{t-1}\rvert$	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0	0	0	0	0	0
(t-stat)	(2.69)	(2.64)	(2.65)	(2.66)	(2.75)	(2.65)	(0.03)	(0.05)	(-0.03)	(0)	(0.06)	(0.06)
Number of Obs.	606	606	606	606	606	606	194	194	194	194	194	194
R^2	37.83%	37.79%	37.61%	37.71%	38.24%	37.97%	6.52%	6.61%	6.38%	6.33%	6.85%	6.59%

Notes: The same as below Table 24.

Table 38

Central bank transparency and dispersion of forecasts - modified benchmark model, where not controlling for the conditional volatility

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Standard deviation of the individual **3-months-ahead short rate** forecasts						Standard deviation of the individual **12-months-ahead short rate** forecasts					
Transparency	-0.08***	-0.02**	-0.04	-0.02	-0.06***	-0.02***	-0.1**	-0.07*	-0.05	0	-0.06	-0.03**
(t-stat)	(-4.01)	(-2.49)	(-1.41)	(-1.21)	(-3.34)	(-3.38)	(-2.14)	(-1.73)	(-1.01)	(0.08)	(-1.35)	(-2.3)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01**	0.01	0.01	0.01	0.01**
(t-stat)	(1.4)	(1.51)	(1.34)	(1.29)	(1.33)	(1.6)	(1.37)	(2.34)	(1.34)	(1.06)	(1.19)	(2.08)
Number of Obs.	643	643	643	643	643	643	177	177	177	177	177	177
R^2	39.97%	39.5%	39.11%	38.94%	39.26%	39.88%	53.6%	54.25%	53.48%	53.36%	53.42%	53.94%
Dependent variable	Standard deviation of the individual **3-months-ahead long rate** forecasts						Standard deviation of the individual **12-months-ahead long rate** forecasts					
Transparency	0.01	-0.01	0.05**	0	0.01	0	0	-0.04***	0	-0.03	-0.04	-0.02*
(t-stat)	(0.34)	(-0.95)	(2.42)	(0.18)	(0.65)	(-0.07)	(0.17)	(-2.74)	(-0.04)	(-0.61)	(-1.42)	(-1.68)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0	0.01	0.01*	0.01	0.01	0.01	0.01*
(t-stat)	(1.04)	(1.19)	(0.98)	(1.02)	(1.03)	(1.06)	(1.48)	(1.95)	(1.49)	(1.54)	(1.57)	(1.83)
Number of Obs.	600	600	600	600	600	600	158	158	158	158	158	158
R^2	18.46%	18.68%	19.19%	18.44%	18.5%	18.43%	36.63%	39.34%	36.63%	36.84%	36.87%	37.95%
Dependent variable	Standard deviation of the individual **current year CPI** forecasts						Standard deviation of the individual **next year CPI** forecasts					
Transparency	-0.09	-0.08**	-0.03	-0.11	0	-0.04*	-0.16	-0.16*	-0.09	-0.29*	-0.05	-0.08*
(t-stat)	(-0.8)	(-2.29)	(-0.45)	(-1.05)	(-0.1)	(-1.85)	(-1.02)	(-1.75)	(-1.16)	(-1.86)	(-0.66)	(-1.77)
$\lvert\Delta oil_{t-1}\rvert$	0.02***	0.03***	0.02***	0.02***	0.02***	0.02***	0.01	0.01**	0.01	0.01	0.01	0.01**
(t-stat)	(4.55)	(5.33)	(4.39)	(4.63)	(4.55)	(4.67)	(1.1)	(2.25)	(1.01)	(1.52)	(0.94)	(2.45)
Number of Obs.	210	210	210	210	210	210	110	110	110	110	110	110
R^2	71.98%	72.78%	71.87%	72.21%	71.86%	72.51%	68.43%	69.61%	68.32%	69.34%	68.23%	69.45%
Dependent variable	Standard deviation of the individual **current year GDP** forecasts						Standard deviation of the individual **next year GDP** forecasts					
Transparency	-0.11*	-0.05*	0.05	-0.02	-0.06	-0.02	-0.11**	-0.08***	0.03	-0.04	0.03	-0.03
(t-stat)	(-1.78)	(-1.94)	(0.84)	(-0.26)	(-1.02)	(-1.2)	(-2)	(-3.39)	(1.23)	(-0.52)	(0.44)	(-1.37)
$\lvert\Delta oil_{t-1}\rvert$	0.03***	0.03***	0.03***	0.03***	0.03***	0.03***	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
(t-stat)	(3.91)	(3.9)	(3.84)	(3.64)	(3.87)	(3.89)	(4.1)	(4.59)	(3.77)	(3.99)	(3.58)	(4.52)
Number of Obs.	210	210	210	210	210	210	110	110	110	110	110	110
R^2	60.4%	60.68%	60.19%	60.09%	60.19%	60.4%	81.97%	82.81%	81.66%	81.69%	81.66%	82.06%
Dependent variable	Standard deviation of the individual **current year consumption** forecasts						Standard deviation of the individual **next year consumption** forecasts					
Transparency	-0.01	-0.05	-0.15*	0.1	0.04	-0.02	0.21	-0.03	0.01	0.28	0.23*	0.03
(t-stat)	(-0.07)	(-1.13)	(-1.9)	(0.87)	(0.46)	(-0.82)	(0.99)	(-1.02)	(0.14)	(1.37)	(1.69)	(1.02)
$\lvert\Delta oil_{t-1}\rvert$	0.03***	0.03***	0.03***	0.03**	0.03***	0.03***	0.01***	0.01***	0.01***	0.01***	0.01***	0.01***
(t-stat)	(2.79)	(2.61)	(2.74)	(2.51)	(2.72)	(2.58)	(4.24)	(3)	(3.06)	(2.77)	(3.41)	(3.29)
Number of Obs.	210	210	210	210	210	210	110	110	110	110	110	110
R^2	79.95%	80.05%	80.15%	80.05%	79.96%	79.99%	88.2%	88.01%	87.98%	88.64%	88.29%	88.1%

Notes: The same as below Table 24.

Table 39
Central bank transparency and forecast accuracy - modified benchmark model, where not controlling for the conditional volatility

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Absolute forecast error of the average **3-months-ahead short rate** forecasts						Absolute forecast error of the average **12-months-ahead short rate** forecasts					
Transparency	-0.21**	-0.12***	-0.03	-0.14*	-0.25***	-0.07***	-0.3	-0.13	-0.53	-0.15	-0.37	-0.11
(t-stat)	(-2.43)	(-2.89)	(-0.43)	(-1.74)	(-3.07)	(-3.15)	(-0.96)	(-0.95)	(-1.16)	(-0.76)	(-1.17)	(-1.46)
$\lvert\Delta oil_{t-1}\rvert$	0.04	0.04*	0.04	0.04	0.04	0.04*	0.05	0.05	0.05	0.04	0.05	0.05
(t-stat)	(1.53)	(1.65)	(1.44)	(1.52)	(1.52)	(1.66)	(1.34)	(1.32)	(1.53)	(1.34)	(1.33)	(1.5)
Number of Obs.	643	643	643	643	643	643	177	177	177	177	177	177
R^2	21.14%	21.95%	20.33%	20.75%	21.08%	21.96%	23.57%	23.78%	25.2%	23.35%	23.66%	24.51%
Dependent variable	Absolute forecast error of the average **3-months-ahead long rate** forecasts						Absolute forecast error of the average **12-months-ahead long rate** forecasts					
Transparency	0	-0.05	0.04	-0.05	-0.03	-0.02	-0.08	-0.34*	-0.13	-0.42	-0.37	-0.16
(t-stat)	(-0.02)	(-1.44)	(0.5)	(-0.64)	(-0.38)	(-0.95)	(-0.26)	(-1.82)	(-0.46)	(-1.3)	(-1.1)	(-1.53)
$\lvert\Delta oil_{t-1}\rvert$	0.01*	0.01**	0.01*	0.01*	0.01*	0.01**	-0.04**	-0.03	-0.04**	-0.04**	-0.04**	-0.03
(t-stat)	(1.76)	(2.17)	(1.76)	(1.86)	(1.81)	(2.02)	(-2.37)	(-1.55)	(-2.44)	(-2.02)	(-2.43)	(-1.52)
Number of Obs.	600	600	600	600	600	600	158	158	158	158	158	158
R^2	12.53%	13.6%	12.57%	12.73%	12.56%	13.03%	24.95%	35.14%	25%	28.44%	26.25%	32.07%
Dependent variable	Absolute forecast error of the average **current year CPI** forecasts						Absolute forecast error of the average **next year CPI** forecasts					
Transparency	-0.22	-0.12	0.21	-0.22	-0.02	-0.05	0.81**	0.16	-0.16	0.26	1.82**	0.18
(t-stat)	(-0.82)	(-1.02)	(0.99)	(-1.18)	(-0.05)	(-0.65)	(2.56)	(0.68)	(-0.45)	(0.48)	(2.48)	(1.29)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.01	0	0.01	0.01	0.01	-0.19	-0.19	-0.18	-0.18	-0.2	-0.19
(t-stat)	(0.61)	(0.69)	(0.29)	(0.7)	(0.47)	(0.62)	(-1.48)	(-1.45)	(-1.32)	(-1.35)	(-1.59)	(-1.53)
Number of Obs.	210	210	210	210	210	210	84	84	84	84	84	84
R^2	44.64%	44.79%	44.7%	44.75%	44.53%	44.68%	47.04%	46.74%	46.65%	46.71%	49.17%	47.12%
Dependent variable	Absolute forecast error of the average **current year GDP** forecasts						Absolute forecast error of the average **next year GDP** forecasts					
Transparency	0.07	-0.19**	0.14	-0.13	-0.5	-0.08	-0.32*	0.12	0.1	-0.38	-0.85**	-0.04
(t-stat)	(0.13)	(-2.31)	(0.47)	(-0.35)	(-0.96)	(-0.8)	(-1.7)	(1.02)	(0.3)	(-0.77)	(-2.31)	(-0.48)
$\lvert\Delta oil_{t-1}\rvert$	0.15***	0.16***	0.14***	0.15***	0.15***	0.15***	-0.08	-0.09	-0.09	-0.09*	-0.08	-0.09
(t-stat)	(4.97)	(5.27)	(4.55)	(4.82)	(5.17)	(5.89)	(-1.55)	(-1.57)	(-1.56)	(-1.95)	(-1.51)	(-1.6)
Number of Obs.	202	202	202	202	202	202	81	81	81	81	81	81
R^2	70.85%	71.1%	70.88%	70.88%	71.07%	70.98%	29.58%	29.61%	29.33%	30.07%	31.79%	29.4%
Dependent variable	Absolute forecast error of the average **current year consumption** forecasts						Absolute forecast error of the average **next year consumption** forecasts					
Transparency	-0.31	-0.4**	-0.97**	-0.16	-0.61	-0.23***	-0.94*	0.25	-0.29*	-1.3	-1.6***	-0.16
(t-stat)	(-0.91)	(-2.4)	(-2.38)	(-0.35)	(-1.4)	(-3.41)	(-1.65)	(1.15)	(-1.8)	(-1.54)	(-4.14)	(-0.83)
$\lvert\Delta oil_{t-1}\rvert$	0.03	0.04	0.03	0.03	0.03	0.05*	-0.03	-0.05	-0.04	-0.04	-0.02	-0.03
(t-stat)	(1.08)	(1.62)	(1.15)	(1.03)	(1.25)	(1.8)	(-0.71)	(-0.91)	(-1.02)	(-1.22)	(-0.61)	(-0.84)
Number of Obs.	202	202	202	202	202	202	81	81	81	81	81	81
R^2	77.5%	78.11%	78.2%	77.47%	77.65%	78.17%	57.72%	57.28%	56.94%	60.27%	60.08%	57.49%

Notes: The same as below Table 24.

Table 40
Central bank transparency and dispersion of CPI forecasts - modified benchmark model, where changes in VAT are controlled for

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Standard deviation of the individual **current year CPI** forecasts						Standard deviation of the individual **next year CPI** forecasts					
Transparency	-0.04	-0.07**	-0.01	-0.06	-0.05	-0.03**	-0.06	-0.17***	-0.01	-0.15	0.03	-0.06***
(t-stat)	(-0.57)	(-2.52)	(-0.23)	(-1.07)	(-0.54)	(-2.06)	(-0.96)	(-2.92)	(-0.15)	(-1.35)	(0.4)	(-3.86)
Cond. volatility	0.13*	0.14*	0.13*	0.13*	0.13*	0.13*	0.23*	0.23*	0.23*	0.22*	0.23*	0.23*
(t-stat)	(1.82)	(1.91)	(1.8)	(1.85)	(1.81)	(1.9)	(1.65)	(1.79)	(1.65)	(1.65)	(1.65)	(1.72)
VAT	0.04*	0.03*	0.04*	0.04*	0.04*	0.04*	-0.01*	-0.01*	-0.01*	-0.01*	-0.01*	-0.01*
(t-stat)	(1.39)	(1.36)	(1.36)	(1.38)	(1.37)	(1.45)	(-0.41)	(-0.54)	(-0.36)	(-0.47)	(-0.29)	(-0.52)
$\lvert\Delta oil_{t-1}\rvert$	0.01***	0.02***	0.01***	0.01***	0.01***	0.02***	0	0.01	0	0	0	0
(t-stat)	(3.09)	(4.28)	(2.99)	(3.33)	(2.99)	(3.45)	(0.03)	(1.57)	(-0.06)	(0.18)	(-0.11)	(0.75)
Number of Obs.	182	182	182	182	182	182	95	95	95	95	95	95
R^2	73.79%	74.92%	73.74%	73.9%	73.79%	74.42%	77.52%	79.25%	77.48%	77.83%	77.49%	78.26%

Notes: The same as below Table 24.

Table 41
Central bank transparency and accuracy of CPI forecasts - modified benchmark model, where changes in VAT are controlled for

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Absolute forecast error of the average **current year CPI** forecasts						Absolute forecast error of the average **next year CPI** forecasts					
Transparency	-0.21	-0.14**	0.25	-0.21	-0.15	-0.06	0.853**	0.029	0.05	0.48	0.7	0.11
(t-stat)	(-0.99)	(-2.01)	(1.06)	(-0.89)	(-0.45)	(-0.94)	(2)	(0.36)	(0.14)	(0.96)	(1.37)	(1.15)
Cond. volatility	0.29***	0.3***	0.29***	0.29***	0.29***	0.29***	0.59**	0.58**	0.58**	0.59**	0.58**	0.58**
(t-stat)	(7.45)	(7.98)	(6.9)	(7.81)	(7.14)	(7.9)	(2.34)	(2.25)	(2.3)	(2.3)	(2.33)	(2.27)
VAT	-0.06***	-0.06***	-0.07***	-0.06***	-0.06***	-0.06***	0.07**	0.07**	0.08**	0.07**	0.07**	0.07**
(t-stat)	(-0.63)	(-0.68)	(-0.8)	(-0.66)	(-0.65)	(-0.62)	(0.6)	(0.66)	(0.65)	(0.59)	(0.63)	(0.64)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.01	0	0.01	0	0.01	-0.13*	-0.12	-0.12	-0.12	-0.13*	-0.13*
(t-stat)	(0.96)	(1.59)	(0.03)	(0.92)	(0.75)	(1.19)	(-1.84)	(-1.61)	(-1.56)	(-1.57)	(-1.75)	(-1.78)
Number of Obs.	182	182	182	182	182	182	73	73	73	73	73	73
R^2	63.67%	64.17%	63.89%	63.77%	63.56%	63.82%	70.89%	69.62%	69.62%	70.41%	70.3%	70.11%

Notes: The same as below Table 24.

Table 42
Central bank transparency and dispersion of forecasts - modified benchmark model, where not controlling for $|\Delta oil_{t-1}|$

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Standard deviation of the individual **3-months-ahead short rate** forecasts						Standard deviation of the individual **12-months-ahead short rate** forecasts					
Transparency	-0.06***	-0.01	0.01	0	-0.03*	-0.01	-0.11*	-0.04	-0.02	0.01	-0.04	-0.02
(t-stat)	(-2.88)	(-0.59)	(0.18)	(0.24)	(-1.83)	(-0.84)	(-1.66)	(-1.11)	(-0.34)	(0.4)	(-1.09)	(-1.29)
Cond. volatility	0.16*	0.16*	0.17*	0.17*	0.16*	0.16*	0.14	0.13	0.14	0.14	0.14	0.14
(t-stat)	(1.76)	(1.77)	(1.74)	(1.78)	(1.77)	(1.75)	(1.22)	(1.19)	(1.16)	(1.14)	(1.17)	(1.19)
Number of Obs.	624	624	624	624	624	624	170	170	170	170	170	170
R^2	46.93%	46.4%	46.35%	46.35%	46.46%	46.45%	54.27%	54.44%	54.03%	54.03%	54.05%	54.27%
Dependent variable	Standard deviation of the individual **3-months-ahead long rate** forecasts						Standard deviation of the individual **12-months-ahead long rate** forecasts					
Transparency	0.02	0	0.07***	0.02	0.02	0.01	0.05	0	0.03	0.03	0	0.01
(t-stat)	(0.93)	(0.43)	(3.2)	(1.49)	(1.25)	(1.17)	(1.16)	(0.13)	(0.72)	(0.71)	(-0.03)	(0.45)
Cond. volatility	0.61***	0.61***	0.61***	0.62***	0.61***	0.62***	1.36***	1.37***	1.36***	1.37***	1.36***	1.37***
(t-stat)	(5.7)	(5.86)	(5.55)	(5.73)	(5.68)	(5.77)	(8.3)	(6.91)	(8.25)	(7.76)	(8.06)	(7.62)
Number of Obs.	554	554	554	554	554	554	146	146	146	146	146	146
R^2	26.75%	26.61%	27.86%	27.04%	26.81%	27.01%	49.73%	49.16%	49.31%	49.41%	49.15%	49.32%
Dependent variable	Standard deviation of the individual **current year CPI** forecasts						Standard deviation of the individual **next year CPI** forecasts					
Transparency	0.01	-0.03	0.04*	-0.02	0.08	-0.01	-0.07	-0.14*	-0.02	-0.16**	-0.01	-0.05**
(t-stat)	(0.23)	(-1.07)	(1.67)	(-0.39)	(1.24)	(-0.42)	(-1.46)	(-1.89)	(-0.43)	(-2.51)	(-0.11)	(-2.03)
Cond. volatility	0.11	0.11	0.11	0.11	0.11	0.11	0.18	0.18	0.18	0.17	0.18	0.18
(t-stat)	(1.44)	(1.47)	(1.44)	(1.47)	(1.43)	(1.45)	(1.26)	(1.35)	(1.25)	(1.27)	(1.25)	(1.31)
Number of Obs.	210	210	210	210	210	210	110	110	110	110	110	110
R^2	72.29%	72.44%	72.33%	72.3%	72.39%	72.31%	74.71%	75.83%	74.68%	75.04%	74.67%	75.27%
Dependent variable	Standard deviation of the individual **current year GDP** forecasts						Standard deviation of the individual **next year GDP** forecasts					
Transparency	0.01	0.01	0.12	0.05	0.02	0.01	-0.02	-0.04	0.07	0.01	0.04	-0.01
(t-stat)	(0.16)	(0.17)	(1.05)	(0.8)	(0.31)	(0.56)	(-0.37)	(-1.03)	(0.77)	(0.12)	(0.59)	(-0.2)
Cond. volatility	0.09**	0.08***	0.08**	0.08**	0.08**	0.08***	0.07**	0.09***	0.06***	0.07***	0.07**	0.07***
(t-stat)	(2.32)	(2.64)	(2.38)	(2.29)	(2.29)	(2.75)	(2.51)	(3.48)	(2.75)	(2.59)	(2.19)	(2.67)
Number of Obs.	202	202	202	202	202	202	105	105	105	105	105	105
R^2	42.97%	42.97%	43.91%	43.17%	42.98%	43.18%	75.53%	75.91%	75.77%	75.51%	75.56%	75.53%
Dependent variable	Standard deviation of the individual **current year consumption** forecasts						Standard deviation of the individual **next year consumption** forecasts					
Transparency	0.12	0.03	-0.07	0.19	0.13	0.03	0.27	0.04	0.14	0.3	0.17**	0.06
(t-stat)	(0.76)	(1.08)	(-0.88)	(1.64)	(1.23)	(1.25)	(1.2)	(0.89)	(1.5)	(1.53)	(2.14)	(1.6)
Cond. volatility	0	0	0.01	0	0	0	-0.08	-0.08	-0.1	-0.06	-0.08	-0.1
(t-stat)	(0.01)	(-0.02)	(0.17)	(0.03)	(0.03)	(-0.08)	(-0.95)	(-0.96)	(-0.95)	(-0.94)	(-0.94)	(-1.16)
Number of Obs.	202	202	202	202	202	202	105	105	105	105	105	105
R^2	76.63%	76.51%	76.51%	77.33%	76.66%	76.7%	82.54%	81.63%	81.89%	83.58%	81.96%	82.6%

Notes: The same as below Table 24.

Table 43
Central bank transparency and forecast accuracy - modified benchmark model, where not controlling for $|\Delta oil_{t-1}|$

(Sample: January 1998 - December 2009, 26 countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
Dependent variable	Absolute forecast error of the average **3-months-ahead short rate** forecasts						Absolute forecast error of the average **12-months-ahead short rate** forecasts					
Transparency	-0.11	-0.03	0.12	0	-0.13	-0.01	-0.16	-0.01	-0.42	0	-0.19	-0.04
(t-stat)	(-0.93)	(-0.59)	(1.28)	(0.05)	(-1.15)	(-0.44)	(-0.37)	(-0.05)	(-0.74)	(-0.01)	(-0.44)	(-0.37)
Cond. volatility	0.35	0.35	0.37	0.36	0.35	0.35	0.27	0.26	0.21	0.26	0.26	0.25
(t-stat)	(1.5)	(1.52)	(1.5)	(1.52)	(1.5)	(1.5)	(0.72)	(0.68)	(0.66)	(0.68)	(0.7)	(0.71)
Number of Obs.	624	624	624	624	624	624	170	170	170	170	170	170
R^2	18.82%	18.74%	18.86%	18.6%	18.8%	18.68%	20.65%	20.56%	21.75%	20.56%	20.67%	20.72%
Dependent variable	Absolute forecast error of the average **3-months-ahead long rate** forecasts						Absolute forecast error of the average **12-months-ahead long rate** forecasts					
Transparency	0.03	-0.02	0.07	0.01	0	0	-0.28	-0.41**	-0.33	-0.54*	-0.59*	-0.2**
(t-stat)	(0.54)	(-0.6)	(0.89)	(0.08)	(0.06)	(-0.11)	(-1.05)	(-2.44)	(-1.25)	(-1.82)	(-1.77)	(-2.29)
Cond. volatility	0.88**	0.85*	0.88**	0.88**	0.88**	0.87**	0.17	-0.47	0.2	-0.05	0.29	-0.18
(t-stat)	(2.02)	(1.93)	(2.02)	(2.01)	(2.01)	(1.97)	(0.15)	(-0.53)	(0.18)	(-0.05)	(0.26)	(-0.2)
Number of Obs.	554	554	554	554	554	554	146	146	146	146	146	146
R^2	13.71%	13.82%	13.82%	13.66%	13.66%	13.67%	17.18%	31.36%	17%	22.33%	20.02%	28.41%
Dependent variable	Absolute forecast error of the average **current year CPI** forecasts						Absolute forecast error of the average **next year CPI** forecasts					
Transparency	-0.19	-0.12*	0.22	-0.15	-0.04	-0.04	0.65	-0.11	0.2	0.58	1.5	0.12
(t-stat)	(-0.8)	(-1.83)	(1.04)	(-0.75)	(-0.14)	(-0.76)	(0.91)	(-0.7)	(0.46)	(0.74)	(1.47)	(0.58)
Cond. volatility	0.38***	0.39***	0.38***	0.38***	0.38***	0.39***	0.8***	0.79***	0.79***	0.81***	0.79***	0.79***
(t-stat)	(4.45)	(4.57)	(4.43)	(4.42)	(4.48)	(4.51)	(3.58)	(4.01)	(3.75)	(3.27)	(3.76)	(3.44)
Number of Obs.	210	210	210	210	210	210	84	84	84	84	84	84
R^2	51.66%	51.9%	51.77%	51.68%	51.58%	51.71%	52.3%	52.08%	52.06%	52.44%	53.77%	52.27%
Dependent variable	Absolute forecast error of the average **current year GDP** forecasts						Absolute forecast error of the average **next year GDP** forecasts					
Transparency	0.53	-0.01	0.39	0.1	-0.14	0.04	-0.49*	0.02	0.17	-0.36	-1***	-0.08
(t-stat)	(0.73)	(-0.06)	(0.83)	(0.22)	(-0.22)	(0.29)	(-1.93)	(0.1)	(0.47)	(-0.76)	(-5.56)	(-0.66)
Cond. volatility	0.58**	0.61**	0.58**	0.6**	0.61**	0.58***	0.04	0.02	0.01	0.04	0.1	0.08
(t-stat)	(2.51)	(2.52)	(2.42)	(2.44)	(2.49)	(2.79)	(0.22)	(0.1)	(0.04)	(0.29)	(0.51)	(0.4)
Number of Obs.	202	202	202	202	202	202	81	81	81	81	81	81
R^2	65.72%	65.48%	65.69%	65.5%	65.5%	65.52%	26.29%	25.61%	25.73%	26.33%	29.05%	26.07%
Dependent variable	Absolute forecast error of the average **current year consumption** forecasts						Absolute forecast error of the average **next year consumption** forecasts					
Transparency	-0.18	-0.3*	-0.9**	-0.07	-0.48	-0.17**	-0.9***	0.1	-0.78	-1.1*	-1.62***	-0.21
(t-stat)	(-0.45)	(-1.89)	(-2.24)	(-0.15)	(-1.03)	(-2.08)	(-3.02)	(0.34)	(-1.4)	(-1.89)	(-4.94)	(-1.12)
Cond. volatility	0.82**	0.86**	0.92***	0.82**	0.82**	0.87**	0.42*	0.43	0.57	0.31*	0.44*	0.49*
(t-stat)	(2.15)	(2.28)	(2.69)	(2.14)	(2.14)	(2.26)	(1.65)	(1.31)	(1.47)	(1.88)	(1.78)	(1.68)
Number of Obs.	202	202	202	202	202	202	81	81	81	81	81	81
R^2	77.32%	77.71%	77.96%	77.3%	77.43%	77.74%	59.39%	58.61%	59.45%	60.83%	61.97%	59.7%

Notes: The same as below Table 24.

Table 44
Central bank transparency and dispersion of current account and budget forecasts - benchmark model

(Sample: January 1998 - December 2009, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
	12 Advanced Countries											
Dependent variable	Standard deviation of the individual **current year budget** forecasts						Standard deviation of the individual **next year budget** forecasts					
Transparency	NA	-0.04	NA	-0.01	-0.26	-0.03	NA	-0.13	NA	-0.38	-0.29	-0.11
(t-stat)	NA	(-0.49)	NA	(-0.07)	(-0.46)	(-0.47)	NA	(-1.41)	NA	(-0.98)	(-0.34)	(-1.42)
Cond. volatility	NA	0.03	NA	0.01	0.01	0.03	NA	0.08	NA	0.09	0.06	0.09
(t-stat)	NA	(0.18)	NA	(0.09)	(0.12)	(0.18)	NA	(0.7)	NA	(0.7)	(0.59)	(0.77)
$\lvert\Delta oil_{t-1}\rvert$	NA	0.04***	NA	0.04***	0.04***	0.04***	NA	0.05***	NA	0.05***	0.05***	0.05***
(t-stat)	NA	(4)	NA	(4.72)	(4.5)	(4.23)	NA	(10.65)	NA	(10.06)	(7.53)	(12.15)
Number of Obs.	NA	83	NA	83	83	83	NA	40	NA	40	40	40
R^2	NA	63.9%	NA	63.72%	64.06%	63.9%	NA	77.42%	NA	77.51%	76.72%	77.64%
Dependent variable	Standard deviation of the individual **current year CA** forecasts						Standard deviation of the individual **next year CA** forecasts					
Transparency	0.21	0.05	0.33***	0.29***	0.04	0.06**	0.44	0.02	0.43***	0.57*	0.2	0.09
(t-stat)	(1.44)	(1.21)	(3.22)	(2.69)	(0.29)	(2.33)	(1.55)	(0.14)	(2.64)	(1.96)	(0.77)	(1.22)
Cond. volatility	0.1	0.12	0.13	0.12	0.12	0.11	0.07	0.13	0.13	0.13	0.1	0.1
(t-stat)	(1.18)	(1.43)	(1.48)	(1.49)	(1.43)	(1.35)	(0.54)	(0.84)	(0.87)	(0.92)	(0.73)	(0.76)
$\lvert\Delta oil_{t-1}\rvert$	0.03***	0.03**	0.03***	0.03**	0.03***	0.03**	0.03*	0.04*	0.04**	0.03*	0.04*	0.03
(t-stat)	(2.63)	(2.39)	(2.87)	(2.51)	(2.81)	(2.19)	(1.68)	(1.71)	(2.01)	(1.9)	(1.82)	(1.57)
Number of Obs.	142	142	142	142	142	142	72	72	72	72	72	72
R^2	70.26%	69.93%	70.42%	71.9%	69.7%	70.71%	66.75%	65.39%	66.07%	69.41%	65.61%	66.63%
	14 Emerging Countries											
Dependent variable	Standard deviation of the individual **current year budget** forecasts						Standard deviation of the individual **next year budget** forecasts					
Transparency	NA	-0.04	0.04	NA	NA	0	NA	0.08**	0.16**	NA	NA	0.07**
(t-stat)	NA	(-0.46)	(0.36)	NA	NA	(0.07)	NA	(2.24)	(2.4)	NA	NA	(1.98)
Cond. volatility	NA	0.23*	0.24*	NA	NA	0.23*	NA	-0.45	-0.41	NA	NA	-0.43
(t-stat)	NA	(1.91)	(1.95)	NA	NA	(1.94)	NA	(-1.55)	(-1.57)	NA	NA	(-1.58)
$\lvert\Delta oil_{t-1}\rvert$	NA	0.01	0.01	NA	NA	0.01	NA	-0.04***	-0.04***	NA	NA	-0.04***
(t-stat)	NA	(0.89)	(0.64)	NA	NA	(0.75)	NA	(-4.57)	(-4.41)	NA	NA	(-4.28)
Number of Obs.	NA	29	29	NA	NA	29	NA	16	16	NA	NA	16
R^2	NA	39%	39.09%	NA	NA	38.76%	NA	54.48%	57.44%	NA	NA	56.06%
Dependent variable	Standard deviation of the individual **current year CA** forecasts						Standard deviation of the individual **next year CA** forecasts					
Transparency	0.66**	0.09	0.01	0.22**	-0.63	0.04	0.5	0.11	0.02	0.17	-1.86***	0.03*
(t-stat)	(2.18)	(0.92)	(0.07)	(2.18)	(-1.56)	(0.48)	(0.53)	(1.56)	(0.14)	(0.53)	(-3.11)	(1.75)
Cond. volatility	0.16*	0.18*	0.17*	0.16*	0.18*	0.17*	0.34	0.38**	0.38**	0.34	0.43**	0.37**
(t-stat)	(1.7)	(1.8)	(1.85)	(1.7)	(1.74)	(1.88)	(1.31)	(2.13)	(2.17)	(1.31)	(2.02)	(1.98)
$\lvert\Delta oil_{t-1}\rvert$	0.05***	0.05***	0.05***	0.05***	0.05***	0.05***	0.04***	0.04***	0.04***	0.04***	0.04***	0.04***
(t-stat)	(2.9)	(2.73)	(2.64)	(2.9)	(2.92)	(2.65)	(4.24)	(3.97)	(3.33)	(4.24)	(3.07)	(4.23)
Number of Obs.	66	66	66	66	66	66	36	36	36	36	36	36
R^2	77.37%	77.28%	77.13%	77.37%	77.49%	77.25%	85.94%	86%	85.82%	85.94%	87.88%	85.88%

Notes: The same as below Table 24. NA means estimation is not possible due to insufficient number of observations.

Table 45
Central bank transparency and accuracy of current account and budget forecasts - benchmark model

(Sample: January 1998 - December 2009, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Political	Economic	Procedural	Policy	Operational	Total	Political	Economic	Procedural	Policy	Operational	Total
	12 Advanced Countries											
Dependent variable	Absolute forecast error of the average **current year budget** forecasts						Absolute forecast error of the average **next year budget** forecasts					
Transparency	NA	-0.41*	NA	-0.29	0.21	-0.25	NA	-0.41	NA	-3.28***	0.63	-0.43**
(t-stat)	NA	(-1.7)	NA	(-0.92)	(0.18)	(-1.63)	NA	(-1.43)	NA	(-3.74)	(0.26)	(-2.25)
Cond. volatility	NA	0.52	NA	0.38	0.34	0.49	NA	0.87***	NA	1.15***	0.72***	0.95***
(t-stat)	NA	(1.27)	NA	(1.21)	(1.2)	(1.29)	NA	(4.49)	NA	(3.93)	(3.09)	(5.4)
$\|\Delta oil_{t-1}\|$	NA	0.06**	NA	0.04	0.04	0.05*	NA	0.03	NA	-0.02	0.01	0.03
(t-stat)	NA	(2)	NA	(1.24)	(1.13)	(1.72)	NA	(0.5)	NA	(-0.75)	(0.12)	(0.59)
Number of Obs.	NA	83	NA	83	83	83	NA	34	NA	34	34	34
R^2	NA	20.59%	NA	16.59%	16.23%	19.22%	NA	36%	NA	52.48%	33.83%	38.37%
Dependent variable	Absolute forecast error of the average **current year CA** forecasts						Absolute forecast error of the average **next year CA** forecasts					
Transparency	-1.49	0.24***	0.38	0.26	-0.48	0.04	-3.67***	0.55	0.91***	0.67	-1.96***	0.03
(t-stat)	(-1.63)	(3.07)	(0.66)	(1.02)	(-0.74)	(0.47)	(-2.88)	(1.09)	(4.28)	(0.8)	(-3.01)	(0.15)
Cond. volatility	0.93	0.73	0.75	0.74	0.8	0.73	2.79***	1.86**	1.99***	1.94***	2.37***	1.95**
(t-stat)	(1.46)	(1.22)	(1.23)	(1.23)	(1.29)	(1.21)	(3.26)	(2.3)	(2.9)	(2.69)	(3.33)	(2.47)
$\|\Delta oil_{t-1}\|$	-0.01	-0.03*	-0.02	-0.02*	-0.02	-0.02**	-0.05	-0.15	-0.12	-0.12	-0.08	-0.12
(t-stat)	(-0.71)	(-1.86)	(-1.57)	(-1.81)	(-1.48)	(-1.97)	(-0.98)	(-1.14)	(-1.56)	(-1.34)	(-1.21)	(-1.45)
Number of Obs.	142	142	142	142	142	142	60	60	60	60	60	60
R^2	52.27%	50.03%	49.44%	49.52%	49.58%	49.4%	69.72%	62.73%	61.62%	61.86%	63.33%	61.34%
	14 Emerging Countries											
Dependent variable	Absolute forecast error of the average **current year budget** forecasts						Absolute forecast error of the average **next year budget** forecasts					
Transparency	NA	0.05	0.44*	NA	NA	0.18	NA	0.24	0.77***	NA	NA	0.31***
(t-stat)	NA	(0.17)	(1.76)	NA	NA	(1.09)	NA	(1.48)	(12.13)	NA	NA	(5.76)
Cond. volatility	NA	1.43***	1.56***	NA	NA	1.48***	NA	1.52*	1.55***	NA	NA	1.52**
(t-stat)	NA	(2.62)	(3.2)	NA	NA	(2.87)	NA	(1.79)	(4.5)	NA	NA	(2.38)
$\|\Delta oil_{t-1}\|$	NA	0.22***	0.2***	NA	NA	0.21***	NA	0.14	0.21	NA	NA	0.19
(t-stat)	NA	(2.75)	(2.66)	NA	NA	(2.66)	NA	(1.08)	(1.47)	NA	NA	(1.14)
Number of Obs.	NA	29	29	NA	NA	29	NA	9	9	NA	NA	9
R^2	NA	63.48%	65.02%	NA	NA	64.15%	NA	83.61%	94.11%	NA	NA	88.47%
Dependent variable	Absolute forecast error of the average **current year CA** forecasts						Absolute forecast error of the average **next year CA** forecasts					
Transparency	3.08***	-0.62	-0.91***	1.03***	-5.36***	-0.44	5.66***	-0.14	-0.56	1.89***	-6.93***	-0.03
(t-stat)	(2.7)	(-1.52)	(-3.05)	(2.7)	(-4.07)	(-1.39)	(2.97)	(-0.46)	(-0.74)	(2.97)	(-23.4)	(-0.13)
Cond. volatility	0.4*	0.46***	0.5***	0.4*	0.56**	0.53***	-0.62	0.01	-0.01	-0.62	0.16	0.03
(t-stat)	(1.79)	(2.66)	(2.81)	(1.79)	(2.51)	(2.98)	(-0.55)	(0.02)	(-0.01)	(-0.55)	(0.19)	(0.04)
$\|\Delta oil_{t-1}\|$	0.22***	0.23***	0.24***	0.22***	0.23***	0.24***	-0.01	0.01	-0.01	-0.01	-0.08	0.02
(t-stat)	(4.2)	(4.31)	(4.5)	(4.2)	(4.71)	(4.45)	(-0.08)	(0.13)	(-0.11)	(-0.08)	(-0.8)	(0.24)
Number of Obs.	66	66	66	66	66	66	23	23	23	23	23	23
R^2	67.91%	68.06%	68.73%	67.91%	69.3%	68.43%	76.68%	73.67%	74.44%	76.68%	77.84%	73.63%

Notes: The same as below Table 44.

Table 46
Central bank transparency (measured by the Minegishi-Cournéde index and sub-indices) and dispersion of forecasts - benchmark model

(Sample: January 1999 - December 2009, 8 OECD countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Policy objective	Policy decision	Economic analysis	Decision-making process	Total	Policy objective	Policy decision	Economic analysis	Decision-making process	Total
Dependent variable	Standard deviation of the individual **3-months-ahead short rate** forecasts					Standard deviation of the individual **12-months-ahead short rate** forecasts				
Transparency	0***	-0.00	0	0	0	-0.00	-0.00	0**	0	0*
(t-stat)	(-2.65)	(-0.78)	(-1.2)	(-1.33)	(-1.54)	(-0.9)	(-1.46)	(-2.23)	(-1.21)	(-1.9)
Cond. volatility	0.18***	0.19***	0.19***	0.19***	0.19***	-0.03	-0.03	-0.04	-0.03	-0.04
(t-stat)	(3.94)	(4.13)	(4.02)	(4.1)	(4)	(-0.58)	(-0.6)	(-0.91)	(-0.47)	(-0.77)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0.01	0.01	0.01**	0.01	0.01**
(t-stat)	(1.23)	(0.88)	(1.01)	(0.97)	(1.13)	(1.5)	(1.6)	(2.36)	(1.47)	(2.02)
Number of Obs.	336	336	336	336	336	88	88	88	88	88
R^2	47.19%	44.65%	45%	45.04%	45.68%	41.86%	42.71%	43.65%	42.23%	43.43%
Dependent variable	Standard deviation of the individual **3-months-ahead long rate** forecasts					Standard deviation of the individual **12-months-ahead long rate** forecasts				
Transparency	-0.00	0.001	0	0	0	0	-0.00	0	0	0
(t-stat)	(-1.37)	(1.41)	(-0.53)	(0.02)	(-0.13)	(0.17)	(-1.09)	(0.31)	(-0.44)	(-0.32)
Cond. volatility	0.68***	0.73***	0.67***	0.7***	0.69***	1.1***	1.02***	1.13***	1.08***	1.07***
(t-stat)	(8.97)	(9.97)	(6.95)	(9.12)	(7.61)	(8.26)	(10.83)	(8.29)	(7.91)	(9.03)
$\lvert\Delta oil_{t-1}\rvert$	0	0	0	0	0	0.01*	0.01**	0*	0.01**	0.01**
(t-stat)	(0.67)	(0.12)	(0.53)	(0.37)	(0.4)	(1.87)	(2.54)	(1.69)	(2.04)	(2.24)
Number of Obs.	336	336	336	336	336	88	88	88	88	88
R^2	25.97%	25.9%	25.49%	25.42%	25.42%	38.83%	40.1%	38.92%	38.93%	38.91%
Dependent variable	Standard deviation of the individual **current year CPI** forecasts					Standard deviation of the individual **next year CPI** forecasts				
Transparency	0	0	0	0**	0	0	0**	0**	0	0
(t-stat)	(1.62)	(1.03)	(0.35)	(2.55)	(1.43)	(1.15)	(-2.32)	(-2.5)	(0.29)	(-1.33)
Cond. volatility	0.06	0.07	0.07	0.04	0.06	-0.06	-0.05	-0.05	-0.06	-0.04
(t-stat)	(0.68)	(0.82)	(0.86)	(0.53)	(0.72)	(-0.81)	(-0.64)	(-0.67)	(-0.68)	(-0.48)
$\lvert\Delta oil_{t-1}\rvert$	0.01**	0.01*	0.01*	0.01**	0.01*	0.01**	0.02**	0.02**	0.01**	0.01**
(t-stat)	(2.06)	(1.8)	(1.75)	(2.19)	(1.74)	(2.06)	(2.48)	(2.43)	(2.11)	(2.35)
Number of Obs.	88	88	88	88	88	48	48	48	48	48
R^2	41.44%	41.43%	40.03%	45.99%	43.44%	32.85%	39.36%	40.32%	32.63%	35.31%
Dependent variable	Standard deviation of the individual **current year GDP** forecasts					Standard deviation of the individual **next year GDP** forecasts				
Transparency	0**	0**	0***	0**	-0.01***	-0.01***	0	0	0	0
(t-stat)	(-2.02)	(-2.5)	(-2.61)	(-2.18)	(-2.62)	(-2.71)	(-1.28)	(-1.24)	(-1.11)	(-1.56)
Cond. volatility	0.04	0.04	0.04	0.04	0.04	0.07**	0.06	0.07*	0.07*	0.07
(t-stat)	(1.02)	(0.84)	(1.04)	(1.07)	(1.01)	(2)	(1.48)	(1.65)	(1.74)	(1.6)
$\lvert\Delta oil_{t-1}\rvert$	0.01**	0.01**	0.01**	0.01**	0.01**	0.01***	0.01***	0.01***	0.01***	0.01***
(t-stat)	(1.96)	(2.54)	(2.38)	(1.98)	(2.54)	(4)	(3.46)	(3.77)	(3.16)	(2.89)
Number of Obs.	88	88	88	88	88	48	48	48	48	48
R^2	38.08%	40.95%	38.3%	39.11%	42.34%	58.85%	57.34%	56.17%	57.23%	58.13%
Dependent variable	Standard deviation of the individual **current year consumption** forecasts					Standard deviation of the individual **next year consumption** forecasts				
Transparency	0	0	0	0	0	-0.01***	0	0	0	0
(t-stat)	(-0.8)	(0.13)	(-0.51)	(-0.12)	(-0.36)	(-2.92)	(0.06)	(-0.11)	(-0.3)	(-0.34)
Cond. volatility	-0.08***	-0.1***	-0.08***	-0.09***	-0.08**	-0.04	-0.07	-0.06	-0.06	-0.05
(t-stat)	(-2.66)	(-4.11)	(-3.01)	(-2.98)	(-2.33)	(-0.89)	(-1.28)	(-0.98)	(-0.98)	(-0.77)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.01	0.01	0.01	0.01	0.01***	0.01***	0.01**	0.01***	0.01**
(t-stat)	(1.39)	(1.23)	(1.26)	(1.21)	(1.19)	(4.06)	(2.69)	(1.98)	(3.04)	(2.06)
Number of Obs.	88	88	88	88	88	48	48	48	48	48
R^2	30.1%	28.39%	28.74%	28.39%	28.78%	50.13%	47.92%	47.94%	48.03%	48.16%

Notes: The same as below Table 24.

Table 47
Central bank transparency (measured by the Minegishi-Cournéde index and sub-indices) and forecast accuracy - benchmark model

(Sample: January 1999 - December 2009, 8 OECD countries, non-overlapping forecast horizons)

Transparency is measured by index or sub-index	Policy objective	Policy decision	Economic analysis	Decision-making process	Total	Policy objective	Policy decision	Economic analysis	Decision-making process	Total
Dependent variable	Absolute forecast error of the average **3-months-ahead short rate** forecasts					Absolute forecast error of the average **12-months-ahead short rate** forecasts				
Transparency	-0.01*	-0.00	0**	0	-0.01**	-0.02	-0.01	-0.01	0	-0.01
(t-stat)	(-1.93)	(-1.42)	(-2.27)	(-0.99)	(-2.04)	(-1.14)	(-0.61)	(-0.47)	(-0.13)	(-0.67)
Cond. volatility	0.21	0.23	0.21	0.23	0.21	-0.31	-0.25	-0.28	-0.24	-0.28
(t-stat)	(0.88)	(1.01)	(0.93)	(0.99)	(0.92)	(-0.9)	(-0.84)	(-1.02)	(-0.75)	(-0.96)
$\lvert\Delta oil_{t-1}\rvert$	0.04	0.03	0.04	0.03	0.04	0.05	0.05	0.05	0.04	0.05
(t-stat)	(1.44)	(1.39)	(1.53)	(1.37)	(1.5)	(1.26)	(1.06)	(1.22)	(1.03)	(1.27)
Number of Obs.	336	336	336	336	336	88	88	88	88	88
R^2	16.47%	15.87%	17%	15.96%	16.73%	18.79%	17.5%	17.71%	17.32%	17.86%
Dependent variable	Absolute forecast error of the average **3-months-ahead long rate** forecasts					Absolute forecast error of the average **12-months-ahead long rate** forecasts				
Transparency	-0.00	-0.00	0	0	0	0.01	-0.01	0	0	0
(t-stat)	(-0.59)	(-0.49)	(-1.32)	(-1.15)	(-1.04)	(0.58)	(-0.58)	(-0.04)	(-0.13)	(-0.04)
Cond. volatility	0.4	0.38	0.16	0.32	0.22	-0.36	-0.69	-0.51	-0.51	-0.51
(t-stat)	(1.4)	(1.31)	(0.41)	(1.09)	(0.59)	(-0.47)	(-0.82)	(-0.49)	(-0.62)	(-0.49)
$\lvert\Delta oil_{t-1}\rvert$	0.01	0.01	0.01	0.01	0.01	-0.05***	-0.04**	-0.04**	-0.04***	-0.04**
(t-stat)	(1.02)	(0.99)	(1.33)	(1.19)	(1.28)	(-2.94)	(-2.46)	(-1.96)	(-2.7)	(-2.13)
Number of Obs.	336	336	336	336	336	88	88	88	88	88
R^2	7.54%	7.53%	8.35%	8.13%	8.23%	26.61%	26.63%	26.03%	26.07%	26.04%
Dependent variable	Absolute forecast error of the average **current year CPI** forecasts					Absolute forecast error of the average **next year CPI** forecasts				
Transparency	0	0	0	0	0	0.02*	0	0.01	0.01**	0.02
(t-stat)	(-0.78)	(0.08)	(0.38)	(0.96)	(0.42)	(1.7)	(0.13)	(1.4)	(1.98)	(1.64)
Cond. volatility	0.01	-0.01	-0.01	-0.05	-0.02	0.11	0.27	0.25	-0.01	0.13
(t-stat)	(0.06)	(-0.1)	(-0.09)	(-0.34)	(-0.17)	(0.27)	(0.64)	(0.52)	(-0.02)	(0.3)
$\lvert\Delta oil_{t-1}\rvert$	0.02*	0.02*	0.01	0.01*	0.01*	-0.06	-0.05	-0.06*	-0.05	-0.06*
(t-stat)	(1.94)	(1.7)	(1.35)	(1.77)	(1.65)	(-1.53)	(-1.14)	(-1.7)	(-1.59)	(-1.81)
Number of Obs.	88	88	88	88	88	40	40	40	40	40
R^2	20.14%	19.51%	19.64%	21.03%	19.76%	36.59%	31.17%	35.28%	39.14%	37.03%
Dependent variable	Absolute forecast error of the average **current year GDP** forecasts					Absolute forecast error of the average **next year GDP** forecasts				
Transparency	-0.03**	-0.03**	-0.01	-0.01	-0.03*	0	-0.01	0.01	0.01	0.01
(t-stat)	(-2.12)	(-2.11)	(-0.96)	(-1.45)	(-1.8)	(0.08)	(-0.68)	(0.81)	(0.5)	(0.27)
Cond. volatility	0.24	0.21	0.25	0.26	0.25	0.34***	0.32***	0.36***	0.34***	0.34***
(t-stat)	(1)	(0.85)	(1.01)	(1.06)	(1)	(8.29)	(3.49)	(7.61)	(7.18)	(6.17)
$\lvert\Delta oil_{t-1}\rvert$	0.08***	0.08***	0.08***	0.07***	0.09***	-0.15**	-0.14***	-0.16***	-0.15**	-0.15**
(t-stat)	(2.99)	(4.55)	(2.98)	(3.52)	(4.5)	(-2.55)	(-2.58)	(-2.6)	(-2.42)	(-2.5)
Number of Obs.	88	88	88	88	88	40	40	40	40	40
R^2	21.42%	25.75%	19.71%	21.24%	23.7%	29.69%	30.65%	30.57%	30.4%	29.85%
Dependent variable	Absolute forecast error of the average **current year consumption** forecasts					Absolute forecast error of the average **next year consumption** forecasts				
Transparency	-0.02***	-0.02**	-0.01	-0.02**	-0.03***	-0.01	-0.01**	0	0	0
(t-stat)	(-2.86)	(-2.29)	(-1.56)	(-2.2)	(-3.02)	(-0.5)	(-1.97)	(0.33)	(0.24)	(-0.25)
Cond. volatility	0.75**	0.83**	0.77**	0.86***	0.96***	0.81	0.89	0.64	0.65	0.76
(t-stat)	(2.03)	(2.17)	(2.06)	(2.7)	(3.09)	(0.98)	(1.2)	(0.73)	(1.01)	(0.91)
$\lvert\Delta oil_{t-1}\rvert$	-0.03	-0.03	-0.03	-0.03	-0.02	-0.1	-0.09	-0.11	-0.1	-0.1
(t-stat)	(-1.18)	(-1.22)	(-1.15)	(-1.19)	(-0.9)	(-1.35)	(-1.54)	(-1.29)	(-1.4)	(-1.44)
Number of Obs.	88	88	88	88	88	40	40	40	40	40
R^2	16.24%	16.34%	15.38%	18.92%	18.72%	25.14%	25.85%	24.88%	24.77%	24.68%

Notes: The same as below Table 24.

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Which Aspects of Central Bank Transparency Matter? Constructing a Weighted Transparency Index