Revisiting Public Support for the Euro, 1999-2017

Accounting for the Crisis and the Recovery

Roth, Felix; Baake, Edgar; Jonung, Lars; Nowak-Lehmann, Felicitas

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Felix Roth
Edgar Baake
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LUND UNIVERSITY

Revisiting Public Support for the Euro, 1999-2017: Accounting for the Crisis and the Recovery*

Felix Roth†, Edgar Baake†, Lars Jonung‡ and Felicitas Nowak-Lehmann≠

† = University of Hamburg; ‡ = Lund University; ≠ = University of Göttingen

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Abstract

This paper explores the evolution and determinants of public support for the euro since its creation in 1999 until the end of 2017, thereby covering the pre-crisis experience of the euro, the crisis years and the recent recovery. Using uniquely large macro and micro databases and applying up-to-date econometric techniques, we revisit the growing literature on public support for the euro. First, we find that a majority of respondents support the euro in nearly all 19 euro area member states. Second, we offer fresh evidence that economic factors are the main determinants of changes in the level of support for the euro: crisis reduces support while periods of recovery bode well for public support. This result holds for both macroeconomic and microeconomic factors. Turning to a broad set of socio-economic variables, we find clear differences in support due to education and perceptions of economic status.

Keywords: Euro, public support for the euro, ECB, EU, euro crisis, unemployment, inflation, monetary union.

JEL Code: C23, E 24, E31, E32, E42, E58, J64, O52.

* Corresponding authors: Felix Roth, University of Hamburg, Hamburg. Email: felix.roth@uni-hamburg.de and Lars Jonung, Knut Wicksell Centre, Department of Economics, Lund University, Lund. Email: lars.jonung@nek.lu.se.

> "Political unity is the glue that holds a monetary union together. Once it dissolves, it is most likely that the monetary union will dissolve." (Bordo and Jonung, 2003, p. 58)

I. Introduction

This paper explores the evolution and determinants of public support for the euro, using the largest up-to-date database on public opinion of the euro since its inception, available from March-April 1999 until November 2017. It falls into the tradition of studies of the determinants of public support for the euro, which has sprung up in recent decades (see for example Banducci *et al.*, 2009, Deroose *et al.*, 2007, Hobolt and Leblond, 2014 and Hobolt and Wratil, 2015 as prominent examples). This debate is about whether and under which circumstances the euro has been supported by citizens, and in particular, about the macroeconomic and microeconomic impact on public support. In line with the previous literature (see e.g. Banducci *et al.*, 2009), we model public support for the euro at the macro-, and micro-level, emphasising the impact of economic factors. In contrast to the previous literature (see e.g. Hobolt and Leblond, 2014), we apply up-to-date econometric techniques in order to control for endogeneity.

Based on these specifications we find that the euro has enjoyed support by a majority in nearly all 19 individual euro area (EA) member states from March-April 1999 until November 2017. Moreover, our econometric results at the macro- and micro-level identify unemployment to be significantly and negatively related to public support for the euro. This result implies that the economic recovery in the EA starting in November 2013 has increased public support, as unemployment has started to fall in EA member states.

The paper is structured as follows. Section II discusses the role of public support for the euro. Section III describes public support for the euro in the EA member states. The fourth section provides insights into the model specification, research design and data. Section V provides econometric results. The sixth section discusses

the empirical findings in the light of previous findings. The paper ends with a short summary of our conclusions.

II. Public Support for the Euro

This section considers the role of public support for EMU and the euro as treated within various strands of the literature.

First, the evidence from the history of monetary unions suggests that a monetary union like the Economic and Monetary Union (EMU) benefits from public support for the common currency (Jonung, 2002, pp. 413-21). Public support for the euro contributes to the sustainability of the euro area. As long as the common currency enjoys public support, the monetary union will be able to adjust and adapt to changing circumstances (Bordo and Jonung, 2003, p. 58 and p. 63).

Second, the literature on the *political economy* in the optimum currency area approach suggests that a sustainable monetary union should feature a shared sense of common destiny (Baldwin and Wyplosz, 2015, p. 361). Such a commonality of destiny between the partners of a monetary union is crucial in order to find collective solutions to shared problems in times of economic strain among its members. Public support for EMU and the euro is a prerequisite for such a shared sense of common destiny. It is a vital ingredient for reconciling the powerful national interests among EA governments, which have been a source of the EA crisis (Frieden and Walter, 2017, p. 386).

Third, contributions within political science stress that public support for the euro is crucial for any move towards more supranational governance (Banducci *et al.*, 2003, p. 686). Public support is necessary for European citizens to be willing to transfer power from national to European institutions (Kaltenthaler and Anderson, 2001, p.14). This literature concludes that public support for EMU is crucial for its political legitimacy (Deroose *et al.*, 2007) and hence sustainability (Verdun, 2016, p. 306).

In short, widespread public support for the euro stands out as an important prerequisite for the long-term sustainability of the euro.

III. Descriptive Statistics

Figure 1 displays public support for the euro by the 19 member states that joined the EA between 1999 and 2017 (namely Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithunia, Luxembourg, Malta, Portugal, Slovenia, Slovakia, Spain and the Netherlands – the EA-19). Figure 1 distinguishes two stages in the history of the euro. The first stage covers the time from its inception until the start of the financial crisis (1999-2008). It is subdivided into the period before (3-4/1999 to 10-11/2001) and after the introduction of the euro as a physical currency (3-5/2002 to 3-5/2008). The second stage covers the time since the start of the financial crisis (10-11/2008 to 11/2017). It is subdivided into a period of crisis (10-11/2008 to 5/2013) and a period of recovery (11/2013 to 11/2017).[1]

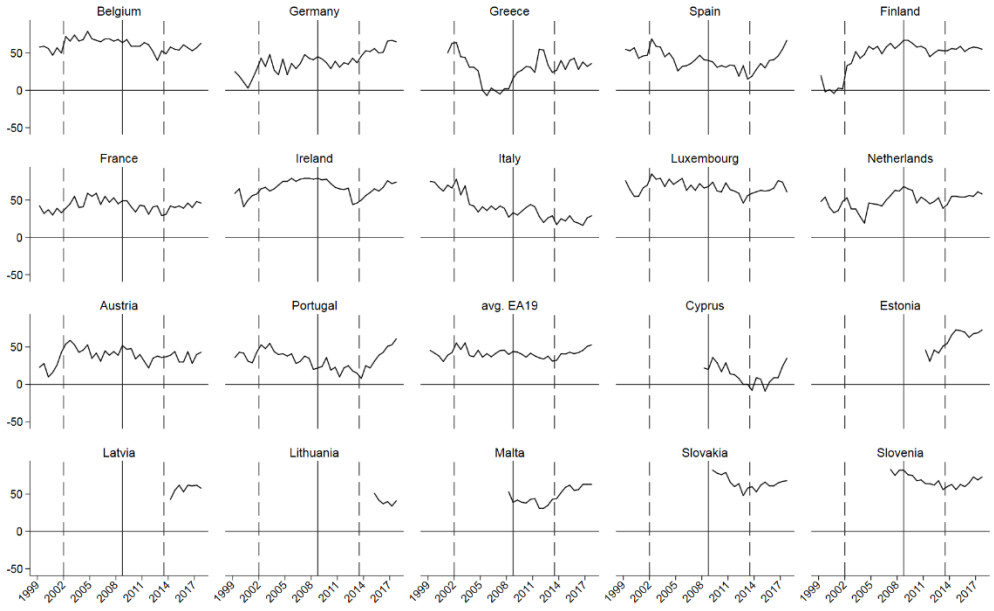
Figure 1 illustrates three central conclusions. First, on average, a large majority of EA-19 citizens supported the euro over the 19-year period since the implementation of the euro (>30 percentage points net support). Whereas net support declined in times of crisis by 9 percentage points, to a mean level of 31 percent, it has more than compensated for this drop during the recovery, with an increase by 22 percentage points – to a mean level of 53 percent (see Table A1 in Appendix A2).

Second, since the establishment of the euro area in 1999, aside from short periods in Finland and Greece in pre-crisis times and Cyprus in crisis times, a majority of citizens in each individual member state of the EA-19 has supported the euro. This

[1] The distinction between the subdivison is based on the aggregate unemployment rate in the EA-19. Whereas unemployment rates steadily increased from 10-11/2008 until 5/2013, we witness the start of the economic recovery from 11/2013 onwards, with a steady decline in aggregate unemployment (see Figure A2 in Appendix A2).

includes continuous majority support in the largest EA economies such as Germany (with a minimum net support of 3 percent in 11-12/2000) and Italy (with a minimum net support of 16 percent in 11/2016) since the introduction of the euro in 1999.

Figure 1: Support for the euro in the EA-19, 1999-2017



Data sources: Standard EB51-EB88.

Notes: The y-axis displays net support in percent. Since the figure depicts net-support, all values above 0 indicate that a majority of the respondents support the euro. The dashed lines distinguish the actual physical introduction of the euro in January 2002, the start of the financial crisis in September 2008 and the start of economic recovery at the end of 2013. Average EA-19 is population weighted.

Third, during the recovery (since 11/2013), public net support for the euro has strongly increased within the EA's periphery, in Spain and Portugal by 52 and 46 percentage points respectively, as well as in the EA's core, namely in Germany by 28 percentage points. In a majority of cases (9 out of 15), the increase in public support for the euro throughout the recovery has more than compensated for the losses that accrued throughout the crisis (see Table A1 in Appendix A2). A weaker

pattern holds for the nine EU member states outside the EA-19, of which a majority of the cases (5 out of 8) at least records an increase in public support for the euro since 11/2013 (see Figure A1 in Appendix A1).[2]

IV. Empirical Approach

Model Specification

To analyse the channels that influence public support for the euro, we adopt a model specification used by Roth *et al.* (2016, pp. 950-2). We estimate support for the euro as a function of unemployment, inflation, growth in real GDP per capita and macroeconomic control variables considered important in explaining the *within* variation of support. Our baseline model (1) reads:

$$Support_{it} = \alpha_i + \beta_1 Unemployment_{it} + \chi_1 Inflation_{it} + \delta_1 Growth_{it} + \phi_1 Z_{it} + w_{it}, \qquad (1)$$

where $Support_{it}$ is the net support for the euro for country i during period t. $Unemployment_{it}$, $Inflation_{it}$, $Growth_{it}$, and Z_{it} are respectively unemployment, inflation, growth of GDP per capita and important macroeconomic or socio-economic control variables for country i during period t. α_i represents a country-specific constant term (fixed effect) and w_{it} is the error term.

Research Design

Equation (1) is estimated with an EA-19 country sample for the time period 1999-2017 with a total number of 38 time observations. With t = 38 and n = 19 and thus with a ratio of t/n = 2, equation (1) is estimated via panel time series estimation. Panel data analysis is superior to cross-section analysis as it exploits both variation

[2] The countries outside the EA deserve a more detailed analysis, but length constraints prevent us from providing it here (see e.g. Hobolt and Wratil, 2015).

over time and variation across cross-sections. In particular, it allows us to control for time-invariant cross-section (country) characteristics by modelling cross-section-specific intercepts. It also allows us to control for endogeneity by internal instrument techniques that require lagging of the variables and to control for omitted variable bias by tackling autocorrelation of the disturbances. In our analysis, we also apply a matching procedure between the macroeconomic variables and the Eurobarometer data as identified in greater detail within the literature (Wälti, 2012, p. 597).

Second, in order to corroborate the findings between unemployment, inflation, economic growth and support for the euro from the macro analysis, support is examined from a microeconomic point of view using 474,712 individual observations. In this case the dependent variables is dichotomous, i.e. 1 in case of support and 0 in case of no support. In this step, emphasis is put on unemployment, inflation and economic perceptions, as well as exploring the socio-economic characteristics of the interviewee: gender, age, legal status, education and employment status.

Operationalization and Data Used

Measures for public support for the euro are based upon the biannual Standard Eurobarometer (EB) surveys[3] (European Commission, 2017) from 3-5/1999 (EB51) to 11/2017 (EB88), which asked respondents the following question: '*What is your opinion on each of the following statements? Please tell me for each statement, whether you are for it or against it. A European economic and monetary union with one single currency, the euro*.' Respondents can then choose between '*For*', '*Against*' or '*Don't Know*'. Net support measures are constructed as the

[3] For each Standard EB survey, which covers about 1,000 respondents per country, new and independent samples are drawn. Interviews are conducted face-to-face in the respondent's home. A multi-stage and random sampling design is used.

number of '*For*' responses minus '*Against*' responses, according to the equation: Net support = (For – Against)/(For + Against + Don't Know).

Data on inflation (the change in the harmonized index of consumer prices), seasonally adjusted unemployment rates, as well as seasonally and calendar adjusted data on GDP per capita, are taken from Eurostat. A summary of the data utilized is given in Table A2.

Individual observations for support for the euro, which we obtained from the GESIS Leibniz-Institute for Social Sciences, have been merged for the period 1999-2017 and include observations from EB51 (3-4/1999) to EB87 (5/2017). The merged variables include inflation, unemployment and economic perceptions and socio-economic variables including gender, age, legal status, education and employment status. A summary of the data utilized is given in Tables A3 and A4.

V. Econometric Results

Macro Analysis

We estimate equation (1) by means of dynamic ordinary least squares (DOLS),[4] a method that permits full control for endogeneity of the regressors.[5] In order to correct for autocorrelation,[6] we apply a FGLS (Feasible General Least Squares) procedure.[7] Both applications lead to the following equation (2), representing our FE-DFGLS (Fixed Effect Dynamic Feasible General Least Squares) approach (the

[4] A pre-requisite 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.

[5] Stock and Watson (1993) and Wooldridge (2009).

[6] We found first-order autocorrelation to be present.

[7] FGLS (in the ready-to-use EViews commands) is not compatible with time-fixed effects. It picks up shocks and omitted variables in the period of study. 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.

detailed steps leading from equation (1) to equation (2) are explained in Appendix A3):

$$Support^{*}_{it} = \alpha_i + \beta_1 Unemployment^{*}_{it} + \chi_1 Inflation^{*}_{it} + \delta_1 Growth^{*}_{it} + \phi_1 Z^{*}_{it}$$
$$+ \sum_{p=-1}^{p=+1} \beta_{2p} \Delta Unemployment^{*}_{it-p} + \sum_{p=-1}^{p=+1} \chi_{2p} \Delta Inflation^{*}_{it-p} + \sum_{p=-1}^{p=+1} \delta_{2p} \Delta Growth^{*}_{it-p}$$
$$+ \sum_{p=-1}^{p=+1} \phi_{2p} \Delta Z^{*}_{it-p} + u_{it} \qquad (2)$$

with α_i being the country fixed effect and Δ indicating that the variables are in first differences. Applying DFGLS, Unemployment, Inflation and Growth 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 causal impact of unemployment, inflation and growth.[8] The asterisk (*) indicates that the variables have been transformed (purged from autoregressive processes) and that the error term u_{it} fulfils the requirements of the classical linear regression model. In addition, FGLS estimations are very robust against the omission of other potentially relevant variables and therefore permit unbiased and consistent estimates of all right-hand side variables.

Table 1 shows the econometric results for equation (2) within our EA-19 country sample. When analysing the full period from 3-4/1999 to 11/2017 with 530 observations, we detect a highly significant negative impact of unemployment and inflation on net support for the euro (-1.3 and -4.7). Whereas the negative relationship between unemployment and public support for the euro is driven by the crisis-recovery period (10-11/2008 to 11/2017), the negative relationship between inflation and public support for the euro is driven by both periods. More importantly, however,

[8] 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, they will not be reported here.

a sensitivity analysis of the crisis-recovery period reveals that whereas the negative relationship between unemployment and public support for the euro in the crisis-recovery period (-1.8) is strongly driven by the recovery period (-3.0), the relationship between inflation and public support turns insignificant in times of economic recovery (regressions 6-7 and 12-15 in Table A7 in Appendix A2).[9]

Table 1: Unemployment, Inflation, GDP per Capita Growth and Support: FE-DFGLS estimations (Aggregated Level), EA-19, 1999-2017

Regression	1	2	3
Dependent variable	EURO	EURO	EURO
Period	FS	BC	CR
Unemployment	**-1.3*** **	-1.8	**-1.8*** **
	(0.41)	(2.13)	(0.37)
Inflation	**-4.7*** **	**-14.2*** **	**-5.3*** **
	(1.72)	(5.59)	(1.43)
Growth	-0.7	-3.1	-0.3
	(0.80)	(2.34)	(0.72)
Durbin-Watson statistic	2.25	2.47	2.12
Adjusted R-squared	0.81	0.79	0.85
Country fixed effects	Yes	Yes	Yes
Control for endogeneity	Yes	Yes	Yes
El. of first order autocor.	Yes	Yes	Yes
Observations	530	218	312
Number of countries	19	19	19

Notes: FS=Full sample; BC=Before Crisis; CR=Crisis-Recovery. Standard errors are in parentheses. † Econometrics results remain robust if analysing an EA-15 country sample. ***p<0.01, **p<0.05 and *p<0.1.

Micro Analysis

In order to extend our study of the relationship between the official macroeconomic determinants such as unemployment, inflation and growth of GDP per capita and net support for the euro from the regression results in Table 1, we examine the

[9] In times of economic recovery one detects negative correlation coefficients of < -0.94 in particular in Ireland, Portugal and Spain (see Table A8 and Figure A2 in Appendix A2).

support for the euro by means of a probit model using individual data, in order to account for respondents' perceptions of unemployment, inflation and growth of GDP per capita as well as their socio-economic characteristics. The equation for the probit model is expressed below:

$$P(Support_{jit} = 1) = \alpha_i + \beta Gender_{jit} + \gamma Age_{jit} + \delta Legal\ Status_{jit} + \theta Education_{jit} + \lambda Employment\ Status_{jit} + \phi Unemployment\ PC_{jit} + \chi Inflation\ PC_{jit} + \psi Economic\ PC_{jit} + \eta_t + \varepsilon_{jit}, \quad (3)$$

where *P* represents the probability with which the euro is supported. The dependent variable *(*$Support_{jit}$*)* represents support of individual j in country i at time t and takes on 1 if the individual supports and 0 if the individual does not support the euro. $Gender_{jit}$, Age_{jit}, *Legal* $Status_{jit}$, $Education_{jit}$ *and Employment* $Status_{jit}$ *represent* gender, age, legal status, education and employment status for individual j in country i at time t. *Unemployment, Inflation* and *Economic* PC_{jit} represent the unemployment, inflation and economic *perceptions* for the national economic situation or personal economic situation for individual j in country i at time t; α_i represents the country-fixed effects; η_t represents the time-fixed effects and ε_{jit} represents the error term.

Regressions 1-3 in Table 2 list our socio-economic background variables for the full-time sample compared to the pre-crisis and crisis-recovery period. The econometric findings indicate significant negative associations for female and unemployed respondents and positive associations for married and educated (16-19 and 20+ years of age respectively when finishing education) respondents. The largest effect can be detected with regard to education. The probability for highly educated (20+) respondents to support the euro is around 18 percentage points higher than those with lower education. Whereas the pre-crisis and crisis-recovery

sample results remain by and large stable, we observe a halving of the negative association for women in times of crisis and a complete reversal of opinion among the oldest age group, 65+ (a shift from -3.8 in pre-crisis times to +3.3 in the crisis-recovery period).

Table 2: Probit Analysis (Individual Level), EA-19, 1999-2017

Regression	(1)	(2)	(3)	(4)	(5)
Sample	FS	BC	CR	CR	CR
Level	-	-	-	PNE	PPE
Female	-4.6***	-6.4***	-3.2***	-2.5***	-2.4***
	(-37.14)	(-33.90)	(-19.21)	(-14.67)	(-12.78)
Age: 25-44	-2.0***	-2.3***	-1.5***	-1.2***	-0.5
	(-8.11)	(-6.60)	(-4.07)	(-3.15)	(-1.25)
Age: 45-64	-0.5*	-0.9**	0.3	0.8**	1.5***
	(-1.88)	(-2.44)	(-0.81)	(-2.27)	(-3.80)
Age: 65+	0.3	-3.8***	3.3***	3.5***	3.4***
	(-1.28)	(-9.44)	(-8.73)	(-8.99)	(-7.76)
Married	3.0***	3.2***	3.0***	2.6***	1.6***
	(-21.82)	(-15.52)	(-16.34)	(-14.05)	(-7.53)
Education: 16-19	9.2***	8.8***	9.2***	8.6***	7.2***
	(-48.87)	(-32.77)	(-35.36)	(-31.96)	(-23.56)
Education: 20+	17.7***	17.9***	17.3***	15.6***	14.0***
	(-91.86)	(-65.00)	(-64.22)	(-56.07)	(-44.03)
Unemployed	-8.2***	-6.2***	-8.3***	-6.8***	-1.8***
	(-32.15)	(-14.72)	(-26.22)	(-21.31)	(-5.28)
Unemployment perceptions	-	-	-	-5.6***	-6.5***
	-	-	-	(-22.85)	(-23.05)
Inflation perceptions	-	-	-	-4.2***	-2.1***
	-	-	-	(-18.69)	(-10.46)
Economy perceptions	-	-	-	10.3***	9.5***
	-	-	-	(-45.60)	(-34.48)
Country fixed effects	Yes	Yes	yes	yes	yes
Time fixed effects	Yes	Yes	yes	yes	yes
Obs.	474,712	207,966	266,746	245,577	205,499

Notes: FS=Full Sample; BC=Before Crisis; CR=Crisis-Recovery; 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.

Regressions 4-5 incorporate the unemployment, inflation and economic *perceptions* at the country and personal level for the crisis-recovery period. The two *perceptions* indicators unemployment and inflation have the expected negative effect and the economic *perceptions* indicator has the expected positive effect for the national (Regression 4) as well as personal economy (Regression 5) in the crisis-recovery period. As the estimation has utilized marginal effects, the coefficients can be interpreted in the following manner: an individual who identified the current unemployment situation of the national/personal economy to be very/rather bad in the crisis-recovery period is around 5.6 or, respectively, 6.5 percentage points less likely to support the euro than an individual who has identified the unemployment situation of the national/personal economy to be rather/very good.

VI. Previous empirical results

Using the largest up-to-date dataset since the inception of the euro, from 1999 to 2017, our analysis first demonstrates that a majority of EA citizens has supported the euro in nearly all individual EA-19 member states. This includes majority support in the largest EA economies such as Germany (> 3 per cent) and Italy (> 16 per cent). Our results are in stark contrast to those of scholars who claim to have found minority support in Italy (Guiso *et al.*, 2016, p. 292) and Germany (Stiglitz, 2016, p. 314). However, these claims are not based on Eurobarometer data – the sole authoritative dataset for thorough research concerning public support for the euro across countries and over time. Instead they utilize single cross-sectional survey data from various sources and hence can only exploit variation across countries, but not over time. Such an approach must be considered less reliable.

Moreover, our econometric results are in line with previous results, which find a negative relationship between unemployment and support for the euro from 2008 until 2014 (Roth *et al.*, 2016, p. 953). However, in contrast to previous findings we find that the negative relationship becomes stronger in times of economic recovery.

In addition, the highly significant negative relationship between inflation and support for the euro is in line with previous findings. However, in contrast to previous findings, we find that the negative relationship loses significance in times of economic recovery.

Furthermore, the findings of our macro-economic analysis are corroborated at the micro-level. We find unemployment and inflation perceptions to be negatively related and economic perceptions to be positively related to public support for the euro in our crisis-recovery period. The patterns for our socio-economic variables gender, education and employment status in the pre-crisis period are similar to previous results (Banducci *et al.*, 2009, p. 576). Our finding that a stable pattern emerges for education, employment and legal status when comparing the pre-crisis period with the crisis-recovery period makes a novel contribution to this literature. Furthermore, the halving of the negative association for women in times of crisis and the complete reversal in opinion among the oldest age group (65+) from strongly negative before the crisis towards strongly positive towards the euro during the crisis-recovery period stand out as new patterns that deserve further research.

Conclusions

We have analysed the support for the euro for an EA-19 country sample over the 19-year period from 1999 to 2017. We reach three main conclusions.

First, the euro, with the exception of short episodes in Greece and Finland in pre-crisis times and in Cyprus in times of crisis, has enjoyed majority support within each individual EA-19 member state since its introduction in 3-4/1999 until 11/2017.

Second, our econometric results at the macro-level suggest a negative and significant relationship between unemployment and public support for the euro, which is more pronounced during the recovery. The results also indicate a significant and negative relationship between inflation and public support for the euro. This relationship, however, is insignificant in times of recovery.

Third, the findings of our micro-econometric analysis corroborate our findings from the macro-level. We discover a negative relationship between unemployment and inflation perceptions and public support for the euro. In addition, our results indicate stable patterns for our socio-economic variables including education, legal and employment status. The largest effect is related to education; the probability for highly educated (20+) citizens to support the euro is significantly higher than those with lower education.

Overall, our results demonstrate that both macroeconomic and microeconomic developments are important drivers behind public support for the euro.

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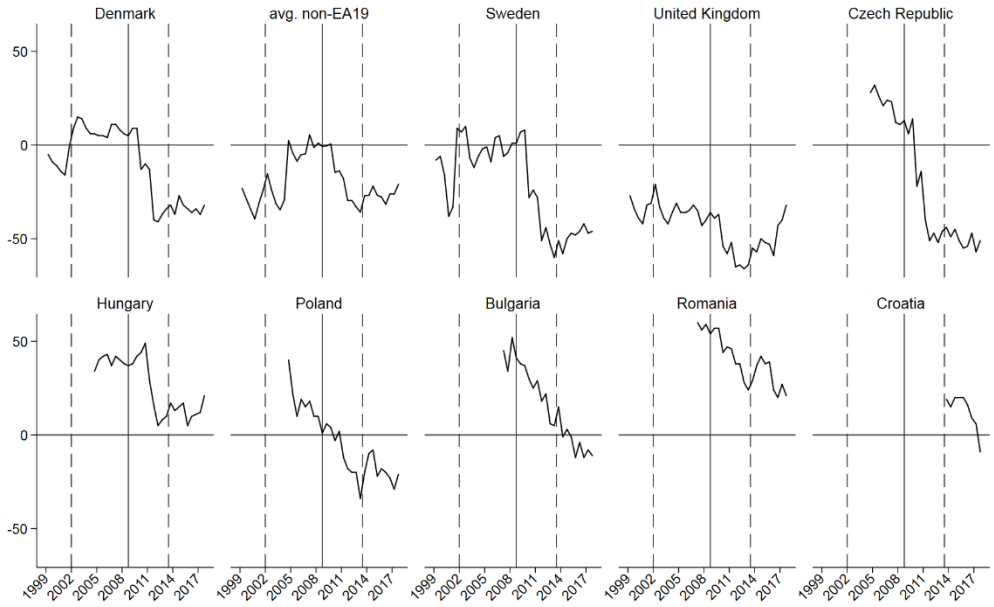
Appendix A1: Support for the Euro in the Non-EA-19, 1999-2017

Figure A1: Net Support for the Euro in the Non-EA-19, 1999-2017



Data sources: Standard EB51-EB88.

Appendix A2: Descriptive Statistics and Test Results

A2: Descriptive Statistics and Test Results

Table A1: Levels and Changes in Net Support for the Euro, EA-19, 2008, 2013 and 2017

Country	Levels 3-5/2008	Levels 5/2013	Levels 11/2017	Changes 5/2013 - 3-5/2008	Changes 11/2017 - 5/2013	Changes 11/2017 - 3-5/2008
Spain	41	15	67	-26	52	26
Portugal	20	15	61	-5	46	41
Cyprus	22	0	35	-22	35	13
Germany	41	37	65	-4	28	24
Ireland	78	46	74	-32	28	-4
EA-19	40	31	53	-9	22	13
Estonia	-	51	73	-	22	-
Malta	53	43	63	-10	20	10
Netherlands	62	39	58	-23	19	-4
France	45	29	46	-16	17	1
Slovenia	82	56	73	-26	17	-9
Greece	2	24	36	22	12	34
Belgium	68	53	63	-15	10	-5
Slovakia	-	58	68	-	10	-
Austria	39	36	43	-3	7	4
Luxembourg	66	56	61	-10	5	-5
Finland	61	53	55	-8	2	-6
Italy	27	29	29	2	0	2
Latvia	-	-	58	-	-	-
Lithuania	-	-	41	-	-	-

Data sources: EB51-EB88.

Table A2: Summary Statistics for the Macro Analysis, 1999-2017

Variable	**N**	**Mean**	**Std. dev.**	**Min.**	**Max.**
Net support for the euro	560	47.0	18.7	-9	85
Unemployment rate	560	8.8	4.5	1.9	27.8
Inflation	560	0.8	1.0	-3.6	5.2
GDP per capita growth	560	0.7	1.7	-7.0	11.7

Notes: N = Number of observations; Std. dev. = Standard deviation; Min. = Minimum; Max. = Maximum.

Data sources: EB51-EB88 and Eurostat.

Table A3: Summary Statistics for the Micro Analysis, Regressions 1-3, 1999-2017

Time period	**Variable**	Obs.	Mean	Std. dev.	Min.	Max.
Full sample	*Support for the euro*	474,712	0.74	0.44	0	1
	Age	474,712	49.2	17.2	15	99
	Gender	474,712	0.46	0.50	0	1
	Education attainment	474,712	2.09	0.75	1	3
	Unemployed	474,712	0.08	0.27	0	1
	Married	474,712	0.65	0.48	0	1
Before crisis	*Support for the euro*	207,966	0.73	0.44	0	1
	Age	207,966	47.3	17.0	15	99
	Gender	207,966	0.47	0.50	0	1
	Education attainment	207,966	2.02	0.76	1	3
	Unemployed	207,966	0.06	0.24	0	1
	Married	207,966	0.64	0.48	0	1
Crisis-recovery	*Support for the euro*	266,746	0.74	0.44	0	1
	Age	266,746	50.6	17.2	15	99
	Gender	266,746	0.46	0.50	0	1
	Education attainment	266,746	2.15	0.74	1	3
	Unemployed	266,746	0.09	0.29	0	1
	Married	266,746	0.66	0.47	0	1

Notes: Obs. = Observations; Std. dev. = Standard deviation; Min. = Minimum; Max. = Maximum. Education attainment is measured based on the responses to the question 'How old were you when you stopped full-time education?' and was subsequently categorized into three classes: 2-15 years, 16-19 years and 19+ years.

Data sources: EB51-EB87.

Table A4: Summary Statistics for the Micro Analysis, Regression 4-5, 2008-2017

Time Period	**Variable**	Obs.	Mean	Std. dev.	Min.	Max.
Crisis-recovery	*Support for the euro*	245,577	0.74	0.44	0	1
	Inflation perception (PNE)	245,577	0.20	0.40	0	1
	Unemployment perception (PNE)	245,577	1.75	0.43	1	2
	Economic perception (PNE)	245,577	1.67	0.47	1	2
	Age	245,577	50.5	17.1	15	99
	Gender	245,577	0.46	0.50	0	1
	Education attainment	245,577	2.15	0.73	1	3
	Unemployed	245,577	0.09	0.29	0	1
	Married	245,577	0.67	0.47	0	1
Crisis-recovery	*Support for the euro*	205,499	0.75	0.44	0	1
	Inflation perception (PPE)	205,499	0.38	0.49	0	1
	Unemployment perception (PPE)	205,499	1.31	0.46	1	2
	Economic perception (PPE)	205,499	1.33	0.47	1	2
	Age	205,499	47.6	15.9	15	99
	Gender	205,499	0.47	0.50	0	1
	Education attainment	205,499	2.19	0.72	1	3
	Unemployed	205,499	0.10	0.30	0	1
	Married	205,499	0.68	0.47	0	1

Notes: Obs .= Observations; Std. dev. = Standard deviation; Min. = Minimum; Max. = Maximum. Education attainment is measured based on the responses to the question 'How old were you when you stopped full-time education?' and was subsequently categorized into three classes: 2-15 years, 16-19 years and 19+ years. PNE= Perceptions National Economy; PPE = Perceptions Personal Economy. One valid proxy for individual perceptions about unemployment is provided by the following question in the Eurobarometer surveys: 'How would you judge the current situation in each of the following?' This question is then split into several parts, including '*the employment situation in (OUR COUNTRY)*' and '*your personal job situation*'. The respondents might then choose one of five answers: '*very good*', '*rather good*', '*rather bad*', '*very bad*' and '*don't know*'. Our final unemployment perception variable was recoded to a dichotomous variable by recoding 'very good' and 'rather good' to 0 and 'very bad' and 'rather bad' to 1.The utilized data on perceptions were only available for the crisis-recovery period. *Data sources*: EB70-EB87.

Table A5: Pesaran's CADF Panel Unit Root Tests, EA-19 Countries

Variable	Observations	CADF-Zt-bar	Probability
Net support for the euro	546	1.84	0.97
Unemployment	546	1.68	0.96
Inflation	546	0.62	0.73
GDP per capita growth	546	-0.45	0.33

Notes: H_0: series has a unit root (individual unit root process). H_a: at least one panel is stationary. Table A5 shows that all series have a unit root. A time trend and two lagged differences were utilized. Three lagged differences were utilized for inflation. Latvia and Lithuania were not included due to the brevity of their time series.

Table A6: Kao's Residual Cointegration Test, EA-19 Countries

Cointegration between the following set of variables:	Number of included observations	ADF-t-statistic	Probability
Net support for euro, unemployment, inflation, GDP per capita growth	560	-1.60	0.055

Notes: H_0: no cointegration. Table A6 shows that the series are cointegrated and thus stand in a long-run relationship. Cointegration could also be established for the pre-crisis and the crisis periods.

Table A7: Sensitivity Analysis between Unemployment, Inflation and Net Support for the Euro: FE-DFGLS Estimations (Aggregated Level), 2008-2017

Row	Specification change	Unemployment	Std. err.	Inflation	Std. err.	Obs.	Cou.	Adj. R-Sq.	DW stat.
1	No change	-1.8***	0.37	-5.3***	1.43	312	19	0.85	2.12
Exclusion of outliers									
2	Greece	-2.8***	0.39	-4.7***	1.32	294	18	0.87	2.03
3	Greece + Germany	-2.7***	0.38	-4.6***	1.32	276	17	0.87	2.03
Restructuring of time sample									
4	10-11/2008 - 05/2017	-1.5***	0.36	-5.6***	1.40	293	19	0.85	2.08
5	10-11/2008 - 11/2016	-1.2***	0.34	-6.1***	1.36	274	19	0.86	2.12
6	10-11/2013 - 11/2017	-3.0***	0.70	-1.2	2.31	148	19	0.90	2.12
7	10-11/2013 - 05/2017	-2.7***	0.88	-1.9	2.56	129	19	0.91	2.12
Restructuring of time sample and exclusion of outliers									
8	10-11/2008 - 05/2017 – Greece	-2.6***	0.38	-4.9***	1.28	276	18	0.87	1.98
9	10-11/2008 - 05/2017 – (Greece + Germany)	-2.6***	0.38	-4.7***	1.30	259	17	0.87	1.98
10	10-11/2008 - 11/2016 – Greece	-2.3***	0.37	-5.3***	1.24	258	18	0.87	2.03
11	10-11/2008 - 11/2016 – (Greece + Germany)	-2.3***	0.38	-5.0***	1.27	242	17	0.87	2.01
12	11/2013 - 11/2017 – Luxembourg	-3.3***	0.71	-1.7	2.29	140	18	0.90	2.13
13	11/2013 - 11/2017 – (Luxembourg + Portugal)	-2.1***	0.69	-2.8	2.04	132	17	0.91	2.26
14	11/2013 - 05/2017 – Luxembourg	-2.9***	089	-2.1	2.55	122	18	0.90	2.15
15	11/2013 - 05/2017 – (Luxembourg + Portugal)	-1.6*	0.87	-3.0	2.26	115	17	0.92	2.34

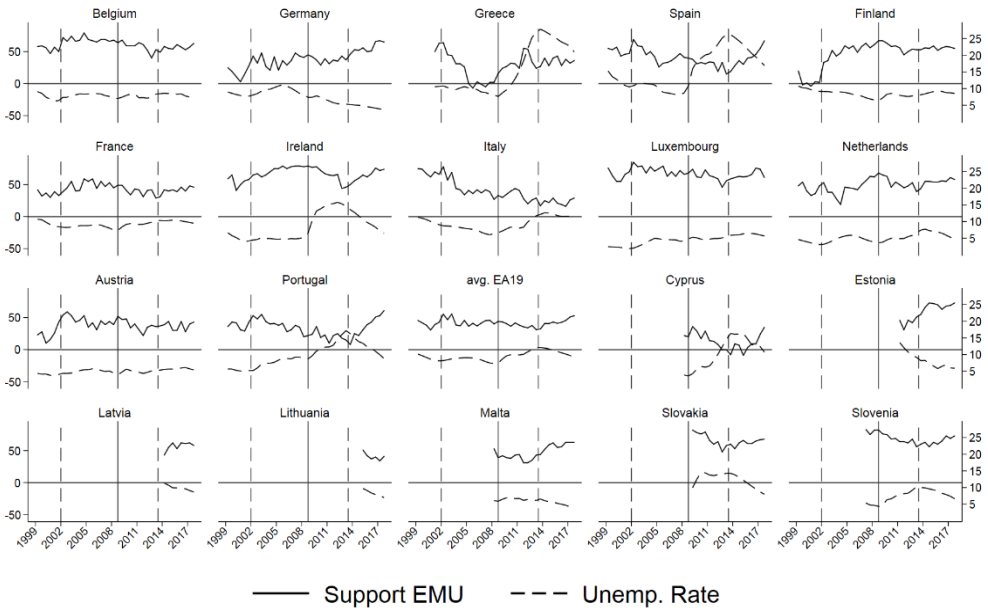
Notes: Std. err. = Standard error; Obs. = Number of observations; Cou. = Number of countries; Adj. R-sq.=Adjusted R-Square; DW stat. = Durbin-Watson Statistic. *** p<=0.01, ** p<=0.05, * p<=0.10. Values depicted in bold highlight *** p<=0.01. Country outliers were based on the correlation coefficients between unemployment and public support for the euro for the EA-19, as e.g. displayed in Tables A8 for the crisis-recovery and recovery period.

Table A8: Correlation Coefficients between Unemployment, Inflation and Net Support for the Euro in the EA-19 Countries, 2008-2013 and 2013-2017

	Crisis-recovery sample		Crisis sample		Recovery sample	
	Unemployment	Inflation	Unemployment	Inflation	Unemployment	Inflation
Country	Euro	Euro	Euro	Euro	Euro	Euro
Greece	**0.35**	-0.07	0.43	-0.10	-0.14	0.24
Luxembourg	0.11	-0.11	-0.36	-0.19	**0.24**	0.27
Austria	-0.08	-0.20	0.06	-0.41	-0.31	0.23
Belgium	-0.27	0.13	-0.16	0.06	-0.46	0.21
Finland	-0.31	0.10	-0.36	0.02	0.11	-0.14
France	-0.43	-0.11	-0.72	0.08	-0.59	-0.38
Netherlands	-0.46	-0.21	-0.83	-0.18	-0.63	-0.27
Ireland	-0.55	-0.16	-0.60	-0.23	-0.94	0.00
Portugal	-0.59	-0.03	-0.36	-0.25	**-0.98**	0.30
Spain	-0.60	0.07	-0.74	0.18	-0.96	0.41
Italy	-0.68	0.23	-0.47	-0.30	0.04	-0.07
Germany	**-0.76**	-0.19	0.02	0.10	-0.84	0.42
Lithuania	0.67	-0.65	-	-	0.67	-0.65
Slovakia	-0.22	-0.10	-0.46	-0.61	-0.75	0.44
Latvia	-0.72	0.03	-	-	-0.72	0.03
Cyprus	-0.74	0.18	-0.86	-0.12	-0.85	0.20
Malta	-0.79	-0.10	0.25	-0.25	-0.79	-0.10
Estonia	-0.87	-0.50	-0.35	-0.73	-0.58	0.00
Slovenia	-0.89	0.37	-0.91	0.35	-0.86	0.18

Notes: Euro = Net support for the euro. Correlations coefficients for the full sample are based on 19 observations (10 for the crisis sample and 9 for the recovery sample). The outlier countries as utilised in Table A7 are shown in bold.

Figure A2: Unemployment and Net Support for the Euro, EA-19, 1999-2017



Data sources: Standard EB51-EB88.

A3: Detailed Steps Leading from Equation (1) to Equation (2)

In the baseline model (1), net support for the euro is estimated as a function of unemployment, inflation, growth of GDP per capita and macroeconomic control variables deemed to be of importance:

$$Support_{it} = \alpha_i + \beta_1 Unemployment_{it} + \chi_1 Inflation_{it} + \delta_1 Growth_{it} + \phi_1 Z_{it} + w_{it}, \quad (1)$$

where $Support_{it}$ is the net support for the euro for country i during period t; $Unemployment_{it}$, $Inflation_{it}$, $Growth_{it}$ and Z_{it} are respectively unemployment, inflation and growth of GDP per capita and macroeconomic control variables deemed of importance for country *i* during period *t*. α_i depicts a country-specific constant term and w_{it} is the error term. As we utilize a Feasible Generalized Least Square (FGLS) estimation approach, time dummies are not included within our baseline estimation, as they are mutually exclusive with FGLS.

The Issue of Endogeneity

When running regressions such as in equation (1), one must be aware of the possibility that the right-hand side variables (unemployment, inflation and growth) might be endogenous (affected by a common event) or stand in a bi-directional relationship with support (a low level of support might lead to a self-fulfilling prophecy, speeding up and worsening an existing downturn). Therefore, we estimate the model by means of dynamic ordinary least squares (DOLS), a method that controls for endogeneity of the regressors (Stock and Watson, 1993; Wooldridge, 2009).

It can be shown that by decomposing the error term and inserting the leads and lags of the right-hand side variables in first differences, the explanatory variables become (super-) exogenous and the regression results thus become unbiased. The

baseline regression, which does not control for endogeneity and reflects a situation in which all adjustments have been made, has already been depicted in equation (1) above. Within equation (1) w_{it} is the iid-N error term with the properties of the classical linear regression model. Controlling for endogeneity requires the decomposition of the error term w_{it} into the endogenous changes of the right-hand side variables, which are correlated with w_{it} (the changes in the variables) and the exogenous part of the error term υ_{it}; with:

$$\begin{aligned} w_{it} &= \sum_{p=-1}^{p=+1} \beta_{2p} \Delta Unemployment_{it-p} + \sum_{p=-1}^{p=+1} \chi_{2p} \Delta Inflation_{it-p} \\ &+ \sum_{p=-1}^{p=+1} \delta_{2p} \Delta Growth_{it-p} + \sum_{p=-1}^{p=+1} \phi_{2p} \Delta Z_{it-p} + \upsilon_{it} \end{aligned} \tag{1a}$$

Inserting equation (1a) into equation (1) leads to the following equation (1b) in which all explanatory variables from the baseline model can be considered exogenous:

$$\begin{aligned} Support_{it} &= \alpha_i + \beta_1 Unemployment_{it} + \chi_1 Inflation_{it} + \delta_1 Growth_{it} + \phi_1 Z_{it} + \\ &\sum_{p=-1}^{p=+1} \beta_{2p} \Delta Unemployment_{it-p} + \sum_{p=-1}^{p=+1} \chi_{2p} \Delta Inflation_{it-p} + \sum_{p=-1}^{p=+1} \delta_{2p} \Delta Growth_{it-p} + \\ &\sum_{p=-1}^{p=+1} \phi_{2p} \Delta Z_{it-p} + \upsilon_{it} \end{aligned} \tag{1b}$$

with α_i representing country fixed effects and Δ indicating that the variables are in first differences; the error term υ_{it}, Unemployment, Inflation and Growth become exogenous and the coefficients β_1, χ_1, δ_1 and ϕ_1 follow a t-distribution. In addition, υ_{it} must fulfil the requirements of the classical linear regression model. Fulfilment of these properties allows us to draw statistical inferences concerning the impact of unemployment, inflation and growth on support for the euro at the national and European level.

Omitted Variables and Autocorrelation

Having found that net support for the euro and the economic variables (unemployment, inflation and growth) are non-stationary and cointegrated, we can be confident that omitted variables (which are lumped together in the error term) do *not* systematically influence our long-run relationship between support and macroeconomic variables. Omitted variables could include: socio-political factors such as positive attitudes towards EU membership (Banducci *et al.*, 2009; Hobolt and Leblond, 2014), consumer confidence (Hobolt and Leblond, 2014), or macroeconomic variables of importance, such as the change in the euro/US dollar exchange rate and the interest rate (Banducci *et al.*, 2003, 2009; and Hobolt and Leblond, 2014), as well as social indicators, such as measures of income inequality and poverty rates, all of which have most likely deteriorated within the periphery countries of the EA-12.

Even though the error term is stationary [I(0)], which is a characteristic of cointegration, *autocorrelation of the error terms might still be a problem that must be fixed*. We do so by applying the two-step FGLS procedure. In a first step, we collect the $\hat{\upsilon}_{it}$s from equation (1b), which has been estimated by means of DOLS. Thereafter, we estimate ρ_1, the first-order autocorrelation[10] coefficient, via OLS based on equation (1c).

$$\hat{\upsilon}_{it} = \rho_1 \hat{\upsilon}_{it-1} + u_{it}\,. \tag{1c}$$

Since the coefficient ρ_1 is usually unknown (as in our case), it has been estimated (giving us $\hat{\rho}_1$) by means of the Cochrane-Orcutt method (see Pindyck and Rubinfeld, 1991), which is an FGLS procedure. In a second step we transform all variables of equation (1b), which can be described by the following formulas (1d):

[10] Higher orders of autocorrelation were not present.

$$Support_{it}^{*} = Support_{it} - \hat{\rho}_1 Support_{it-1},$$

$$Unemployment_{it}^{*} = Unemployment_{it} - \hat{\rho}_1 Unemployment_{it-1},$$

$$Inflation_{it}^{*} = Inflation_{it} - \hat{\rho}_1 Inflation_{it-1},$$

$$Growth_{it}^{*} = Growth_{it} - \hat{\rho}_1 Growth_{it-1},$$

$$Z_{it}^{*} = Z_{it} - \hat{\rho}_1 Z_{it-1} \qquad (1d)$$

where the differences of the explanatory variables are transformed in exactly the same way as the variables in levels.

Correcting for autocorrelation in the error term via FGLS leads to equation (2):

$$Support_{it}^{*} = \alpha_i + \beta_1 Unemployment_{it}^{*} + \chi_1 Inflation_{it}^{*} + \delta_1 Growth_{it}^{*} + \phi_1 Z_{it}^{*} + \sum_{p=-1}^{p=+1} \beta_{2p} \Delta Unemployment_{it-p}^{*} + \sum_{p=-1}^{p=+1} \chi_{2p} \Delta Inflation_{it-p}^{*} + \sum_{p=-1}^{p=+1} \delta_{2p} \Delta Growth_{it-p}^{*} + \sum_{p=-1}^{p=+1} \phi_{2p} \Delta Z_{it-p}^{*} + u_{it} \qquad (2)$$

with α_i being the country fixed effect and Δ indicating that the variables are in first differences; * indicating that the variables have been transformed (purged from autoregressive processes) and that the new error term u_{it} ($u_{it} = \upsilon_{it} - \hat{\rho}_1 \upsilon_{it-1}$) fulfils the requirements of the classical linear regression model (it is free from autocorrelation). Equation (2), which is an improved version of equation (1b), represents the fixed effects dynamic feasible generalized least squares (FE-DFGLS) approach.