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Crisis and Public Support for the Euro, 1990–2014*

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Abstract

This article analyses the evolution of public support for the single European currency, the euro, from 1990 to 2014 for a 12-country sample of the euro area (EA-12), focusing on the most recent period of the financial and sovereign debt crisis, starting in 2008. We find that citizens' support for the euro on average was marginally reduced during the first six years of the crisis, and that support has remained at high levels. While the pronounced increase in unemployment in the EA-12 throughout the crisis has led to a marked decline in trust in the European Central Bank (ECB), it is only weakly related to support for the euro.

Keywords: support for the Euro; euro area crisis; unemployment; Economic and Monetary Union (EMU); trust in the ECB; panel time series estimation

Introduction

Ever since the plans for a European monetary union and a single European currency were announced, social scientists have explored the determinants of public attitudes towards the new currency (see e.g. Banducci *et al.*, 2003, 2009, Brettschneider *et al.*, 2003, Deroose *et al.*, 2007, Gärtner, 1997, Guiso *et al.*, 2014, Hobolt and Leblond, 2009, 2014, Hobolt and Wratil, 2015, Kaltenthaler and Anderson, 2001). This study falls into this area of research by analysing the longest time series collected to date for public support for the single currency, covering the period 1990–2014 for a 12-country sample of the euro area (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain – the EA-12).

We analyse the period 1990–98 solely on a descriptive basis, before focusing on the period since the establishment of the euro (1999–2014) in the econometric analysis, making a distinction between the pre-crisis years 1999–2008 and the crisis years 2008–14.¹ Our study takes its inspiration from the observation that citizens' trust in the ECB fell significantly during the financial and sovereign debt crisis that started in 2008 (see e.g. Ehrmann *et al.*, 2013, Roth *et al.*, 2014, Wälti, 2012). This raises the question: has the euro, the currency

*We have benefited from comments by participants at the 14th Göttinger Workshop 'Internationale Wirtschaftsbeziehungen' 2012, the 4th International IFABS Conference 2012, the annual conference of Swedish economists 2012, the 2013 EPCS Meeting, the 14th annual SNEE conference 2013, the XVI Applied Economics Meeting 2013, the EcoMod conference 2013, the 21st International Conference for Europeanists 2014 and meetings of DG ECFIN's research fellowship initiative 2014/2015. We thank three anonymous reviewers, Richard Baldwin, Michael Bordo, Eugénia da Conceição-Heldt, Barry Eichengreen, Michael Ehrmann, Javier Estrada, Stephan Klasen, Eric Ruscher and Charles Wyplosz for valuable comments. Felix Roth is grateful to Raf van Gestel for excellent research assistance and to Stiftung Mercator for funding the research project entitled 'Has the crisis in the Eurozone undermined citizens' support for European Monetary Union and the euro?'. Earlier versions of this paper were published as *CEPS Working Document* No. 358 in 2011 and Working Paper 2012:20 of the Department of Economics at Lund University in 2012.

¹ We identify the bankruptcy of Lehman Brothers in September 2008 as the peak of the financial crisis and the start of the economic crisis. Thus, we distinguish between a pre-crisis before and a crisis period after this date.

supplied by the ECB, also suffered a loss in public support due to the crisis, similar to the fall in trust in the ECB?^{2,3}

In line with the literature (Guiso *et al.*, 2014, p. 1, Hobolt and Leblond, 2014, p. 132, Hobolt and Wratil, 2015, p. 238), our analysis reveals that on average there is no empirical evidence of a significant erosion of citizens' support in times of crisis. It remains largely unchanged. However, in contrast to the above-mentioned literature, we detect distinct differences in the time series of public support within the individual EA-12 countries in times of crisis. Estimating our panel time series data with the help of a fixed-effects dynamic feasible generalized least squares (FE-DFGLS) approach, we detect that these differences seem not to be affected by inflation or growth of GDP per capita, but they are – by and large – negatively affected by unemployment.

For the quarter century covered by our analysis, the euro has always on average been supported by a majority of the citizens in the euro area and, since its introduction in 1999 – aside from short periods in Finland and Greece – in each individual member state of the EA-12. The suggestion that 'the global economic crisis has sapped support for the euro' (Jones, 2009, p. 1085) finds little empirical support – at least within the first six years of the crisis that we examine.

The remainder of this article is structured as follows: section I discusses the role of public support for the euro. Section II considers the measurement of public support for the euro and describes the aggregated and individual country patterns. Section III specifies the econometric model, the research design and the data utilized. Section IV presents the econometric results and section V discusses the empirical findings. The last section concludes.

I. The Role of Public Support for the Euro

Why study public support for European monetary unification and the single currency, the euro? Our reply is straightforward: public support plays a crucial role in determining the sustainability of the euro. The glue that holds a monetary union together is the political will to maintain a single currency. The costs and benefits of the euro as perceived by the public are reflected in their support for the currency. By analysing public support, we are able to understand the factors that impact on the sustainability of the euro. We highlight three strands of argument below to support this view.⁴

First, according to Banducci *et al.* (2003, p. 686), citizens' support for European monetary unification and the euro is critical to evaluate the future of European integration and the potential to move towards supranational governance. Similarly, Kaltenthaler and Anderson (2001, p. 141) argue that citizens' support for the euro functions as 'a crucial test case for whether and why European citizens may be willing to transfer power from the nation state to European institutions'. Following the sovereign debt crisis, De Grauwe

² We are aware that a *support* measure, such as support for the euro, is not fully identical to a *trust* measure, such as institutional *trust*. Still, the two measures are close enough for us to compare them in our empirical work.

³ The comparison between public support for the euro and trust in the ECB helps to clarify whether citizens hold the euro per se responsible for the unemployment crisis or whether they hold policy-makers and their institutions accountable. Being a centrepiece of European integration, a pronounced decline of support for the euro would endanger the legitimacy of the euro and EMU.

⁴ It is not imperative for a government to follow public opinion. In reality, some governments of the EA-12 acted against public opinion before switching to the euro in 1999, e.g. the euro was not supported by a majority of German citizens from 1992 to 1997.

(2010, 2014) argues that only deeper European political integration would guarantee the long-term success of EMU (The Economic and Monetary Union).

Second, Jonung (2002, pp. 413–21) and Bordo and Jonung (2003) stress that citizens' support is crucial for the political legitimacy of the euro. Weak political legitimacy will undermine the political unity behind it, thus eroding the glue that holds the monetary union together.

Third, high levels of citizens' support can be interpreted as a shared sense of a 'commonality of destiny', which Baldwin and Wyplosz (2009, pp. 327–9) argue is a prerequisite for the smooth functioning of a currency union. The absence of such sentiment will likely lead to the dissolution of a currency union in the medium to long run. In this context, De Grauwe (2014, p. 133) argues that an important prerequisite for the proper functioning of a currency union might be a socially determined variable, such as solidarity, in contrast to the standard economic criteria found in the theory of optimum currency areas.

In sum, public support for the common currency is an important determinant of the sustainability of a monetary union. Traditionally, this aspect is neglected in assessments of the monetary policy of a nation-state, as the existence of the national currency is taken as a self-evident fact. We find no studies, for example, of the popularity of the dollar or the pound. Such popularity data are only available – as far as we know – for the euro. Thus, our data are unique in international comparisons.

II. Public Support for the Euro

Measuring Public Support for the Single Currency

We construct our measure of public support for the euro from data on responses to Eurobarometer (EB) surveys⁵ carried out bi-annually between 10–11/1990⁶ and 6/2014 (EB34–EB81). Here, the survey respondents were asked their opinion on several statements: 'Please tell me for each statement, whether you are for it or against it.' One statement was: 'A European Monetary Union with one single currency, the euro'. The respondent could choose from the following answers: 'For', 'Against' or 'Don't Know'. The exact wording of the survey question was adjusted over time in response to the development of the monetary union (see Appendix A2).

The use of this survey question underlies the literature on public attitudes towards the single currency (see e.g. Banducci *et al.*, 2003, 2009, Kaelberer, 2007, Kaltenthaler and Anderson, 2001). Following Gärtner (1997, pp. 488–9), we focus on the average percentage of net support measured as the number of 'For' responses minus 'Against' responses to the above question on the country level.⁷

⁵ Eurobarometer surveys normally cover about 1000 respondents per member country in the EU. The interviews are conducted face-to-face in the home of the respondent. For each Standard EB survey, new and independent samples are drawn. The basic sampling design in all EU Member States is multi-stage and random, thereby guaranteeing the polling of a representative sample of the population.

⁶ Values depict the month(s) of fieldwork in the respective year. All values are displayed in the legend of the x-axis in Figure 1.

⁷ Net support is constructed according to the equation:
$$\text{Net support} = \frac{\text{For} - \text{Against}}{\text{For} + \text{Against} + \text{Don't Know}}$$
 Since the response rate of 'Don't Know' fluctuates over the entire sample (ranging from 0 to 38, with a mean of 8 and a standard deviation of 6), a measure of net support is more appropriate than a measure of support to account for these fluctuations. Still, the two measures are highly correlated at 0.96.

Support in the EA-12

Figure 1 shows average net support for the single currency in the EA-12 country sample from 10–11/1990 to 6/2014.^{8,9}

In Figure 1, we identify four distinct phases in the history of the euro during the period 10–11/1990 to 6/2014. The first one covers the 1990s up to the actual establishment of the euro area in January 1999, when irrevocably pegged exchange rates were introduced among the euro area members. This period is characterized by a steady decline of net support from 47 per cent in 3/1991 to 17 per cent in 2–6/1997, with a rapid increase in net support to 51 per cent until 10–11/1998. Whereas the average net support remained positive, net support was indeed negative (≥ -40) in Austria and Finland (1995–97) and in Germany (1992–97).

The second period starts with the introduction of the euro as a bookkeeping entity in January 1999 and ends with the launch of the euro as a full-fledged currency in January 2002. Initially, net support deteriorated by 20 percentage points to 31 per cent until 11–12/2000, increasing again to 55 per cent in 3–5/2002. Net support was negative (≥ -4) only in Finland (1999–2000).

Our third period starts when the euro entered into actual circulation in January 2002. Whereas net support declines to 38 per cent in 10–11/2003, from this time onwards until 3–5/2008, net support remains stable at an average mean level of 41 per cent and a standard deviation of 3.5 per cent. Net support was negative (≥ -7) only in Greece (2005–07).

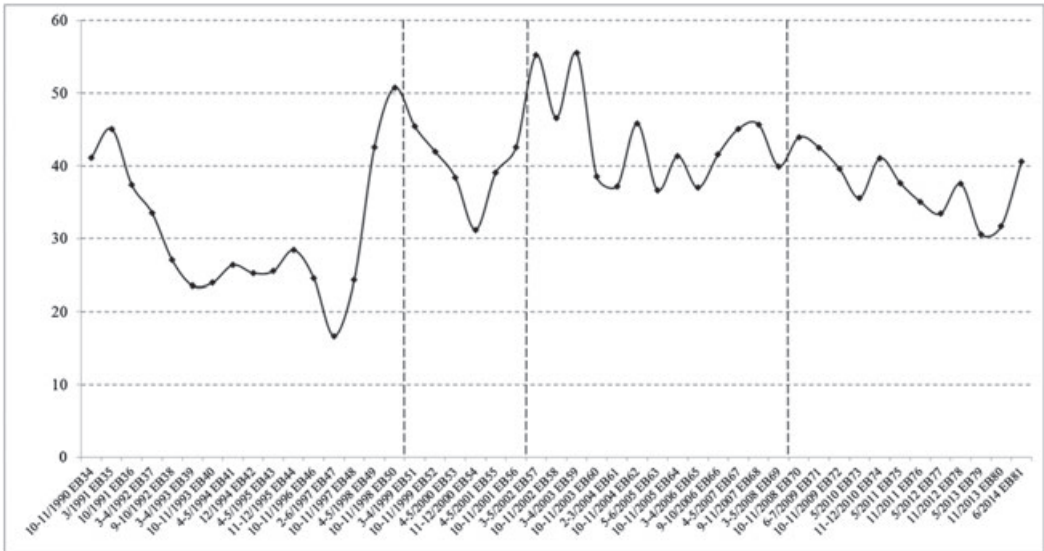
Our fourth period begins with the financial and sovereign debt crisis in September 2008. An average mean level of 37 per cent paired with a standard deviation of 4 per cent from 10–11/2008 until 6/2014 suggests that there is no evident break between the pre-crisis and crisis periods. Net support has been positive in each individual EA-12 country. In 6/2014, in the sixth year of the crisis, net support is positioned at 41 per cent (in total values, 67 per cent support the euro vs. 26 per cent who are against it). The summary statistics for the four phases of the population-weighted aggregated times series and the individual observations at the country level are shown in rows 3–10 in Table A1, Appendix A3.

Figure 1 and its underlying single-country patterns in Figure A1 clarify five facts. First, on average, there always existed a majority of EA-12 citizens who supported the euro over the 25-year period. Second, since the establishment of the euro area in 1999, aside from short periods in Finland and Greece in pre-crisis times, a majority of citizens in each member state of the EA-12 supported the euro, even during the crisis. Third, in 6/2014, in the sixth year of the financial crisis and the fourth year of the sovereign debt crisis, on average, there is actually a slight increase (1 percentage point) in popular support for the euro compared to the pre-crisis period in 3–5/2008. Fourth, in 6/2014 a large majority of EA-12 citizens still supported the euro as a whole (net support >40), and the same was the case in each individual member state of the EA-12 (net support ≥ 25). Fifth, in comparison to a significant decline in *net trust in the ECB* since September 2008, net support for the euro remained almost stable in the EA-12 on average; it declined only slightly in most individual countries and even increased in some countries (see Figures A4 and A5, Appendix A3).

⁸ All individual aggregates for the EA-12 countries are depicted in Figure A1; the respective summary statistics for all 546 individual observations at the country level can be found in row 12 in Table A1, Appendix A3.

⁹ For the aggregation, population weights were applied. Although population-weighted measures are slightly smaller than non-population-weighted measures, with a mean of 37 vs. 42 per cent, both are highly correlated at 0.91. The summary statistics are displayed in rows 1 and 2 in Table A1, Appendix A3.

Figure 1: Average Net Support for the Single Currency in the EA-12 Countries, 1990–2014



Notes: Figure 1 is based on 546 individual observations at the country level. Since the figure depicts net support, all values above 0 indicate that a majority of the respondents support the single currency. Data for EB45 are not available.

Data sources: Aggregated data from 1990 to 2014 include observations from EB34–EB81. The aggregate from 1990–94 is only based on EA-10 countries, i.e. EA-12 excluding Austria and Finland.

Support across Member States

To analyse the impact of the crisis on net support for the euro across member states, Table 1 compares net support before the crisis (3–5/2008) with the level recorded in the sixth year of the crisis (6/2014) (and the respective change between these two periods). Following Roth *et al.* (2014, p. 308), values are displayed for EA-12, EA-4, EA-8 and each individual EA-12 country, as well as for a non-EA and an EA-6 country sample.

According to Table 1, similar to the findings in Figure 1, average net support in the EA-12 actually increased by 1 percentage point, from 40 per cent to 41 per cent from 3–5/2008 to 6/2014. Only a small difference can be observed between an EA-4 and an EA-8 country sample, with a slight drop in the EA-4 by 3 percentage points and a small increase in the EA-8 by 1 percentage point. The marginal drop in the EA-4 is driven by a decrease in Spain (–13), with a strong increase of 38 percentage points in Greece leveling out the more pronounced decline of 22 percentage points in Ireland. The marginal drop in the EA-8 is driven by Germany, France and Italy, which either follow their pre-crisis paths with only slight declines of 3 and 2 percentage points (in France and Italy) or even manage to augment support (in Germany), with an increase of 12 percentage points. One EA-8 country, Belgium, registered a noteworthy decline of net support, with a 10 percentage-point decrease.

Table 1: Net Support and Changes in Net Support in the EA-12, EA-4, EA-8 and Individual EA-12 Countries, 2008–14

Country	Levels 3–5/2008	Levels 6/2014	Changes 6/2014–3–5/2008
EA-12	40	41	1
EA-4	34	31	–3
EA-8	42	43	1
Ireland	78	56	–22
Spain	41	28	–13
Belgium	68	58	–10
Netherlands	62	55	–7
Luxembourg	66	61	–5
Finland	61	56	–5
France	45	42	–3
Italy	27	25	–2
Austria	39	39	0
Portugal	20	25	5
Germany	41	53	12
Greece	2	40	38
Non-EA	1	–26	–27
EA-6	38	51	13

Notes: EA-12 includes EA-4 and EA-8 countries. EA-4 includes Greece, Ireland, Portugal and Spain. EA-8 includes Austria, Belgium, Finland, France, Germany, Italy, Luxembourg and the Netherlands. Non-EA includes Bulgaria, Czech Republic, Denmark, Hungary, Lithuania, Poland, Romania, Sweden and the United Kingdom. EA-6 includes Cyprus, Estonia, Latvia, Malta, Slovak Republic and Slovenia. All country aggregates are weighted by population.
Data sources: EB69 and EB81.

Thus, although most EA-12 countries follow a stable time pattern, we detect distinct differences within the time series between the EA-4 and EA-8 countries. By focusing almost exclusively on country aggregates, these individual country differences have not been discussed in the existing literature (Guiso *et al.*, 2014, p. 21, Hobolt and Leblond, 2014, p. 132, Hobolt and Wratil, 2015, p. 244–5). The results of Table 1 contrast sharply with comparable data showing *net trust in the ECB*, which declined by 52 percentage points in the EA-12 and by 89 percentage points in the EA-4, with Spain, Ireland and Greece losing 103, 71 and 58 percentage points in *net trust* respectively (Table A2, Appendix A3).

In contrast to the stable support in most EA-12 countries, support outside the euro area declined strongly by 27 percentage points, from 1 per cent in 3–5/2008 to –26 per cent.¹⁰ The most pronounced decline occurred in the Czech Republic and in Sweden, with respective values of –60 per cent and –59 per cent. In the UK, whereas the decline was still moderate, with a value of –17 per cent, the level of –66 in 11/2012 is the lowest within the EU-27 over 1990–2014. Within the member countries that joined the euro after 2001, support increased by 13 percentage points.¹¹ We focus on the original EA-12

¹⁰ Support for the euro within non-EA countries is depicted in Figure A2; summary statistics for all 242 individual observations at the country level are shown in row 13 in Table A1, Appendix A3.

¹¹ Individual time series data for the EA countries that joined the euro after 2001 are depicted in Figure A3; the respective summary statistics for all 120 individual observations at the country level are displayed in row 14 of Table A1, Appendix A3.

countries while controlling for the robustness of the econometric results with an EA-18 country sample.¹²

III. Empirical Approach

Model Specification

So far, we have described public support for the euro. Next, we analyse channels potentially influencing support for the euro. We estimate net support for the euro as a function of inflation, growth in real GDP per capita and unemployment.¹³ This approach is solidly embedded within three strands of research: i) the literature on popularity functions (Bellucci and Lewis-Beck, 2011, pp. 192–4, Nannestad and Paldam, 1994, pp. 215–16); ii) a recent study on trust in the ECB (Roth *et al.*, 2014, pp. 306–7); and iii) a study that suggests further work on the macro-economic impact on the popularity of the euro (Banducci *et al.*, 2009, p. 564). Thus, in our baseline model (1), aggregated net support for the euro is estimated as a function of inflation, growth of GDP per capita, unemployment and macro-economic control variables deemed of importance:

$$\text{Support_euro}_{it} = \alpha_i + \beta_1 \text{Inflation}_{it} + \chi_1 \text{Growth}_{it} + \delta_1 \text{Unemployment}_{it} + \phi_1 Z_{it} + w_{it}, \quad (1)$$

Support_euro_{it} is the aggregated net support for the euro in country *i* during period *t*; *Inflation_{it}*, *Growth_{it}*, *Unemployment_{it}* and *Z_{it}* are, respectively, inflation, growth of GDP per capita, unemployment and macro-economic control variables, such as the change in the euro/US dollar exchange rate for country *i* during period *t*. α_i depicts a country-specific constant term and w_{it} is the error term. Since we utilize an FGLS (Feasible Generalized Least Square) estimation approach, time dummies are not included within our baseline estimation.

Research Design

We proceed in two steps. First, support for the euro is studied from a macro perspective with a focus on feedback effects between support for the euro and the overall economic situation. Equation (1) is estimated with an EA-12 country sample for 1999–2014 with a total number of 331 observations.¹⁴ Due to a lack of monthly or quarterly data on inflation, GDP and unemployment, it is not possible to cover the period prior to the establishment of the euro (1990–98). Focusing on the period from 1999 onwards allows us also to compare our econometric results with those from other studies.

¹² The countries outside the EA deserve a more detailed econometric analysis not provided here (see e.g. Guiso *et al.* 2014, p. 32, Hobolt and Leblond 2014, pp. 133–36 and Hobolt and Wratil 2015).

¹³ We disregard potential collinearity between growth of GDP per capita and unemployment; see e.g. Okun (1962), as the correlation between growth of GDP per capita and unemployment is only -0.17 in the EA-12 country sample.

¹⁴ For Greece, time series data from 2001 onwards were taken.

With $t=31$ and $n=12$ and thus with a ratio of $t/n=2.58$, equation (1) is estimated via panel time series estimation. The analysis differentiates between a pre-crisis (1999–2008) and a crisis period (2008–14). The matching between the macroeconomic variables and the Eurobarometer data follows a procedure proposed by Wälti (2012, p. 597).

Second, in order to corroborate the findings between inflation and support for the euro from the macro-econometric analysis in regressions 1–3 in Table 2, support for the euro is examined from a micro point of view using 136,587 individual observations. In this step, emphasis is put on inflation *perceptions*, controlling for the personal characteristics of the interviewee (age, gender, education, employment and legal status and political attitudes) as well as perceptions concerning the employment and economic situations.

Data Used

Data on support for EMU and the euro and trust in the ECB are taken from the bi-annual Eurobarometer survey. For the descriptive analysis, aggregated data on support for EMU and the euro from 1990 to 2014 include observations from EB34 (10-11/1990) to EB81 (6/2014).¹⁵ For the econometric analysis at the aggregated level, data on support for EMU and the euro and trust in the ECB from 1999 to 2014 include observations from EB51 (3-4/1999) to EB81 (6/2014). Monthly data on inflation (the change in the harmonized index of consumer prices) and unemployment rates are from Eurostat. Unemployment data were seasonally adjusted. Monthly data on GDP¹⁶ and population¹⁷ are taken from Eurostat's quarterly database. To gain monthly observations, data on GDP and population were interpolated.¹⁸ Monthly data on the exchange rate of the euro vis-à-vis the US dollar are based on Eurostat data. A summary of the data utilized for the descriptive analysis (1990–2014) is given in Table A1, Appendix A3; and data for the econometric analysis at the macro level from 1999 to 2014 are given in Table A3, Appendix A3.

Data for the econometric analysis of individual observations are obtained from the ZACAT service from GESIS-Leibniz Institute for the Social Sciences and have been merged for the period 1999–2011; they include observations from EB51 (3-4/1999) to EB75 (5/2011). The merged variables utilized include support for the euro, inflation perceptions and socio-economic background variables including age, gender, education, legal and employment status, political attitudes and perceptions concerning the employment and economic situations. A summary of the descriptive statistics of all variables is given in Table A4, Appendix A3.

¹⁵ Aggregated data from EB38–EB71 for support for the EMU and the euro were purchased from TNS-Emnid. Data from EB34–EB37 were drawn from Gesis (2005). Data for EB72–EB81 were drawn from the European Commission (2014).

¹⁶ GDP data were seasonally adjusted and chain-linked with 2005 as the reference year. Data on GDP were missing for Greece from the second semester of 2011 onwards and for Portugal and Ireland from the first semester of 2013 onwards.

¹⁷ Due to inconsistencies and breaks in various country series within the official Eurostat data, values had to be replaced by means of interpolation whenever necessary.

¹⁸ Potential measurement errors from the applied interpolation seem unlikely as the monthly constructed variables correlate with those constructed on a semester basis as high as 0.95 for growth of GDP per capita.

IV. Econometric Results

Macro Analysis

We estimate equation (1) by means of DOLS (dynamic ordinary least squares),¹⁹ a method that permits full control for endogeneity of the regressors (Stock and Watson, 1993, Wooldridge, 2009).²⁰ In order to correct for autocorrelation,²¹ we apply a FGLS procedure.²² Both applications lead to the following equation (2), representing our FE-DFGLS approach (the detailed steps leading from equation (1) to equation (2) are explained in Appendix A4):

$$\begin{aligned} \text{Support_euro}_{it}^* &= \alpha_i + \beta_1 \text{Inflation}_{it}^* + \chi_1 \text{Growth}_{it}^* + \delta_1 \text{Unemployment}_{it}^* + \phi_1 Z_{it}^* + \\ &\sum_{p=-1}^{p=+1} \beta_{2p} \Delta \text{Inflation}_{it-p}^* + \sum_{p=-1}^{p=+1} \chi_{2p} \Delta \text{Growth}_{it-p}^* + \sum_{p=-1}^{p=+1} \delta_{2p} \Delta \text{Unemployment}_{it-p}^* + \\ &\sum_{p=-1}^{p=+1} \phi_{2p} \Delta Z_{it-p}^* + u_{it} \end{aligned} \quad (2)$$

with α_i being the country fixed effect and Δ indicating that the variables are in first differences. Inflation, growth and unemployment turn exogenous and the coefficients β_1 , χ_1 , δ_1 and ϕ_1 follow a t-distribution. This property permits us to derive statistical inferences on the impact of inflation, growth and unemployment.²³ The asterisk (*) indicates that the variables have been transformed (purged from autoregressive processes) and that the error term u_{it} fulfills the requirements of the classical linear regression model (i.e. it is free from autocorrelation).

Table 2 shows the econometric results for equation (2) within our EA-12 country sample. When analysing the full sample (3–4/1999 to 6/2014) with 331 observations, in regression (1) unemployment is significantly (95 per cent confidence level) and negatively (–1.4) related to support for the euro.²⁴ In contrast to unemployment, inflation and growth of GDP per capita are insignificantly related to support for the euro when estimating our full sample.²⁵

We have argued that the pre-crisis period (3–4/1999 to 3–5/2008) should be kept distinct from the crisis period (10–11/2008 to 6/2014); accordingly, regressions 2 and 3 split the full sample into a pre-crisis period and a crisis period to explore the impact of the crisis on popular support for the euro. Splitting the full sample reveals that the significant effect of

¹⁹ A prerequisite for using DOLS is that the variables entering the model are non-stationary and that all the series are in a long-run relationship (cointegrated). In our case, all series are integrated of order 1, i.e. they are I(1) (and thus non-stationary); non-stationarity of inflation and growth of GDP per capita is due to non-stationarity (non-constancy) of the variance of these series and they are cointegrated. The panel unit root tests and Kao's residual cointegration test are displayed in Tables A5–6, Appendix A3.

²⁰ Without controlling for endogeneity, existing empirical studies based their conclusions on biased empirical results (see e.g. Banducci *et al.*, 2009, p. 571 and Hobolt and Leblond, 2014, p. 141).

²¹ We found first-order autocorrelation to be present.

²² FGLS (in the ready-to-use EViews commands) is not compatible with time-fixed effects. It picks up shocks and their influence over short to medium-term periods. In addition, it has been found that running the regression with time-fixed effects (without applying FGLS) does not tackle the problem of autocorrelation of the error term.

²³ The coefficients β_{2p} , χ_{2p} , δ_{2p} and ϕ_{2p} are linked to the endogenous part of the explanatory variables and do not result in a t-distribution. Since we are not interested in the influence of these 'differenced variables' on support for the euro, they will not be reported here.

²⁴ The sensitivity analysis in Table A7, Appendix A3 indicates that the most robust relationship is retrieved when solely analysing the third and fourth phase in the history of the euro from 3–5/2002 until 6/2014. In this case, even when restructuring the time sample (rows 6–8) and excluding the identified country outliers (rows 18–23), the unemployment coefficient remains robust and highly significant (99 per cent confidence level).

²⁵ When excluding Greece, inflation tends to be significant (95 per cent confidence level) (see rows 14–23 in Table A7).

Table 2: Inflation, Unemployment, GDP per Capita Growth and Net Support for the Euro: FE-DFGLS Estimations (Aggregated Level), 1999–2014

Regression Dependent variable Sample	(1) Net Support for Euro FS	(2) Net Support for Euro BC	(3) Net Support for Euro C
<i>Inflation</i>	−4.0 (2.57)	−12.7*** (4.80)	−2.2 (2.71)
<i>Unemployment</i>	−1.4** (0.61)	−1.6 (2.07)	−1.6** (0.67)
<i>GDP per capita growth</i>	−0.8 (1.14)	−1.4 (2.43)	−2.2* (1.26)
Country fixed effects	Yes	Yes	Yes
Control for endogeneity	Yes	Yes	Yes
Elimination of first-order correlation	Yes	Yes	Yes
Durbin-Watson statistic	2.38	2.48	2.22
Number of observations	331	211	120
Number of countries	12	12	12
Adjusted R-squared	0.79	0.79	0.84

Notes: FS = Full sample; BC = Before crisis; C = Crisis. Data on GDP per capita is missing for Greece from the 2nd semester of 2011 and for Portugal and Ireland from the 1st semester of 2013 onwards. Standard errors are in parentheses. *** $p < = 0.01$. ** $p < = 0.05$. * $p < = 0.10$.

unemployment (−1.4) on net support for the euro is driven by the crisis period, in which unemployment is negatively (−1.6) and significantly (95 per cent confidence level) related to net support for the euro.²⁶ In contrast, whereas inflation is insignificantly related to support for the euro in times of crisis, it is strongly negatively (−12.7) and highly significantly (99 per cent confidence level) related to net support for the euro in the pre-crisis period.^{27,28,29}

The relatively weak coefficient of −1.6 between unemployment and net support for the euro in times of crisis is in clear contrast to a much larger coefficient of −6.6 between unemployment and *net trust in the ECB* in times of crisis (Table A9, Appendix A3). Thus, in times of crisis, an increase in unemployment exerts an over four times stronger effect on *net trust in the ECB* compared to net support for the euro. Whereas the pronounced increase in unemployment rates in the EA-12 throughout the crisis – with the exception of Germany, but in particular in the EA-4 – has led to a significant decline in *net trust in the ECB*, it has only led to a slight decline in net support for the euro in the EA-12, in particular in Spain and Ireland.³⁰ It even followed opposite trends in Greece in the beginning of the crisis. Interestingly,

²⁶ For a comparison of unemployment and net support for the euro in each EA-12 country, see Figure A6, Appendix A3. The relationship within the EA-12 country sample in times of crisis seems to be driven by the most recent observations (see rows 9–11 and rows 24–29 in Table A7). It also tends to be more robust once Greece is excluded (see rows 9 and 24, 10 and 26 in Table A7), where unemployment and net support are actually positively associated from 10–11/2008 to 11/2011 (see Table A8 and Figure A6). Due to missing data for growth of GDP per capita, the Greek time series could only be estimated until 11–12/2010.

²⁷ We also utilized alternative inflation indicators, such as the absolute deviation from the 2 per cent target, as well as including a squared term to estimate a curvilinear relationship. These alternative estimators, however, did not yield any additional insight.

²⁸ For the behaviour of inflation and net support for each individual EA-12 country, see Figure A7, Appendix A3.

²⁹ This highly significant association is driven by the Finnish case and our second phase in the history of the euro (see rows 12–13 and 30–32 in Table A7).

³⁰ For a comparison of time series between unemployment and net support for the euro, as well as *net trust in the ECB* in each EA-12 country, see Figures A6 and A8, Appendix A3. For a table of correlation coefficients see Table A8.

whereas the reduction of unemployment rates in Germany was positively associated with a significant decline in *net trust in the ECB*, it is negatively associated with an increase in net support for the euro, and thus contributes to the weak negative evidence between unemployment and net support for the euro.³¹

We are confident that our econometric analysis has not omitted any important variables, having found that our time series are cointegrated.³² However, to address concerns over missing variables, we include the change in the euro/US dollar exchange rate, as Banducci *et al.* (2003, p. 694; 2009, p. 571), Brettschneider *et al.* (2003, p. 50) and Hobolt and Leblond (2009; 2014, p. 137) stress its importance for support for the euro. The inclusion of the change in the euro/US dollar exchange rate in Table A10, Appendix A3 does not alter our results in any substantial manner – although growth of GDP per capita renders significant (95 per cent confidence level) in times of crisis. It confirms previous empirical results which find a positive and significant relationship between the change in the euro/US dollar exchange rate and net support for the euro in pre-crisis times. In times of crisis, however, it is insignificantly related to net support for the euro.

To corroborate our results for the complete euro area, we include an EA-6 country sample. Estimating an EA-18 country sample in Table A11, Appendix A3 does not change the key econometric results in any substantial manner, although inflation is rendered significant (95 per cent confidence level) in times of crisis.

Micro Analysis

In order to extend our study of the relationship between the official inflation rate and net support for the euro from regressions 1–3 in Table 2, and as Banducci *et al.* (2009) suggest that the actual economic situation – as summarized in official economic statistics – does not necessarily agree with the perceived economic situation, in equation (3) we examine the support for the euro based on a probit model and on individual data, in order to account for citizens' perceptions towards inflation.³³ The data set at hand does not allow us to track individuals over time. The equation for the probit model is expressed as follows:

$$P(\text{Support_euro}_{jit} = 1) = \alpha_i + \beta \text{Inflation } PC_{jit} + \chi \text{Economic } PC_{jit} + \delta \text{Unemployment } PC_{jit} + \phi Z_{jit} + \gamma_t + \varepsilon_{jit}, \quad (3)$$

where P represents the probability with which the euro is supported. The dependent variable ($\text{Support_euro}_{jit}$) represents the support for the euro for individual j in country i at time t and takes on 1 if the individual supports the euro and 0 if the individual does not support the euro. Inflation ,³⁴ Economic and $\text{Unemployment } PC_{jit}$ represent the inflation,

³¹ See the results of the correlation coefficient for Germany in Table A8, as well as the evolution of time series in Figures A6 and A8.

³² See Table A6, Appendix A3 and the discussion concerning potential omitted variables in Appendix A4.

³³ To illustrate the difference between the official inflation rate and inflation perception, Figure A10 compares their behaviour within each EA-12 country. These two series are lowly correlated at 0.39.

³⁴ The best proxy for individual perceptions about inflation is provided by the following question in the Eurobarometer surveys: 'What do you think are the two most important issues (you are)/(OUR COUNTRY is) facing at the moment?' Several possible answers are then given, with 'rising prices/inflation', 'unemployment', 'economic situation' and a range of other responses as possibilities, with a maximum of two options to be chosen by the respondent. The particular inflation perception measure for the personal and national economic situation is then coded as 1 if the respondent identifies inflation as an important issue for her/himself and for her/his country or 0 if inflation is not identified to be important.

Table 3: Inflation Perceptions and Support for the Euro – Probit Analysis (Individual Level), 2003–11

Regression	(1)	(2)	(3)	(4)	(5)	(6)
Sample	FS	BC	C	FS	BC	C
Level	PNE	PNE	PNE	PPE	PPE	PPE
<i>Inflation perceptions</i>	−3.9*** (−12.7)	−4.4*** (−11.6)	−2.9*** (−5.6)	-	-	−4.4*** (−9.9)
Obs.	136,587	92,389	44,198	-	-	44,198

Notes: FS=Full Sample; BC=Before Crisis; C=Crisis; PNE=Perceptions National Economy; PPE=Perceptions Personal Economy; Obs.=Observations. Coefficients display marginal effects. Z-statistics are placed beneath the coefficients between parentheses. *** $p < 0.01$.

economic and unemployment perceptions for the national economic situation or personal economic situation for individual j in country i at time t . Z_{jit} represents micro controls including age, gender, education, employment and legal status and political orientation for individual j in country i at time t ; α_i represents the country fixed effects; γ_t represents the time-fixed effects; and ε_{jit} represents the error term.

To corroborate the findings between inflation and net support for the euro, Table 3 only displays and analyses the value for the β -coefficient in equation (3) (thus the impact of the perception of inflation on support for the euro). Controlling for the above-mentioned specification with a maximum amount of 136,587 individual observations, inflation perceptions, in contrast to the official inflation rate, have the expected negative effect in all three samples (Full Sample, Before Crisis and Crisis) for the national economic situation (regressions 1, 2 and 3) as well as the personal economic situation in times of crisis (regression 6). As the values depict the marginal effects, the interpretation of the coefficient in times of crisis is as follows: an individual who identifies inflation to be an important issue either for the national economy or for his/her personal economy in times of crisis is around 2.9 or, respectively, 4.4 per cent less likely to support the euro than an individual who has not identified inflation to be an important issue.

Previous Findings

How do our econometric results for the crisis period 2008–14 square with previous findings? First, in contrast to Hobolt and Leblond (2014, p. 141), we find a significant and negative relationship between unemployment and net support for the euro in times of crisis.^{35,36} Second, similar to previous empirical findings (Roth *et al.*, 2014, p. 310), this negative relationship is four times smaller than the one between unemployment and *net trust in the ECB*. Third, in contrast to Banducci *et al.* (2009, p. 571)³⁷ and Hobolt and Leblond (2014, p. 141),³⁸ we find a significant and negative relationship between inflation and net support for

³⁵ Results differ because our analysis: i) has controlled for potential endogeneity; ii) uses a matching strategy as identified above; and iii) is based on a longer time sample (until 6/2014).

³⁶ Our result indicates that the claim by Hobolt and Leblond (2014, p. 142), that ‘worsening economic conditions lead to increased support for the euro in the event of a very severe economic crisis’, needs to be revisited.

³⁷ Results differ because points i) and ii), as mentioned above, apply. In addition, our analysis iii) is based on 211 bi-annual vs. 84 annual observations and iv) estimates an extended pre-crisis time-period from 1999 to 2008 vs. 2001–07.

³⁸ Results differ because points i) and ii), as mentioned above, apply. In addition, iii) the matching of the inflation indicator ‘annual’ rate of change in HICP to a ‘bi-annual’ research design (Hobolt and Leblond, 2014, p. 144) might create measurement errors.

the euro in pre-crisis times, in line with underlying theoretical literature (Kaelberer, 2007, p. 626). The negative relationship, however, is insignificant in times of crisis. Fourth, at the micro level we are able to confirm the negative relationship between inflation perception and support for the euro in pre-crisis times, as found by Banducci *et al.* (2009, p. 576), and we also find a similar negative relationship in times of crisis. These differences in the empirical results suggest the need for further research on the determinants of the public support for the euro.

V. Discussion

Our econometric results invite a number of comments concerning the future of the euro. First, how should we interpret the support for the euro in light of the theoretical literature and the first six years of the crisis? Following the arguments by Banducci *et al.* (2003, p. 686) and Kaltenthaler and Anderson (2001, p. 141), support for the euro within the EA-12 during the crisis period 2008–14 suggests there maybe scope for further political integration to strengthen the sustainability of the single currency, as argued by De Grauwe (2010, 2014). Following Jonung (2002) and Bordo and Jonung (2003), support for the euro during the crisis indicates that the political glue necessary for the euro is at hand within the EA-12. In a similar vein, according to the arguments of Baldwin and Wyplosz (2009, pp. 327–9) and De Grauwe (2014, p. 133), the key prerequisite for the smooth functioning of a currency union – the ‘commonality of destiny’ or solidarity – is still present within the EA-12.

Second, how should we interpret the fact that the ECB bears the brunt of the blame for the unemployment crisis in the EA-12, as opposed to the actual euro? One could argue that euro-area citizens simply continue to want the euro as their currency and do not hold the euro *per se* responsible for the unemployment crisis. Instead, policy-makers and their institutions are blamed. Consequently, the decline in trust in the ECB is part of a larger decline in *systemic trust* due to the crisis, including institutions of democratic governance at the European and national level (see e.g. Ehrmann *et al.*, 2013, Roth *et al.*, 2013). It maybe the case that citizens support the euro because the euro is a binary regime from which exit would have worse consequences than staying in (Guiso *et al.*, 2014, p. 32, Hobolt and Leblond, 2014, p. 142). In contrast, the ECB is a policy-making institution that is held accountable by citizens for the crisis.

Finally, the fact that the euro – a centrepiece of European integration – still finds support during the crisis should be viewed as a necessary condition for its survival. The future will show if this support is sufficient to guarantee its existence.

Conclusions

Five findings emerge from our analysis.

First, our analysis covering the 25-year period from 1990 to 2014 for the EA-12 country sample shows that, on average, a majority of citizens has supported the single European currency.

Second, since the establishment of the euro in January 1999, besides short time periods in Finland and Greece in the pre-crisis period, a majority of citizens in each individual member state of the EA-12 supported the euro, even during the crisis period 2008–14.

Third, the crisis has only slightly dented support for the euro in most EA-12 countries, and even increased it in some. This finding contrasts with the development of *net trust in the ECB*, which declined in a pronounced way due to the crisis.

Fourth, the difference between net support for the euro and *net trust in the ECB* during the crisis can largely be explained by changes in unemployment rates. Whereas the pronounced increase in unemployment rates in the EA-12 during the crisis – with the exception of Germany, but in particular in the EA-4 – has led to a significant decline in *net trust in the ECB*, it has only led to a slight decline in net support for the euro in the EA-12.

Fifth, whereas we detect an insignificant relationship between inflation and net support for the euro during the crisis at the macro level, we find a negative link between citizens' perceptions towards inflation and support for the euro.

Finally, we conclude that the support for the euro before as well as after the crisis suggests that one of the most important prerequisites for a sustainable monetary union is present within the EA-12. The future will show how well European policy-makers will manage this support for the single currency.

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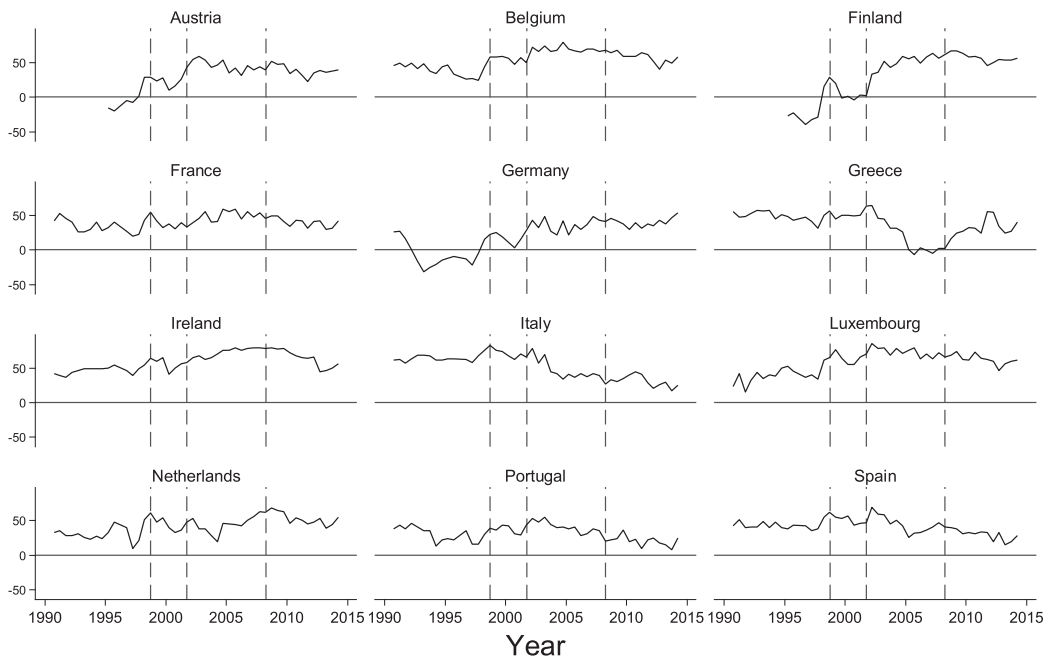
D-37073 Göttingen

Germany

email: froth1@uni-goettingen.de

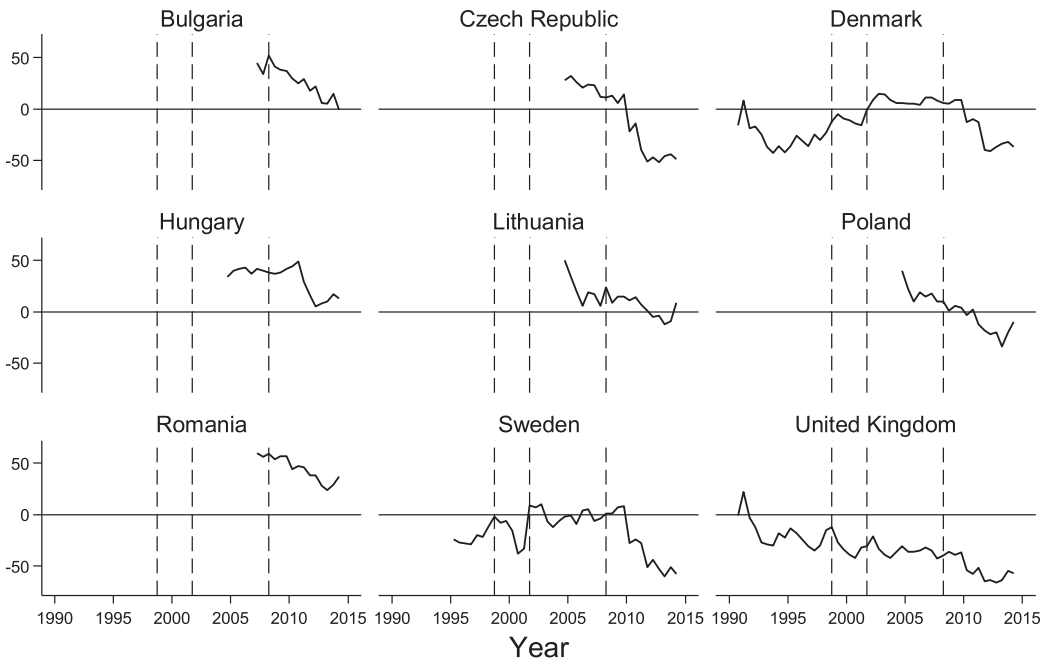
Appendix A1: Individual Country Time Series for the EU-27, 1990–2014

Figure A1: Net Support for the Single Currency, EA-12 Countries, 1990–2014



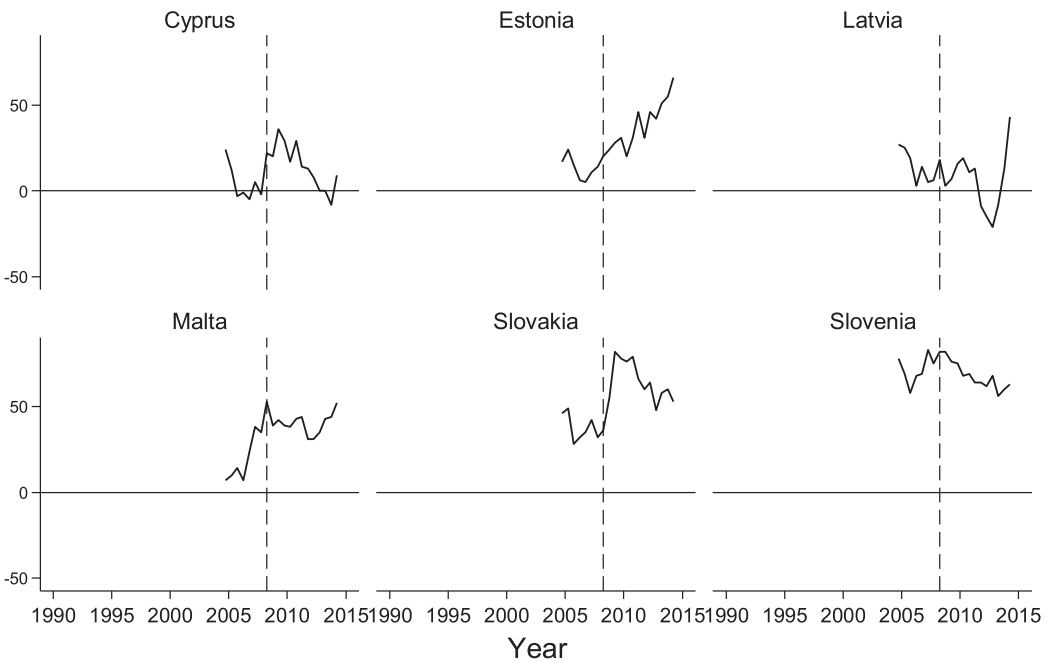
Data sources: EB34-EB81.

Figure A2: Net Support for the Single Currency, Non-EA Countries, 1990–2014



Data sources: EB34-EB81.

Figure A3: Net Support for the Euro, six EA Countries that Joined EMU after 2001, 2004–14



Data sources: EB62-EB81.

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Supporting Information

Additional Supporting Information maybe found in the online version of this article at the publisher's web-site:

Appendix A2: A Detailed Breakdown of the Questionnaire over the 25-year Time Period

Appendix A3: Descriptive Statistics and Test Results

Table A1: Summary Statistics for the Descriptive Analysis

Table A2: Net Trust and Changes in Net Trust in the ECB in EA-12, EA-4, EA-8 and Individual EA-12 Countries, 2008–14

Table A3: Summary Statistics for the Macro Analysis, 1999–2014

Table A4: Summary Statistics for the Micro Analysis, 2003–11

Table A5: Pesaran's CADF Panel Unit Root Tests, EA-12 Countries

Table A6: Kao's Residual Cointegration Test, EA-12 Countries

Table A7: Sensitivity Analysis between Unemployment, Inflation and Net Support for the Euro: FE-DFGLS Estimations (Aggregated Level), 1999–2014

Table A8: Correlation Coefficients between Unemployment, Inflation and Net Support for the Euro, Net Trust in the ECB in the EA-12 countries, 1999–2014

Table A9: Inflation, Unemployment, GDP per Capita Growth and Net Trust in the ECB: FE-DFGLS Estimations (Aggregated Level), 1999–2014

Table A10: Inflation, Unemployment, GDP per Capita Growth, Change in Euro/US Dollar Exchange Rate and Net Support for the Euro: FE-DFGLS Estimation (Aggregated Level), 1999–2014

Table A11: Inflation, Unemployment, GDP per Capita Growth and Net Support for the Euro: FE-DFGLS Estimations (Aggregated Level), EA-18, 1999–2014

Figure A4: Average Net Support for the Euro and Net Trust in the ECB, EA-12 Countries, 1999–2014

Figure A5: Net Support for the Euro and Net Trust in the ECB, EA-12 Countries, 1999–2014

Figure A6: Unemployment and Net Support for the Euro, EA-12 Countries, 1999–2014

Figure A7: Inflation and Net Support for the Euro, EA-12 Countries, 1999–2014

Figure A8: Unemployment and Net Trust in the ECB, EA-12 Countries, 1999–2014

Figure A9: Inflation and Net Trust in the ECB, EA-12 Countries, 1999–2014

Figure A10: Inflation and Inflation Perceptions, EA-12 Countries, 2003–11

Appendix A4: Detailed Steps Leading from Equation (1) to Equation (2)