Trust no more? The impact of the crisis on citizens' trust in central banks*

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Abstract

Public trust in economic institutions has generally declined since the onset of the crisis. In particular, Eurobarometer surveys show that trust in the European Central Bank has fallen significantly during the crisis. This paper studies the determinants of public trust in the ECB, in particular during the crisis. Along with inflation and unemployment, rising sovereign bond yields and banking sector distress reduce net trust. An increase of one percent in sovereign bond yields leads to a fall of about nine percent in trust. Hence, country-specific fiscal developments weigh heavily on the level of citizens' trust in the ECB.

JEL Classification: E02; E31; E58; E63; P16.

Keywords: central bank; trust; crisis; sovereign bond yields; banking crisis.

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There is no doubt that in order to be successful over the longer term, the ECB will have to win and maintain the trust and support of the European public.

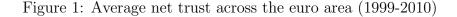
Otmar Issing (2000)

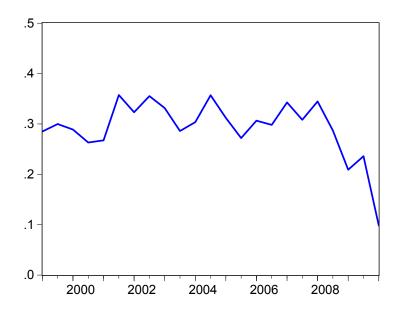
1 Introduction

The persistence of economic institutions in a democratic society requires that its citizens trust them. When citizens lose confidence in an economic institution, they are likely to vote for change, or to elect candidates who favour change. Therefore, economic institutions must earn the trust of citizens, they must maintain it, and they must do so on the basis of observable factors. Trust in economic institutions would be particularly important at times of crisis, when uncertainty increases markedly.

Survey results show that citizens' trust in economic institutions has actually declined since the onset of the crisis (Roth, 2009). A Financial Times/Harris Poll was conducted in June 2009 across five European countries (United Kingdom, France, Italy, Spain and Germany) and the United States (Harris Interactive, 2009). This poll asked respondents the following question: "Do you feel the European Central Bank/Bank of England/Federal Reserve has responded appropriately to the challenges of the economic downturn and its consequences?" A majority answered no in each of these countries. Further evidence on trust in central banks can be obtained from standard Eurobarometer surveys. Among other things, these surveys have asked citizens from EU member countries whether they tend to trust European institutions or not. Figure 1 depicts the cross-country average of net trust of European citizens in the European Central Bank (ECB) from 1999 until May 2010. Net trust is defined as the difference between the share of respondents to standard Eurobarometer surveys who say they trust the ECB, minus the share of respondents who do not trust. Net trust stood at around 30 percent until the crisis started. Since then, net trust has fallen significantly and has even become negative in several countries. Similar results have been obtained for the European Commission and the European Parliament (Roth, 2009).

¹See Figure A1 in the Appendix.





The purpose of this paper is to investigate empirically the determinants of public trust in the European Central Bank, in particular since the onset of the crisis. Is the decline in trust related to large movements in inflation and unemployment, the typical arguments of social loss functions in macroeconomics, since the beginning of the crisis? Is the fall in trust also related to other country-specific developments during the crisis, for example rising sovereign bond yields or financial sector turbulence?

The empirical literature on the determinants of trust in central banks has focused on the European Central Bank due to data availability. Eurobarometer surveys are conducted across EU countries twice a year. Such variation both across countries and over time makes the use of panel data analysis very appealing. Fischer and Hahn (2008) have focused only on the first five years of the euro and thus, they do not include the crisis in their analysis. Gros and Roth (2010) have extended the analysis up to the survey conducted in Fall 2009, thereby exploiting time variation in both the level of trust and macroeconomic variables. In this paper, we extend the sample period to the latest Eurobarometer survey conducted in May 2010 (published in November 2010). The spring of 2010 was characterised by severe

financial market distress and rising unemployment in several euro area members. As such, including this observation contributes in a non-negligible manner to the identification of the determinants of the fall in net trust during the crisis.² Moreover, Gros and Roth (2010) focus narrowly on economic growth to identify the impact of the crisis on net trust. Yet, the crisis has manifested itself in different forms in different countries. Some countries have experienced severe banking sector distress, while others have suffered more from downturns in the real economy. Spreads on sovereign bonds have also diverged sharply after a long period of almost complete convergence, reflecting indebtedness concerns in some but not all countries. Even though economic growth could probably capture some part of banking sector distress and rising bond yields, we control for different forms of the crisis directly by including a large set of explanatory variables in our regression analysis.

Our results show that macroeconomic variables affect the level of net trust of citizens in the ECB. Higher unemployment and deviations of inflation from its level consistent with price stability reduce net trust. Moreover, higher sovereign bond yields and banking sector distress also contribute to the decline in net trust. In particular, an increase of one percent in sovereign bond yields leads to a fall of about nine percent in net trust. Hence, country-specific fiscal developments weigh heavily on the level of citizens' trust in the ECB.

Section 2 describes the empirical approach, including the regression specification, the measurement of net trust and explanatory variables. Since standard Eurobarometer surveys are conducted twice a year at irregular intervals, the construction of the dataset deserves an extensive discussion. Section 3 presents our estimation results and the final section concludes.

2 Empirical approach

This section describes the panel regression specification, the measurement of net trust in the European Central Bank, as well as the construction of explanatory variables.

²Gros and Roth (2010) conclude that "the change of net confidence seems to have come to a halt in October-November 2009". As Figure 1 shows, net trust fell even further in May 2010.

2.1 Regression specification

Standard Eurobarometer surveys are carried out twice a year across the European Union. The availability of data across countries over time makes the use of panel data techniques very appealing. The dependent variable is the level of net trust in country i at survey t. The regression specification includes the typical arguments of social loss functions in macroeconomics, namely inflation and unemployment.³ The apparent association between the fall in net trust and the crisis could be explained by sharp movements of inflation and unemployment during the crisis. Yet, other macroeconomic variables have experienced sometimes abrupt and large changes during the crisis. Thus, we add to the specification a number of explanatory variables capturing various aspects of the crisis to see whether the crisis has had an effect on trust beyond its impact through inflation and unemployment.

$$Trust_{i,t} = \alpha_i + \lambda_t + \beta \pi_{i,t} + \gamma U_{i,t} + \delta X_{i,t} + \varepsilon_{i,t}$$
 (1)

where α_i is a country fixed effect, λ_t is a survey fixed effect capturing variation in net trust common to all countries, $\pi_{i,t}$ is inflation in country i at survey t, $U_{i,t}$ stands for unemployment in country i at survey t, and $X_{i,t}$ comprises other macroeconomic variables of interest.

The country fixed effect will pick up unobserved time-invariant country heterogeneity. Fischer and Hahn (2008) postulate that net trust could vary across countries according to national differences in mentality, history and national economic institutions. The inclusion of survey fixed effects is more controversial. On the one hand, survey fixed effects will capture unobserved variation in net trust common to all countries. On the other hand, survey fixed effects will eat up all the variation in macroeconomic variables with similar patterns over time. For example, inflation had been broadly stable across countries since the creation of the euro until it increased substantially across countries in 2008 and decreased (to negative values in many countries) across countries in 2009. The increase in 2008 was the result of a commodity price shock, while the decrease in 2009 was associated

³See, for example, Drazen (2000), chapter 4, for a discussion of social loss functions in macroeconomics.

with the crisis. Adding survey fixed effects to our regression specification will likely make the coefficient on inflation insignificant. This should not necessarily be interpreted as a lack of statistical significance; the estimated survey fixed effect simply picks up the similar time path of inflation. In the light of this discussion, we estimate all regression specifications with and without survey fixed effects.

2.2 Measurement of net trust

The measure of net trust is constructed on the basis of the standard Eurobarometer surveys. These surveys were established in 1973 and consist of approximately 1000 interviews for each member state at each survey.⁴ Interviews are conducted twice a year, in spring and autumn.

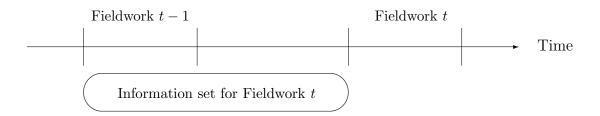
Standard surveys comprise a list of questions which repeat at every wave of the survey. The standard question about trust in European institutions is the following: "And, for each of them, please tell me if you tend to trust it or tend not to trust it?"The list of institutions includes the European Central Bank. We measure net trust as the share of respondents in a country during a given survey which answer they trust the ECB, minus the share of respondents who do not trust. In order to obtain a balanced panel, we focus on the twelve member states who adopted the euro early on. Data are retrieved from the Eurobarometer 51 (Spring 1999) to the Eurobarometer 73 (Spring 2010). Twenty-three waves of the survey for twelve countries gives us 272 observations (in fact, 276 minus four observations; Greece became a member in January 2001, so the first four waves for Greece are not taken into account).

Even though the average level of net trust stood at around 30 percent until the crisis started, it has since then fallen markedly. This fall spreads across all countries in the sample (see Table A1 and Figure A1 in the Appendix for evidence on individual countries). Yet, the magnitude of the fall is not uniform across countries. Some countries experience small

 $^{^4}$ Germany has about 2000, Luxembourg about 500, and the United Kingdom about 1300 (300 for Northern Ireland).

 $^{^5}$ Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain.

Figure 2: Construction of explanatory variables



decreases in net trust, like Austria or Finland, while others have seen large falls, like Germany, the Netherlands or Ireland.

2.3 Explanatory variables

Standard Eurobarometer surveys are always carried out twice a year but the fieldwork does not always happen in the same months. The irregular occurrence of the fieldwork complicates somewhat the construction of explanatory variables. In particular, we must make an assumption about those observable factors which citizens consider when answering the Eurobarometer questions. We shall assume that citizens consider the average of the values of explanatory variables between the month preceding the fieldwork back to the first month of the previous fieldwork. Figure 2 depicts the information set of citizens when they answer questions for the fieldwork at survey t.

When going back in time starting from the month before the fieldwork, why would one stop at the first month of the previous fieldwork? The main idea is best described using an equation. Suppose that net trust depends only on inflation and unemployment. Thus,

$$Trust_{i,t} = \alpha + \beta \pi_{i,t} + \gamma U_{i,t} + \varepsilon_{i,t}$$

where we drop fixed effects and other explanatory variables for convenience. The variable $\pi_{i,t}$ is really the average inflation rate in country i between the month before the fieldwork t and the first month of the previous fieldwork t-1. Similarly, the variable $U_{i,t}$ is the average rate of unemployment in country i between the month before the fieldwork

t and the first month of the previous fieldwork t-1. Taking first differences, we get

$$\Delta Trust_{i,t} = \beta \Delta \pi_{i,t} + \gamma \Delta U_{i,t} + (\varepsilon_{i,t} - \varepsilon_{i,t-1})$$

Any change in the level of trust between two surveys is explained by changes in the explanatory variables between these two surveys. Any information which was already available before is already reflected in the level of trust obtained at the fieldwork t-1.

All data for this paper are retrieved at the monthly frequency. Fischer and Hahn (2008) average net trust within each year and use one-year lags of explanatory variables. The problem with this approach is that anything that happens between the beginning of a year and the fieldwork is ignored. In the context of the crisis, where financial and real variables can move suddenly and sometimes by large amounts, one-year lags are unsatisfactory. Gros and Roth (2010) ignore the irregular occurrence of surveys and tweak the dataset by assuming that all surveys are conducted in April-May and in October-November. They use monthly and quarterly data and transform these into semester data to fit the assumed cycle of surveys. According to the authors, tweaking the dataset in this way is necessary because "it is not possible to change the research design throughout the dataset". Our approach suggests that the irregular occurrence of surveys does not prevent us from running a meaningful empirical exercise, so long as one is willing to work with macroeconomic data at the monthly frequency.

Data on the Harmonised Consumer Price Index (HCPI), unemployment and bond yields have been gathered from the online Eurostat database. Inflation is the year-on-year growth rate of the HCPI. Since high inflation and deflation are both "bads", we transform the rate of inflation by subtracting 2 (the assumed level of inflation consistent with price stability) and taking the absolute value. In terms of a social loss function, the social loss would increase whenever inflation departs from its level consistent with price stability. Data on total industrial production, industrial production excluding construction and construction have been gathered from the OECD Main Economic Indicators. Data on construction activity were only available at the quarterly frequency for Greece, Ireland and Italy. Monthly

observations for these countries were obtained by linear interpolation. Finally, data on broad stock market indices, banking sector stock indices and financial sector stock indices were obtained from Datastream. Returns were calculated as percentage changes. Sharply negative returns on either of the three indices signal financial market distress.

3 Results

In light of the pros and cons of including survey fixed effects in the regression equation, we present results with and without survey fixed effects. Table 1 presents estimation results without survey fixed effects, while Table 2 includes survey fixed effects. All regression specifications feature country fixed effects and robust standard errors. The null hypothesis that all country fixed effects are equal is always rejected.

Estimation results in Table 1 show that higher unemployment and deviations of inflation from its level consistent with price stability both reduce net trust. The coefficient estimate on unemployment is always statistically significant. A one-percentage point increase in unemployment reduces net trust by an approximately equivalent amount. The evidence for inflation is less strong. The coefficient estimate is statistically significant at the 5% level in some specifications, and only at the 10% level in other specifications. A one-percentage point deviation of inflation from its level consistent with price stability decreases net trust by about 1.5 percentage points.

The coefficient estimates for other macroeconomic variables are usually not statistically significant, except for construction activity. Some countries in our sample such as Ireland and Spain have experienced construction booms before the crisis. The crisis has completely reversed this course of action, with abrupt falls in construction activity in those countries. Interestingly, either total industrial production and industrial production excluding construction are not statistically significant. Thus, it appears that construction is really having an impact on net trust and is not capturing a broader collapse of output. Moreover, the abrupt fall in construction activity has an impact on trust beyond the inherent rise in unemployment.

Table 1: Estimation results without survey fixed effects a,b $\,$

(VIII)	Ŀ			(0.418)											1)	0.182**	(0.081)	256	Yes	No	9 0.085	
(VII)	╟─	4) (0.769)		(0.415)									(2	0.174	(0.111)			272	Yes	No	8 0.069	
(VI)				3) (0.416)					-		<u>~</u>	0.150	(0.107)					272	Yes	No	90.00	
(V)	ŀ		<u> </u>	(0.393)						-0.030	(0.028)							272	Yes	No	990.0	
(VI)	<u> </u>) (0.394)			_	0.003	(0.027)									272	Yes	No	0.059	
(III)	<u> </u>		<u> </u>	(0.396)		0.008	(0.027)		-									272	Yes	No	090.0	
(II)	<u> </u>			(0.417)	-0.355 (0.993)													272	Yes	No	090.0	
(I)		(0.733)	-1.184***	(0.397)					-				-					272	Yes	No	0.059	
	Inflation		Unemployment		Bond yield	Banking index	return	Financial index	return	Stock index	return	Industrial production	incl. construction	Industrial production	excl. construction	Construction		Observations	Country fixed effects	Survey fixed effects	R-squared (within)	

^a Robust standard errors in parentheses. * Significant at 10% level; ** significant at 5% level; *** significant at 1% level. b The dependent variable is the net share of respondents who trust the European Central Bank multiplied by 100.

Table 2: Estimation results with survey fixed effects a,b

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(XI)	(X)
Inflation	-0.785	-0.891	-0.717	-0.845	-0.771	-0.771	-0.785	-0.926	-0.826	-0.944
	(0.845)	(0.754)	(0.858)	(0.857)	(0.844)	(0.851)	(0.849)	(0.953)	(0.764)	(0.765)
Unemployment	-0.107	0.264	-0.132	-0.053	-0.063	-0.123	-0.110	0.150	0.235	0.304
	(0.370)	(0.354)	(0.372)	(0.370)	(0.366)	(0.371)	(0.372)	(0.387)	(0.363)	(0.363)
Bond yield		-9.224***							-9.084***	-8.979***
		(2.058)							(2.041)	(2.003)
Banking index			0.074^{**}						0.070**	
return			(0.035)						(0.033)	
Financial index				0.100***						0.092***
return				(0.038)						(0.035)
Stock index					-0.039					
return					(0.044)					
Industrial production						-0.116				
incl. construction						(0.196)				
Industrial production							-0.014			
excl. construction							(0.177)			
Construction								0.054		
								(0.068)		
Observations	272	272	272	272	272	272	272	256	272	272
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey fixed effects	Yes	$_{ m Ves}$	Yes	$_{ m Aes}$	Yes	$_{ m Ves}$	$_{ m Ves}$	Yes	m Aes	Yes
R-squared (within)	0.353	0.399	0.365	0.370	0.356	0.354	0.353	0.375	0.410	0.415
F statistic	5.33***	9.30***	5.27***	5.66***	5.12***	5.29	5.22***	5.61***	8.65***	8.63***

^a Robust standard errors in parentheses. * Significant at 10% level; ** significant at 5% level; *** significant at 1% level. ^b The dependent variable is the net share of respondents who trust the European Central Bank multiplied by 100.

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Estimation results in Table 2 show that once we control for survey fixed effects, rising sovereign bond yields and banking sector distress reduce net trust. Coefficient estimates for these two variables are always statistically significant, at least at the 5% level. Even though the coefficient on banking sector (and more generally financial sector) distress remains rather small, the coefficient estimate on sovereign bond yields is very large in economic terms. A one-percentage point increase in sovereign bond yields reduces net trust by about nine percentage points, other things equal. Hence, country-specific fiscal developments as reflected in sovereign bond yields affect citizens' level of trust in the ECB very strongly.

As expected, inflation and unemployment lose their statistical significance once we include survey fixed effects. But this lack of statistical significance does not imply that inflation and unemployment have no effect on net trust. Both series exhibit a similar time path across countries which is now picked up by the survey fixed effects.

Coefficient estimates for banking sector (and financial sector) returns are statistically significant, while the coefficient estimate for stock market returns is not statistically different from zero. Along with the inclusion of survey fixed effects, this finding means that we are really capturing banking distress and not some common, unobserved shock which would affect all assets across the board.

Finally, developments in the real sector have no impact on net trust beyond the impact of the recession (or slowdown) on unemployment. Gros and Roth (2010) have found that the small recovery in net trust in Fall 2009 coincides with the economic recovery. However, this result is hard to reconcile with the evolution of net trust and economic growth in Spring 2010. Net trust deteriorated sharply while economic growth did not experience any major setback during the months preceding the May 2010 fieldwork.

4 Concluding remarks

This paper studies the determinants of public trust in the European Central Bank, in particular during the crisis. Survey results indicate that the level of net trust of citizens

in the ECB has declined significantly since the onset of the crisis. To the extent that the persistence of economic institutions over time requires the trust of citizens, it would be crucial for such institutions to develop and maintain public support. Of course, net trust could simply fall because unemployment has risen and inflation has deviated significantly from its level consistent with price stability. However, citizens may also trust the ECB to a lesser degree because of purely country-specific developments.

We find that unemployment and deviations of inflation from its level consistent with price stability reduce net trust. These two variables are typical arguments of social loss functions in macroeconomics. Moreover, higher sovereign bond yields and banking sector distress also reduce net trust. The coefficient estimate on sovereign bond yields is especially large. Hence, fiscal developments weigh heavily on the level of public trust in the ECB.

References

- [1] Drazen, A. (2000), Political Economy in Macroeconomics, Princeton University Press.
- [2] Harris Interactive (2009), Monthly opinions of adults from five European countries and the United States, July (http://www.harrisinteractive.com/news/datatables/HI_FT_HarrisPoll_July2009.pdf).
- [3] Fischer, J. and Hahn, V. (2008), Determinants of trust in the European Central Bank, SSE/EFI Working Paper 695.
- [4] Gros, D. and Roth, F. (2010), The financial crisis and citizens' trust in the European Central Bank, manuscript.
- [5] Issing, O. (2000), Should we have faith in central banks?, St. Edmund's College Millennium Lecture, Cambridge.
- [6] Roth, F. (2009), The effect of the financial crisis on systemic trust, *Intereconomics* 44(4), 203-208.

Table A1: Net trust in euro area members, EB51-EB73 (1999-2010)

	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
SPA	0.1160	0.2690	0.2640	0.2420	0.1760	0.2630	0.1660	0.3210	0.1350	0.1830	0.2230	0.2532	0.0693	0.0709	0.1274	0.1605	0.2870	0.1580	0.4017	0.2160	0.0589	0.1000	0.0200
POR	0.2360	0.4056	0.3460	0.3170	0.3320	0.3247	0.3930	0.3120	0.4176	0.3430	0.3250	0.4080	0.4149	0.4217	0.3124	0.3518	0.3422	0.2390	0.3906	0.2650	0.2317	0.3300	0.0700
NDL	0.5398	0.6545	0.5744	0.4831	0.5038	0.5325	0.4794	0.4410	0.4861	0.3668	0.4531	0.5847	0.4960	0.4995	0.5560	0.5884	0.6036	0.6577	0.6993	0.6926	0.4580	0.4100	0.2400
TOX	0.4908	0.2977	0.3950	0.3826	0.4433	0.5348	0.5150	0.5350	0.4917	0.4395	0.4814	0.4602	0.5079	0.5020	0.4374	0.4500	0.4286	0.4323	0.4192	0.3720	0.3830	0.3800	0.3100
ITA	0.3470	0.3515	0.3130	0.3090	0.2480	0.4184	0.4240	0.4065	0.3330	0.2788	0.2049	0.2784	0.3317	0.1710	0.3720	0.0944	0.3030	0.1455	0.2094	0.1320	0.1573	0.1500	0.0900
IRE	0.3914	0.3616	0.4320	0.4016	0.4464	0.5095	0.4492	0.5010	0.4033	0.4448	0.4356	0.3880	0.3042	0.3835	0.4068	0.3760	0.4230	0.3724	0.4731	0.2810	0.2217	0.2300	0.0700
GRE	0.0960	0.0782	0.2500	0.1198	0.1353	0.2415	0.2016	0.1984	0.2572	0.3467	0.3224	0.3150	0.1950	0.1610	0.1640	0.2420	0.1190	0.0530	0.0120	0.0370	-0.1570	0.0700	-0.1800
GER	0.2413	0.2046	0.1259	0.1436	0.2205	0.2910	0.3423	0.3673	0.3467	0.2540	0.2716	0.2790	0.2039	0.2497	0.2575	0.3305	0.4164	0.3897	0.3214	0.2280	0.1709	0.1700	-0.0200
FRA	0.1160	0.1316	0.1727	0.1037	0.1325	0.2129	0.0911	0.1125	0.1619	0.0502	0.0736	0.1451	6900.0	0.0238	0.0382	0.0099	0.0424	0.1506	0.1010	0.0711	-0.0039	-0.0400	-0.1300
FIN	0.3057	0.2059	0.2089	0.2099	0.2153	0.3500	0.3564	0.3228	0.4474	0.3212	0.4791	0.4249	0.5107	0.2442	0.3976	0.3210	0.4586	0.4424	0.4890	0.5378	0.5049	0.5300	0.4100
BLG	0.1785	0.1877	0.2474	0.1679	0.2073	0.3247	0.2297	0.3896	0.2761	0.1800	0.2451	0.4795	0.4590	0.3193	0.3775	0.4048	0.4679	0.3796	0.4167	0.3453	0.2228	0.2100	0.1500
AUT	0.1721	0.2279	0.0985	0.1340	0.1488	0.2853	0.2300	0.3564	0.2214	0.2238	0.1283	0.2671	0.2450	0.2157	0.2301	0.2480	0.2196	0.2778	0.2020	0.2652	0.2601	0.2900	0.1500
Fieldwork	Mar-Apr 1999	Oct-Nov 1999	Apr-May 2000	Nov-Dec 2000	Apr-May 2001	Oct-Nov 2001	Mar-May 2002	Oct-Nov 2002	Mar-Apr 2003	Oct-Nov 2003	Feb-Mar 2004	Oct-Nov 2004	May-Jun 2005	Oct-Nov 2005	Mar-May 2006	Sep-Oct 2006	Apr-May 2007	Sep-Nov 2007	Mar-May 2008	Oct-Nov 2008	Jun-Jul 2009	Oct-Nov 2009	May 2010
Survey	EB51	EB52	EB53	EB54	EB55	EB56	EB57	EB58	EB59	EB60	EB61	EB62	EB63	EB64	EB65	EB66	EB67	EB68	EB69	EB70	EB71	EB72	EB73

2002 2004 2006 2008 2000 2002 2004 2006 2008 United Kingdom Netherlands Germany 2000 0.2-0.4 -8.0 -9.0 0.2-0.0 0.0 -0.2-0.8-9.0 0.2-Figure A1: Net trust in EU15 countries, EB51-EB73 (1999-2010) $\,$ 2000 2002 2004 2006 2008 2002 2004 2006 Luxembourg France Sweden 2002 2004 2000 -0.2-0.8 - 9.0 0.4 0.2-0.0 -0.2--8.0 - 9.0 0.4 0.2 0.0 1.0 0.8 9.0 0.4 0.2 -0.2-2002 2004 2006 2008 2000 2002 2004 2006 2008 Denmark Finland Italy 2000 -8.0 0.6 0.0 - 8.0 - 9.0 0.0 -0.2-0.8 9.0 0.4 0.2 0.4 2002 2004 2006 2008 2002 2004 2006 2008 Belgium Ireland Spain 2000 0.2-0.2 0.8-0.4 0.0 -0.2-0.8--9.0 0.4 0.2-0.0 0.8 9.0 0.4 -0.2-2002 2004 2006 2008 2000 2002 2004 2006 Portugal Greece Austria 2004 0.4 - 9.0 0.8 0.6 0.8 0.8 - 9.0

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