# Determinants of Trust in the European Central Bank

Justina Fischer

and

Volker Hahn

## Abstract

In this paper we study the determinants of citizens' trust in the European Central Bank during the start-up phase from 1999-2004. Using data from the Eurobarometer survey, we find that higher inflation rates reduce trust. Thus people appear to evaluate the performance of the ECB on the basis of its success in achieving its primary objective, namely price stability. In contrast, unemployment does not have a significant impact on trust in the ECB, while unemployment spending exerts a trust-building impact. Possibly, automatic stabilizers serve as substitutes for ECB interventions, that may lower people's trust. Interestingly, active labor market policies, which can be interpreted as proxies for the public's perception of the urgency of the problem of high unemployment, tend to decrease trust.

# 1 Introduction

When the Euro coins and banknotes were introduced in 2002 many citizens had the impression of huge price increases. Perceived inflation, which can be constructed from the European Commission's Consumer Survey, showed a surge in this period (compare, e.g., ECB (2002) and ECB (2007)). These perceptions are puzzling, because Euro area-wide inflation, measured by the HICP, has been remarkably stable and low since the inception of the European Monetary Union. Interestingly, even five years after the Euro cash changeover, there is a striking discrepancy between perceived inflation and measured inflation (see ECB (2007)). This difference might indicate a pervasive lack of confidence and trust in the ECB and in its ability to keep inflation under control.

Why is trust in the ECB important? First, alack of trust may reduce political support for the ECB and thus ultimately endanger its independence. Given the commonly held view that central bank independence is a prerequisite for successful monetary policy, this should be worrying.[1] Second, the significance of reputation and credibility for the conduct of monetary policy is well-known since the pioneering works of Kydland and Prescott (1977) and Barro and Gordon (1983). In a similar vein, New Keynesian models imply that expectations about future inflation, which in turn are influenced by agents' expectations about future monetary policy, play a key role in the determination of inflation.[2] A high level of confidence in a central bank's ability and determination to keep inflation at bay therefore enhances the effectiveness of monetary policy. By contrast, low levels of trust pose a problem for monetary policy makers. For example, disinflations are more costly, when high inflation expectations manifest themselves in high nominal wage increases. Third, public support for the ECB may be an important factor determining the decisions of non-EMU members like Denmark, UK, and Sweden to join the Euro area.[3] For example, Denmark has refused to adopt the Euro, following a referendum in 2000.

This leads us to the question of how confidence in the ECB could be measured. According to the Maastricht treaty, guaranteeing price stability is the ECB's paramount objective. Thus it is plausible to interpret the difference between inflation expectations and the official inflation rate objective of approximately 2% as a measure of the central bank's credibility. This would involve two drawbacks. First, in the short term inflation expectations are also affected by other factors, for example, oil price shocks. Second, most methods of obtaining inflation expectations rely on the judgments of experts rather than on the opinions of the general public. For example, the ECB publishes inflation expectations based on its Survey of Professional Forecasters.[4] It may also be interesting to obtain a measure of the ordinary citizens' trust in monetary policy. As a consequence, we use data from the Eurobarometer survey in this paper.

---

1 For an analysis of monetary policy to a conservative central banker, compare the seminal article by Rogoff (1985). For a more recent contribution see Herrendorf and Lockwood (1997). Among others, Alesina (1989) has found empirical support for the hypothesis that central bank independence is beneficial.

2 See Clarida et al. (1999).

3 Formally, only UK and Denmark have a right to decide whether or not to adopt the Euro. However, the example of Sweden shows that a country can deliberately remain outside the EMU by violating the membership criteria.

4 In the Consumer Survey of the European Commission, there are no questions about numerical values concerning the expected inflation rate.

## 2 Factors that are Likely to Influence the Trust in the ECB

We have already mentioned that maintaining price stability is the ECB's main objective. It is therefore plausible that the public's trust in the ECB depends on how successful the ECB is in this respect. While the ECB aims at stabilizing HICP inflation aggregated over the entire EMU, there have been substantial differences in national inflation rates. In September 2007, for example, the 12-month average inflation rate amounted to 1.4% in Finland and France and 2.9% in Greece.[5] It is likely that citizens' confidence in the ECB is affected by national inflation rates rather than EMU aggregates. We would surmise that higher inflation leads to a lower level of trust.

Many central banks also have other objectives, in addition to the goal of maintaining price-stability. For example, one of the Federal Reserve's additional goals is maximum employment. The fact that most central banks are often also made accountable for employment and output is captured by the fact that the standard approach to modeling the central bank's loss function captures a trade-off between two goals, namely low inflation and high employment or low inflation and high output.[6] There is another reason to believe that the public might hold the ECB accountable for high levels of unemployment and low growth. Politicians sometimes accuse the ECB of pursuing an excessively tight monetary policy that is detrimental to the economy. For example, the French President Sarkozy demanded that the ECB adopt looser monetary policy in order to boost French exports.[7] To sum up, although the Maastricht treaty assigns only a subordinate role to other targets, it is interesting whether citizens make the ECB responsible for key economic variables like the unemployment rate and GDP growth. Again we assume that citizens are more concerned and better informed about national variables than about EMU-wide aggregates. Obviously, one would expect that high levels of unemployment and GDP growth reduce the public's confidence in the ECB.

## 3 Data and Methodology

Trust in the ECB is obtained from various Eurobarometer surveys between 1999, the first year trust in the ECB was measured, and 2004, the last year the survey was available.[8] We measure the national level of trust in the ECB as the share of respondents answering "yes, tend to" to the question "And, for each of them, please tell me if you tend to trust it or tend not to trust it? (READ OUT): 'The European Central Bank'". The possible answers were "1, Tend to trust", "2 Tend not to trust", and "3 Don't know". With 12 countries constituting the Eurozone observed for 5 years since the establishment of the ECB and the introduction of the Euro as a fixed exchange rate regime we obtain a balanced panel of 72 data points.

Macroeconomic variables are obtained from the Word Development Indicators database (WDI 2007) and the OECD. These include GDP per capita (measured in PPP constant 2000 int'l US), and the share of population living in urbanized areas, population size for the baseline model. Furthermore, we also employ the national inflation rate (measured by the CPI),

---

5 See http://europa.eu.int/rapid.

6 Compare Kydland and Prescott (1977) and Barro and Gordon (1983).

7 "The Economist", July 10th 2007, "Nicolas Sarkozy wants a bigger budget deficit".

8 On average, there were four Eurobarometer rounds per year covering differing topics. If the question of interest was posed twice within the same year, we employed an unweighted average of the round-specific population shares. We calculated round-specific population shares using cross-sectional individual weights supplied by the Eurobarometer surveys.

unemployment rate, and government spending on unemployment benefits as well as on active labor market policies, measured as shares of GDP.

Descr stats…..

Model

For this analysis, we view people's trust in the European Central Bank in EMU-member country i at time t (Yit) as a function of the macro-economic state of the participants' economies (ECOit). The macroeconomic state is proxied by various measures relating to GDP, inflation and unemployment. Since it may take some time until a country's population becomes fully aware of changes in her economy's state, most of the objective economic variables enter the model lagged by one period.

As both the evolvement of the economy or the perception of its state and trust in the ECB might be correlated with other basic national characteristics of the country (Xit), we also control for population size, which may, for example, reflect the size of the domestic market.

$$Yit = b' ECOit + g' Xit + Ci + Tt + eit$$

Unobserved individual heterogeneity due to e.g. national differences in mentality, history, and national institutions is taken account by employing country fixed effects (Ci). Moreover, year fixed effects (Tt) proxy characteristics in the environment that are identical for all countries in the sample, but change on an annual basis, such as e.g. Euro cash changeover, EU enlargements, and the state of the world economy. Finally, an individual-specific error term complements the model. Given the nature of our dependent variable, which is continuous, we apply a fixed effects GLS estimator.

Our approach is to start with a very simple baseline specification, and to investigate the impact of further economic determinants via step-by-step model extensions. The first analysis deals with the effect of national income, followed by an investigation into the role of inflation, while the last two analyses relate to the effects of unemployment and related labor market policies.

**Trust in the ECB, 1999 – 2004**

*The influence of GDP*

The results for the effects of GDP are reported in Table 1. As regards our baseline variables, which we include in all models further on, there is a tendency that more populous countries are less trusting in the European Central Bank.

Our variable of interest in this analysis, national income of the past period, appears strongly positively correlated with a population's trust in the ECB, statistically significant at the 1 percent level. Similar results are obtained when using the two-period lagged GDP. The similar coefficient sizes and equal significance levels suggest that national income two years ago is of comparable importance for trust in the ECB compared to when employing the one-period lagged value. Alternatively, due to the extremely high correlation of GDP over time (with rho (GDP, L1.GDP) = 0.99) the two-period lag might just proxy the one-period lagged value. Unfortunately, this correlation prevents simultaneous inclusion in the same model. Test of equ of coef.…Overall, the results in columns 1 and 2 indicate that between 1999 and 2004 wealthier countries had more confidence in the ECB.

The influences of GDP growth are analyzed in columns 3 and 4, with our variable of interest added to the baseline model consisting of population size, country and time fixed effects. The model in column 3 employs current GDP growth defined as the change between actual GDP and past GDP, divided by past GDP, while column 4 uses the GDP growth rate lagged by one period. Both estimates for either measure are insignificant, suggesting that GDP growth has no effect for a nation's trust in the ECB.[9]

However, based on classical macro-economic models of growth, we can expect the effect of GDP growth be assessed differently by the population, depending on the economic stage a country is currently in. More specifically, a moderate growth rate is most likely to be judged unfavorably if the country is at the beginning of its economic development, while the same rate may be highly appreciated in a prosperous economy. The models estimated in columns 5 and 6 take account of path dependency by adding the past GDP level to the specification with GDP growth rates. While model 5 combines current growth with the lagged GDP level, model 6 employs the same set of GDP variables, but all lagged by one period.

Both models suggest that national richness is an important trust-building device, independent of the number of lags. (However, again, past values may well only approximate current values, with the structure of the data not permitting us to disentangle both effects). Contrasting results are obtained for GDP growth. While current growth does not appear to influence the confidence in the ECB, past year's growth appears highly conducive to it (significance at the 1 percent level).[10] In line with our prediction, higher growth rates contribute positively to a nation's trust in the ECB. Thus, as model 6 suggests, both national income as well as increases therein appear to trigger more trust.

However, a statistical test based on a more simple specification (using only past GDP levels (GDPt-2) and changes therein (GDPt-1 – GDPt-2) cannot reject the hypothesis of equality of coefficients of both variables. Thus, one might conclude that both variables jointly represent

---

[9] Please note the change in sign between column 3 and 4, with only the latter being in line with our predictions.

[10] Estimating a model with both current and past GDP growth, which are only moderately correlated (□ = 0.49), yields qualitatively identical results, with only past GDP level and growth exerting significant impacts.

only the effect of the GDP measured in t-1 (as GDPt-2 +(GDPt-1 – GDPt-2) = GDPt-1. On the other hand, the fact that both GDP level and changes therein are independently significant, support the interpretation that both exert an impact of their own. To sum up, it is impossible to draw a final conclusion.

For simplicity, we will account for the positive effects of income and its growth rate for trust in the ECB by using the one-period lagged GDP level.

Table 1: the influence of GDP

| | 1<br>trust | 2<br>trust | 3<br>trust | 4<br>trust | 5<br>trust | 6<br>trust |
|---|---|---|---|---|---|---|
| log_gdp_L | 0.853** | | | | 0.890** | |
| | [4.89] | | | | [4.66] | |
| log_gdp_L2 | | 0.705** | | | | 0.871** |
| | | [3.64] | | | | [4.60] |
| GDP_gr | | | -0.411 | | 0.156 | |
| | | | [1.20] | | [0.50] | |
| GDP_gr_L | | | | 0.418 | | 0.788** |
| | | | | [1.39] | | [2.93] |
| log_pop_L | -2.826** | -2.824** | -0.612 | 0.235 | -2.738** | -2.904** |
| | [3.34] | [2.78] | [0.70] | [0.30] | [3.15] | [3.06] |
| Constant | 38.041** | 39.535* | 10.552 | -3.31 | 36.230** | 39.139** |
| | [2.99] | [2.60] | [0.74] | [0.26] | [2.72] | [2.75] |
| Observations | 72 | 72 | 72 | 72 | 72 | 72 |
| Number of id | 12 | 12 | 12 | 12 | 12 | 12 |
| R-squared | 0.45 | 0.36 | 0.22 | 0.23 | 0.45 | 0.45 |

*The effects of inflation and unemployment*

Table 2 investigates the impact of inflation and unemployment on trust in the ECB for the Eurozone countries. Allowing for non-linearity in the effects of inflation, we employ not only the simple inflation rate, but also its squared term. In the first model we add the current inflation rate, while in model 2 the lagged inflation rate is employed. Model 3 then employs both current and lagged values. The results show clearly that current inflation matters to people's trust in the ECB (column 1), while the inflation of the last year does not exert any decisive influence (column 2). This finding is corroborated but the estimates of model 3, although decreases in significances are observable for all inflation variables likewise. The results for model 1 also show that the marginal trust-destroying effect of current inflation is slightly decreasing.

Models in columns 4 to 6 analyze the effects of unemployment (and changes therein), also controlling for current inflation. In columns 4 and 5, results for the current and the lagged unemployment growth rates are reported.[11] The estimates show that neither of them matters

[11] The effects are similar for changes in unemployment rate.

for trust in the ECB. In contrast, the results for model 6 indicate that the unemployment rate of the past year exerts a positive influence on trust, contradicting our expectations. Combining models 5 and 6, assuming that growth in unemployment rate might depend on the initial level of unemployment rate, equally shows that only the level exerts a significant impact, but not its change. Overall, these analyses show first, that higher inflation is destructive to people's trust in the ECB, while higher unemployment appears beneficial. We will return to this point in the next section.

Table 2: The effects of inflation and unemployment

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| | trust | trust | trust | trust | trust | trust | trust |
| inflation | -0.035+ | | -0.034 | -0.035+ | -0.038+ | -0.036+ | -0.047* |
| | [1.73] | | [1.36] | [1.71] | [1.82] | [1.84] | [2.42] |
| inflation_s | 0.004 | | 0.004 | 0.004 | 0.004 | 0.005 | 0.006+ |
| | [1.19] | | [1.01] | [1.18] | [1.27] | [1.42] | [1.94] |
| inflation_L | | -0.007 | 0.01 | | | | |
| | | [0.28] | [0.33] | | | | |
| inflation_L_s | | -0.001 | -0.003 | | | | |
| | | [0.36] | [0.69] | | | | |
| unempl_gr | | | | -0.019 | | | |
| | | | | [0.38] | | | |
| unempl_gr_L | | | | | -0.037 | | 0.003 |
| | | | | | [0.75] | | [0.06] |
| log_unempl_L | | | | | | 0.083* | |
| | | | | | | [2.10] | |
| log_unempl_L2 | | | | | | | 0.139** |
| | | | | | | | [3.21] |
| log_gdp_L | 0.873** | 0.864** | 0.879** | 0.869** | 0.831** | 0.941** | 0.833** |
| | [5.05] | [4.97] | [5.04] | [4.97] | [4.55] | [5.52] | [4.98] |
| log_pop_L | -2.761** | -2.552** | -2.621** | -2.660** | -2.404* | -2.729** | -1.373 |
| | [3.23] | [2.96] | [2.99] | [2.95] | [2.45] | [3.30] | [1.44] |
| Constant | 36.811** | 33.439* | 34.458* | 35.201* | 31.393* | 35.420** | 14.256 |
| | [2.86] | [2.57] | [2.61] | [2.58] | [2.12] | [2.84] | [0.98] |
| Observations | 72 | 72 | 72 | 72 | 72 | 72 | 72 |
| Number of id | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| R-squared | 0.49 | 0.48 | 0.5 | 0.49 | 0.49 | 0.53 | 0.58 |

*The effects of labour market policies*

Table 3 reports the results for the models in which the effects of two government spending variables have been tested: first, unemployment benefits spending, measured as share of GDP, which is automatically triggered by rising unemployment. Second, they also test the effects of active labor market policy spending, such as spending on training and re-employment programs, the level of which is usually deliberately set by the ruling governments. Put differently, while unemployment spending works as an *automatic* stabilizer, active labor market policy spending constitutes a means of deliberate policy-making.

The baseline model results (obtained from the previous analyses) are reported in column 1, with a significant positive impact of unemployment rate. Model 2 adds lagged government unemployment spending to the new baseline, while model 3 includes the lagged active labor Markey policy spending. Both labor market policy variables are simultaneously tested in Model 4.

The results for model 2 reveal that neither unemployment spending nor the unemployment rate do not significantly affect trust in the ECB, at least not in this model specification. However, the coefficient on unemployment spending is only slightly below the 10 percent of significance, while the one on unemployment rate is far below conventional significance levels. These findings suggest that the previously observed positive impact of unemployment rate was driven by (unobserved) unemployment spending, which it must have approximated.

In contrast, the estimates of model 3 clearly indicate that more active labor market spending triggers lower levels of trust in the ECB. Possibly, a government's stronger engagement in such policies might serve as a signal to the citizenry that contemporary unemployment rates are of serious concern, possibly combined with a not so rosy outlook of the overall economic development. Note also that unemployment rates themselves are still positively associated with trust in the ECB, suggesting that these do not approximate active labor market spending, which, thus, do not serve as automatic stabilizers.

Finally, when employing both labor market variables (model 4), we find that both types of government spending matter for people's trust in the ECB, with a significance at least at the 5 percent level. Qualitatively, the results are identical compared to those previous two models, with a trust decreasing impact of active labor market policies and a trust increasing effect of unemployment spending. Please note that the unemployment rate itself does not influence trust in the ECB any more.

Why the positive impact of un employment spending on trust in the ECB ? A naïve prediction would suggest that higher unemployment rates and , thus, higher unemployment spending serve as signals for a worsening or bad economic state – for which the ECB may be to blame. Thus, one would rather expect a negative relation. On the other hand, if the citizenry knew what political institutions are most likely to be accountable of the occurrence of unnaturally high unemployment, the ECB would be among those which are least to blame. In fact, national

labor market rigidities and government policies have a much stronger influence on the demand for labor.

As explanation, we can offer what we would like to call the 'Banerjee-effect' (named after his author). This effect links government reactions to economic performance to expectations on the probability of an ECB intervention. According to his argument, a stronger response of the national government to mitigate the negative effects of a bad economic state decreases the need of for the ECB to react. Based on these arguments, we should observe a positive association of between an automatic national stabilizer and this country's confidence in the ECB.

Table 3: The effects of labour market policies

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | trust | trust | trust | trust |
| log_u_sp_L | | 0.065 | | 0.083* |
| | | [1.58] | | [2.18] |
| log_active_L | | | -0.105** | -0.117** |
| | | | [2.80] | [3.20] |
| log_unempl_L | 0.083* | 0.041 | 0.122** | 0.072 |
| | [2.10] | [0.87] | [3.07] | [1.63] |
| inflation | -0.036+ | -0.039+ | -0.026 | -0.029 |
| | [1.84] | [2.01] | [1.38] | [1.56] |
| inflation_s | 0.005 | 0.005 | 0.003 | 0.003 |
| | [1.42] | [1.48] | [0.97] | [1.01] |
| log_gdp_L | 0.941** | 0.941** | 0.992** | 0.998** |
| | [5.52] | [5.60] | [6.16] | [6.43] |
| log_pop_L | -2.729** | -3.112** | -3.078** | -3.610** |
| | [3.30] | [3.66] | [3.92] | [4.54] |
| Constant | 35.420** | 41.759** | 40.476** | 49.188** |
| | [2.84] | [3.23] | [3.42] | [4.07] |
| Observations | 72 | 72 | 72 | 72 |
| Number of id | 12 | 12 | 12 | 12 |
| R-squared | 0.53 | 0.55 | 0.59 | 0.63 |

# 4 Conclusions

In this paper we have analyzed which factors determine the trust of EMU citizens in the European Central Bank. Because the European Central Bank's primary objective amounts to price stability, it is plausible that the inflation rate is a major determinant of trust. We confirm this presumption, as the inflation rate always has a significantly negative impact. One might conjecture that people make the ECB responsible also for high unemployment and low economic growth. However, such an impact of these variables on trust cannot be found in the data. This should be good news to the ECB: Apparently, most people seem to understand that the ECB has no means to lower unemployment or boost growth. They evaluate the ECB's performance on the basis of its success with respect to price stability.

There are interesting extensions to analysis, which we would like to apply in future research. For example, one hypothesis that can be often found in the literature states that citizens consider prices goods like food, which is often paid by cash, much more intensively when forming their estimates of inflation. Accordingly, other prices, like housing prices, should have a much lower impact on the perceived inflation rate and thus on trust in the ECB's ability to control prices. Considering increases for different prices might be a fruitful avenue for future research.

## References


Alberto Alesina. Politics and Business Cycles in Industrial Democracies. Economic Policy, 4(1):55–98, April 1989.

Robert Barro and David Gordon. Rules, Discretion, and Reputation in a Model of Monetary Policy. Journal of Monetary Economics, 12:101–121, 1983.

Helge Berger and Till Müller. How Should Large and Small Countries Be Represented in a Currency Union? "CESifo Working Paper 1344" 2004.

Alan Blinder, Charles Goodhart, Philipp Hildebrand, David Lipton, and Charles Wyplosz. How Do Central Banks Talk?, 2001. ICMB and CEPR, Geneva Reports on the World Economy 3.

Willem H. Buiter. Alice in Euroland. Journal of Common Market Studies, 73(2): 181–209, 1999.

Richard Clarida, Jordi Gali, and Mark Gertler. The Science of Monetary Policy: A New Keynesian Perspective. Journal of Economic Literature, 37:1661–1707, December 1999.

ECB Recent Developments in Perceived and Actual Inflation. Monthly Bulletin, pages 20–23, October 2002.

ECB. Measured Inflation and Inflation Perceptions in the Euro Area. Monthly Bulletin, pages 63–72, May 2007.

Sylvester C.W. Eijffinger and Petra M.Geraats. How Transparent Are Central Banks? mimeo, may 2002.

Bertold Herrendorf and Ben Lockwood. Rogoff's "Conservative" Central Banker Restored. Journal of Money, Credit, and Banking, 29(4):476–495, 1997.

Finn Kydland and Edward Prescott. Rules Rather than Discretion:The Inconsistency of Optimal Plans. Journal of Political Economy, 85(3):473–492, 1977.

Kenneth Rogoff. The Optimal Degree of Commitment to an Intermediate Monetary Target. Quarterly Journal of Economics, 100:1169–1189, 1985.

Lars E. O. Svensson. A Reform of the Eurosystem's Monetary-Policy Strategy Is Increasingly Urgent. Briefing paper for the Committee on Economic and Monetary Affairs (ECON) of the European Parliament, May 2002.