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Public support for the single European currency, the euro, 1990 to 2011. Does the financial crisis matter?

Felix Roth, Lars Jonung and Felicitas Nowak-Lehmann D.¹

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Abstract

This paper analyses the evolution of public support for the single European currency, the euro, from 1990 to 2011, focusing on the most recent period of financial and sovereign debt crisis. Exploring a huge database of more than half a million observations covering the 12 original euro area member countries, we find that the ongoing crisis has only marginally reduced citizens' support for the euro. This result is in stark contrast to a sharp fall in public trust in the European Central Bank. We conclude that the crisis – at least so far - has hardly dented popular support for the euro while the central bank supplying the single currency has lost sharply in public trust. Thus, the euro appears to have established a credibility of its own – separate from the institutional framework behind the euro.

Keywords: Support for the euro; European Monetary Union; euro area crisis

JEL: E31; E42; E65; C23

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1. Introduction

Ever since the plans for a European monetary union and a single European currency were announced, social scientists have explored the trends and determinants of public attitudes towards the new currency (Gärtner, 1997; Kaltenthaler and Anderson, 2001; Banducci et al., 2003, 2009; Hobolt and Leblond, 2009; Isengard and Schneider, 2007; Brettschneider et al., 2003). This study falls into this area of research by analysing public support for the single currency over a 21-year period from 1990-2011 for 12 euro member states (Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain – the EA-12). We focus on the 2002-2011 period in the descriptive and econometric analysis, making a distinction between the pre-crisis years 2002-2008 and the crisis years 2008-2011. Our study is inspired by the observation that citizens' trust in the European Central Bank, the ECB, fell sharply during the financial and sovereign debt crisis that started in 2008 (Roth, 2009; Gros and Roth, 2009, 2010; Roth, Gros and Nowak-Lehmann D., 2011; Ehrmann et al, 2010; Wälti, 2012). This raises the question: Has the euro, the currency supplied by the ECB, also suffered a loss in public support due to the crisis similar to the fall in trust in the ECB?

Our analysis reveals that there is no empirical evidence for a significant erosion of citizens' support by the ongoing financial and sovereign debt crisis. Euro support stays at a relatively high level even in times of crisis and seems not to be affected by the rise in unemployment and the decline in growth of GDP per capita. Citizens' support for the euro is also manifested by the fact that for the two decades covered by our analysis, the euro has always been supported by a majority of citizens in the euro area. The suggestion that "the global economic crisis has sapped support for the euro" (Jones, 2009) has so far weak empirical support.

The paper is structured as follows. Section 2 discusses the role of public support for the euro, highlighting why it is worthwhile to analyze citizens' support for the European monetary union and the euro. Section 3 considers the measurement of public support for the euro and describes the aggregated and individual country trends during the history of the single currency. Moreover, support for the euro is compared to trends in trust in the ECB and other European institutions during the financial crisis. Section 4 elaborates on the specification of the model and the data utilized. Section 5 discusses econometric issues and presents the econometric results. Section 6 concludes.

2. The role of public support for the euro

Why should we care about public support for European monetary unification and the single currency, the euro? The 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 of supporting and maintaining a single currency. The costs and benefits of the euro as perceived by the public are reflected in the support behind the euro. Thus, by analyzing public support we are able to better understand the viability of the euro. Various arguments to back this view are found in the literature. Below three strands of arguments are highlighted.

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. Similar, Kaltenthaler and Anderson (2001, p. 140-41) argue that citizens' support for the euro will function "as a crucial test case for whether citizens are willing to transfer power from the nation state to European institutions". Applying a similar line of reasoning to the recent sovereign debt crisis, De Grauwe (2009 and 2010) argues that a deeper process of European political integration is necessary in order to prevent the break-up of the European monetary union.

Second, Jonung (2002, p. 413-21) and Bordo and Jonung (2003) stress that citizens' support is crucial for the political legitimacy of the euro. A weak political legitimacy will invite critique against the euro which will endanger political unity behind the single currency. Political unity functions as the glue that holds a monetary union together. Once this glue dissolves, it is most likely that the monetary union will dissolve.

Third, a high level of citizens' support can be interpreted as a sign for a "commonality of destiny" among euro area members according to Baldwin and Wyplosz (2009, 327-29). This "commonality of destiny" is a key prerequisite for the smooth functioning of a currency union according to them. Lack of such commonality will most likely lead to the dissolution of a currency union in the long run. Similar, De Grauwe (2009: 113) argues that the most important prerequisite for the optimal 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 optimal currency unions. De Grauwe's argument matches that of Jonung (2002, p. 420) who highlights that political unity rather than common economic characteristics is necessary for a sustainable monetary union.

To sum up these arguments, public support for the idea of a common currency is an important determinant of the viability of a monetary union. Traditionally, this aspect is not identified when discussing the monetary policy of the nation state. In this case, the existence of the national currency is taken as self-evident, a fact that is not disputed. For example, we find no studies of the popularity of the dollar or the pound using poll data of the opinion of representative samples of citizens. Such data are only available – as far as we know – for one currency, the single European currency, the euro.

3. Measurement and Description of Trends

3.1 *Measuring public support for the single currency*

We construct our measure of public support for the euro from data on responses to Eurobarometer (EB) surveys carried out bi-annually since the fall of 1990 (Standard EB 34) until the autumn of 2011 (Standard EB 76). Eurobarometer surveys normally cover about 1,000 respondents per member country in the EU. The interviews are conducted face to face in the home of the respondents. 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 (probability), thereby guaranteeing the polling of a representative sample of the population.

To measure public support for the euro the survey respondents were asked about their opinion on several proposals: "*Please tell me for each proposal, whether you are for it or against it.*" One proposal was: "*A European Monetary Union with one single currency, the Euro*".² The respondent could then choose from the following answers: "*For*", "*Against*" or "*Don't Know*".

² During the 21-year period studied by us, this question has been modified slightly over time. The wording of EB 34-37 was "Within this European Economic and Monetary Union, a single common currency replacing the different currencies of the Member States in five or six years time". The wording of the question from EB38 to EB40 was: "There should be a European Monetary Union with one single currency replacing by 1999 the

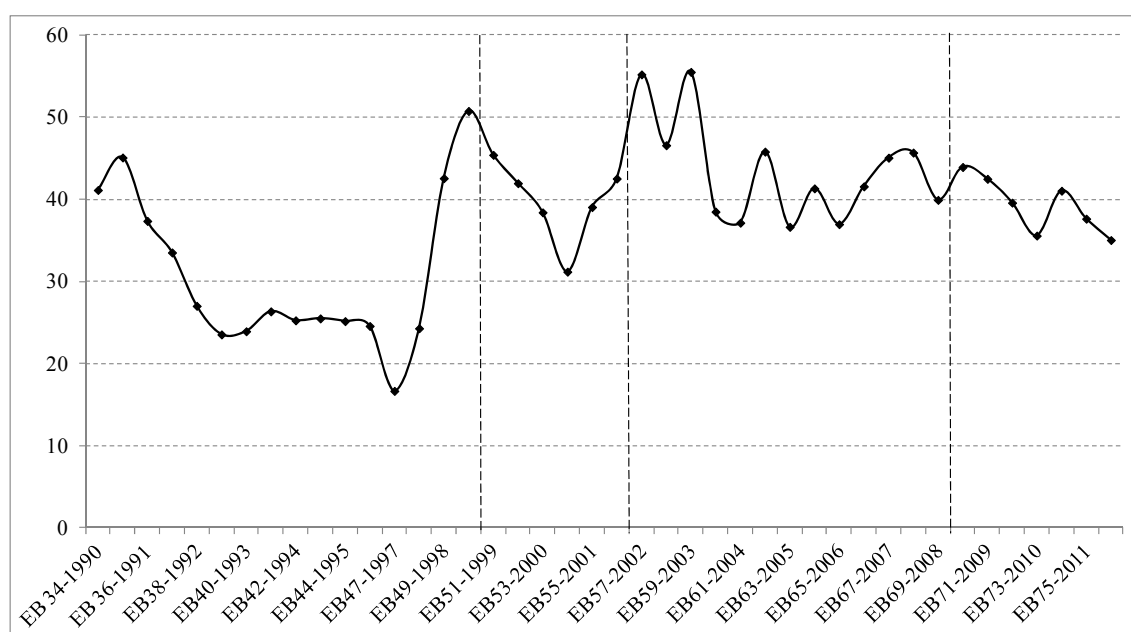
The use of this survey question underlies the literature on public attitudes towards the single currency (see e.g. Kaltenthaler and Anderson, 2001; Banducci et al., 2003 and 2009; Kaelberer, 2007; Jonung, 2011).

As the response rate of the “*Don’t Know*” answer fluctuates over the entire sample (ranging from 0 to 34 and a mean of 8 with a standard deviation of 3.5), 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 in our analysis.

3.2 Support in the EA-12

Figure 1 shows this measure of citizens’ net support for the single currency in the EA-12 country sample from 1990-2011.

Figure 1. Average net support for the single currency in the EA-12 countries, 1990-2011



Notes: The measure for net support is based upon approximately 510,100 individual responses. As the figure depicts net support, all values above 0 indicate that a majority of the respondents support the single currency. For the aggregation of the 12 euro area countries, population weights were applied.

Sources: Aggregated data from 1990-2011 include observations from EB34 to EB76. EB38-71 was purchased from TNS-Emnid. Data from EB34-37 were drawn from Gesis (2005). Data for EB72-76 from autumn 2009 to autumn 2011 were drawn from Eurobarometer (2009, 2010 a and b and 2011 a and b). The aggregated trend

(national currency) and all other national currencies of the Member States of the European Community”. After the ratification of the Maastricht Treaty, the wording in EB41 was changed to: “(...) Member States of the European Union and European Community”. From EB 42 onwards, “European Community” was dropped. From EB44 onwards, the “by 1999” was dropped. From EB 46 onwards, the “euro” is introduced and the wording “European monetary union” is taken out. From EB48 onwards, the word “should” is replaced by “has”. From EB54 the wording “replacing the (national currency) and all other national currencies” is dropped. From EB 54 onwards, “European Monetary Union” is reintroduced. From EB 56 to EB72 onwards, “There has to be” is dropped. The question in EB56 to EB72 represents the wording as highlighted within our main text. From EB73 onwards, “European Monetary Union” was replaced by “Economic and Monetary Union”. As we are of the opinion that these changes in the framing of the question over time are not responsible for any significant changes in the responses, we ignore these modifications of the survey question. A similar argument is made by Banducci et al., 2003, p. 690.

from 1990 to 1994 is based on 10 EA countries, that is EA-12 excluding Austria and Finland. Starting from spring 1995, Austria and Finland are included in the sample.

We identify four distinct phases in the history of the euro during the period 1990-2011 in Figure 1. The first period covers the 1990s up to the actual establishment of the euro area on 1 January 1999 of irrevocably pegged exchange rates among the euro area members. In autumn 1990, net support levels started with an overwhelmingly majority of citizens' support for the euro (41.1%). From autumn 1990 until spring 1993, net support for the euro deteriorated. This deterioration may be explained by exchange rate developments (Banducci et al., 2003, p. 693-94). From autumn 1992 until autumn 1997 net support levels hovered in a narrow range with an average value of 24%. Thus, before the introduction of the euro in 1999 a clear majority supported the single currency. Within the first period – from autumn 1997 until autumn 1998 during the run-up to the euro launch – there is a rapid increase in net support to 51%. During this phase the euro was favourably received in the media across Europe (see e.g. Brettschneider et al., 2003).

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-fledge currency and its introduction physically into circulation in January 2002. Initially, net support deteriorated by 21 percentage points from 51% to 30% until spring 2000 in this second phase. This deterioration is sometimes explained by the decline of the euro vis-à-vis the US dollar (Banducci et al., 2003; Banducci et al., 2009, p. 566; Hobolt and Leblond, 2009). We suggest that the decline may also be a backlash following its positive exposure in the media shortly before January 1999 (e.g. Brettschneider et al., 2003).

Our third period starts when the euro entered into actual circulation on the 1st of January 2002. Initially, net support increased by 12 percentage points from 43% to up to 55%, similar to the pattern of 1997-98. From autumn 2003 onwards, net support remains stable at an average level of around 40% (with a standard deviation of 3,5%) until autumn 2011. The stable trend and low standard deviation of 3.5% suggest that there is no structural break between the pre-crisis period, our third phase, and the financial and sovereign debt crisis period, our fourth phase. In the direct aftermath of the financial crisis, support for the euro actually increased from spring 2008 to autumn 2008 from 40% to 44%, followed by a decrease to 36% in the spring of 2010. In the midst of the sovereign debt crisis, support increased again to 41% in autumn 2010 and decreased to 35% in autumn 2011.

Figure 1 demonstrates that starting from modest positive levels (24%) prior to its introduction, net support for the euro was stabilised at a significantly higher level (40%) after two decades. Most noteworthy, during the financial and sovereign debt crises in 2008-2011, there is only a small decline in popular support for the euro.

3.3 *Support across member states*

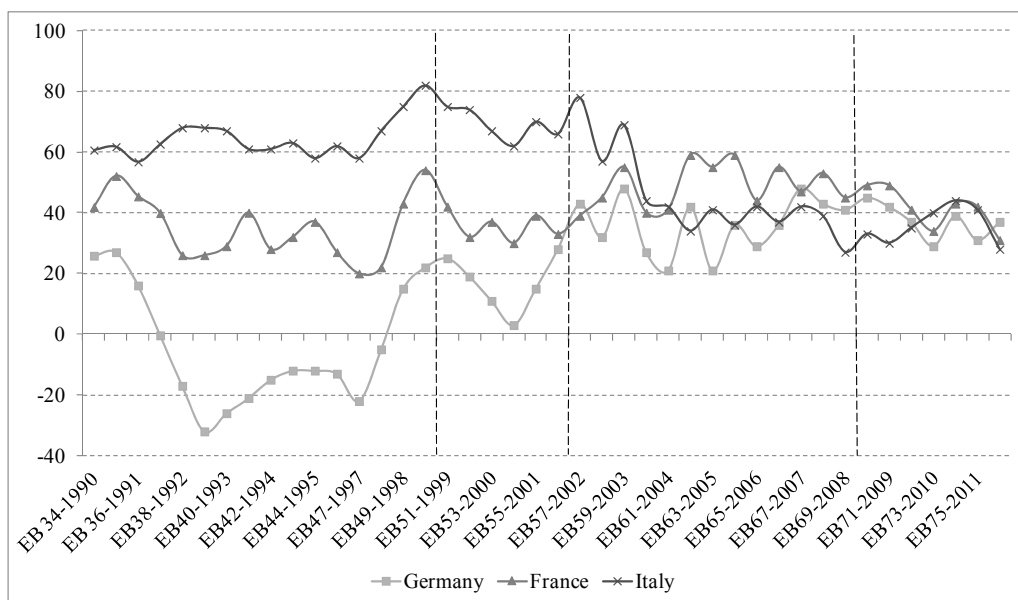
To analyse cross-country discrepancies behind the aggregated net support for the euro, Figure 2 focuses on the three largest euro area economies; Germany, France and Italy. Figure 2 shows a common convergence in all three countries, with a clear catch-up process in Germany from 1993 onwards.

Whereas all three countries start off with values around 25% to 62% from 1993 onwards they differ largely on their level of net support, with a support of -17% in Germany, 26% in France and 68% in Italy. These trends converge to levels of 36% to 46% in the aftermath of the introduction of the euro (2002-2011) and remain relatively stable from 2006

onwards at average levels of around 40%.³ In autumn 2011, the German respondents display a net support of 37%, French citizens a net support of 31% and Italian citizens of 28%. These numbers are in sharp contrast to trust in the ECB which reached levels of -12, -18 and -5, respectively in autumn 2011. Most astonishingly, a clear majority of German respondents supported the euro in autumn 1990. The steady fall from 1990 to 1993 is explained in the literature by the rise in the German exchange rate (Banducci et al., 2003, p. 694).

The corresponding data for other euro area countries and non-euro area countries are depicted in Figures A2, A3, A4 and A5. The pattern for Greece is especially noteworthy. In contrast to a massive drop in Greece in trust in almost all national and European institutions (Roth, Nowak-Lehmann D. and Otter, 2011), the support for their own (European) currency has been increasing throughout the European debt crisis. Whereas net support for the euro was 2% in spring 2008, it rose during the sovereign debt crisis to 55% in autumn 2011. In addition, Figures A4 and A5 demonstrate that levels of euro support in the non-euro area countries is significantly lower than in euro area countries and that the sovereign debt crisis has significantly eroded support for the euro in the non-euro countries, in particular in the UK (with a record low in all EU-27 countries of -65% in autumn 2011), Sweden, Denmark and the Czech Republic.

Figure 2. Net support for the euro in France, Germany and Italy, 1990-2011



Notes: The aggregated data for Germany are calculated from approximately 76,500 observations and 38,000 observations for France and Italy, respectively. As the figure depicts net support, all values above 0 indicate that a majority of the respondents support the single currency.

Sources: Aggregated data from 1990-2011 include observations from EB34 to EB76. EB38-71 was purchased from TNS-Emnid. Data from EB34-37 were drawn from Gesis (2005). Data for EB72-76 from autumn 2009 to autumn 2011 were drawn from Eurobarometer (2009, 2010 a and b; 2011 a and b).

3.4 Support for the euro and trust in the ECB

How do these results compare to the evolution of public trust in the ECB? As depicted in Table 1 and Figure A1 (in the Appendix), public trust in the ECB dropped from 29% in spring 2008 to -12% in autumn 2011, while support for the euro declined only from 40% to

³ This result is consistent with evidence in Jonung and Conflitti (2008) on popular support for the euro.

35% during the same period. Similarly, but less dramatic, a loss of institutional trust⁴ in the European Commission, the European Parliament and the European Union is also registered. One possible explanation for the diverging results between popular support behind the euro and popular trust in the ECB may be that the two measures cover different concepts. Thus, they should be compared with caution. Recent empirical findings on falling public trust in the euro in Germany (Köcher, 2010) suggest that this argument might be plausible.

The question is what do the two measures “trust” in the euro and “support” for the euro actually reflect?⁵ It seems reasonable to interpret “trust” in the euro as “trust” in the purchasing power of this type of money (see Kaelberer, 2007, p. 625-26), similar to “trust” in the stability of the Deutsche Mark. “Support” for the euro would then mean support for the idea of a single European currency while not necessarily meaning that the respondent expects the euro to deliver a stable purchasing power. The support for the euro would then indicate that respondents are willing to “transfer power from the nation state to European institutions” (Kalthenthaler et al., 2001, p. 141) and that they support the idea of a single European currency. In addition, the question is not only directed towards the euro but also towards the European Monetary Union as the relevant question in the survey (EB56-72) asks: “Are you for or against a European Monetary Union with one single currency, the euro”. Thus, whereas the question about “trust” seems appropriate to capture the concept of institutional trust such as trust in the ECB, the European Commission or the European Parliament, the Eurobarometer question concerning “support” for the euro and the EMU is most likely a better measure than “trust” to clearly distinguish the euro as being the single currency for Europe (including the transfer of monetary power to the ECB).

From the reasoning above, we interpret the fall in trust in the ECB to imply that citizens blame the ECB for not preventing the economic, financial and political turmoil during the crisis and suspect that the crisis measures taken by the ECB and other European institutions have had an inflationary effect (for both arguments see here Roth, Gros and Nowak-Lehmann D., 2011). The almost constant popular support behind the euro during the crisis suggests that the respondents support the euro as their currency and that they do not blame the euro for the crisis.

Table 1. Changes in net trust in national and European institutions in comparison to the euro and EMU in the EA-12, 2008-11

	Spring 2008	Autumn 2011	Autumn 2011 - Spring 2008
<i>Net Trust ECB</i>	29	-12	-41
<i>Net Trust EU</i>	14	-24	-38
<i>Net Trust EC</i>	21	-9	-30
<i>Net Trust EP</i>	27	-4	-31
<i>Net support EURO</i>	40	35	-5

Notes: ECB= European Central Bank; EU= European Union; EC= European Commission; EP= European Parliament.

Sources: Standard EB 69 and 76.

4. Model specification, research design and data used

4.1 Model specification

⁴ For a definition of institutional trust, see Luhmann (2000) and Giddens (1996).

⁵ For a general discussion on the adequacy of using a “trust” or a “support” item in questionnaires, see Luhmann, 2000, p.70.

So far our account has summarized the evolution of popular support for the euro. Next we try to identify the major determinants of support for the single currency. Although, the existent empirical studies analyzing popular support for the euro concentrate on a range of factors, varying from economic, political, and historical factors (Jonung, 2011) our analysis will focus primarily on three macro-economic variables inflation, unemployment and growth of GDP but controlling for political and societal factors as well⁶. We believe that this approach is well embedded within three strands of research: i) the literature on popularity functions (Nannestad and Paldam, 1994; Bellucci and Lewis-Beck, 2011), ii) the literature on trust in the ECB (Fischer and Hahn, 2008; Roth et al., 2011) and iii) the most recent empirical studies who stress the necessity of further analyzing macro-economic impact on the popularity of the euro (Banducci et al., 2009, p. 564). Thus, in the baseline model with an unbalanced panel, net support for the euro is therefore estimated as a function of inflation, unemployment and growth of GDP per capita, and a set control variables (Z):

$$Support_euro_{i,t} = f(Inflation_{i,t}, Unemployment_{i,t}, Growth_{i,t}, Z_{i,t}) \quad (1)$$

where i represents each country and t represents each time period; $support_euro_{i,t}$ is the net support for the euro in country i during period t ; $Inflation_{i,t}$, $Unemployment_{i,t}$, $Growth_{i,t}$, and $Z_{i,t}$ are respectively inflation, unemployment, growth of GDP per capita and control variables relating to politics, such as trust in other institutions (national and EU institutions), satisfaction with politics, or other economic variables, such as public expenditure, the level of debt to GDP and the USD/EUR exchange rate for country i during period t .

4.2 Research design

The analysis proceeds in two steps: First, support for the euro is studied from a macro point of view using aggregate macro data. In this step a close look will be taken at feed-back effects between support for the euro and the overall economic situation on the country level in the 2002-2011 period for the EA-12 countries Germany, France, Italy, Spain, the Netherlands, Belgium, Finland, Austria, Portugal, Greece, Ireland and Luxembourg. Equations (2)-(5) are macro-econometric equations based on panel data with i signaling the country (in our case we analyze 12 countries) and t representing time (in our case we analyze 20 time periods as the data is bi-annual). Second, support for the euro is examined from a micro point of view using individual data. In this step, emphasis is put on personal characteristics of the interviewed person (age, gender, political attitudes, education and employment) but also on perceptions of the economic situation. Equation (6), our micro-econometric equation, is based on individual data. In the further analysis the sample is split into a pre-crisis and crisis period.

4.3 Data used

The data has been retrieved from the following sources:

- The data on support for the EMU and the euro and trust in the European institutions are based upon the bi-annual Eurobarometer survey. Aggregated data on support for

⁶ The cointegration approach is very helpful in eliminating non-influential variables from the regression equation. In our case, political and societal variables did not systematically influence support for the euro, at least over the period of study having found cointegration (see table A4 in the appendix for the cointegration results of the full sample).

the EMU and the euro from 1990-2011 include observations from EB34 to EB76. Aggregated data from EB38-71 was purchased from TNS-Emnid. Data from EB34-37 were drawn from Gesis (2005) and have been calculated based on individual data. Data for EB72-76 from autumn 2009 to autumn 2011 were drawn from Eurobarometer (2009, 2010 a and b and 2011 a and b).

- Data for the econometric analysis of individual observations have been downloaded from the ZACAT service from the Leibniz institute for the Social Sciences.
- Data on population and on GDP are taken from Eurostat's quarterly data. GDP data were chain-linked with 2000 as the reference year.⁷ As the Eurobarometer fieldwork normally takes place around April–May and October–November,⁸ GDP per capita growth was constructed by using GDP per capita data on the four quarters preceding the Eurobarometer's fieldwork. More precisely, the two quarters directly preceding the Eurobarometer were compared with the third and fourth quarters before the Eurobarometer.
- Data on inflation rates are based on Eurostat's monthly indicators for the harmonised index of consumer prices. Semester data were constructed by averaging monthly data from April to September and from October to the end of March. The April–September data were then matched with the Standard Eurobarometers from autumn, and the October–end of March data were then matched with the Standard Eurobarometers from spring.
- Data on unemployment are obtained from Eurostat. Data for unemployment were constructed in a similar manner as for GDP and inflation.

5. Econometric Analysis

5.1 *The issue of endogeneity*

When running regressions such as in equation (2) below one must be aware of the possibility, that the right-hand side variables (inflation, growth and unemployment) might be endogenous (affected by a common event) or stand in a bi-directional relationship with support for the euro (a low level of support might lead to a self-fulfilling prophecy and might speed up and worsen an already existing downturn). Therefore, we estimate the model by means of dynamic ordinary least squares (DOLS), a method that controls for endogeneity of the regressors. DOLS is also known as the leads and lags approach proposed by Stock and Watson (1993) and described by 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 which reflects a situation whereby all adjustments have come to an end, reads as follows:

⁷ Chain-linking is a methodology for calculating GDP values at constant prices. In particular, the previous year is used as a base year instead of a single fixed year, which is moved every five years. The year 2000 is used as a reference year, for which the deflators are expressed as equal to 100.

⁸ Although this fluctuates slightly we assumed that the Standard Eurobarometer in spring was polled in April–May and the one in autumn was polled in October–November. That this assumption is valid is underlined when analysing the exact dates of the fieldwork for the single Eurobarometers. The polling for the Standard Eurobarometers took place in the following months: 04-05/2002, 10-11/2002, 04-05/2003, 10-11/2003, 02-03/2004, 10-11/2004, 05-06/2005, 10-11/2005, 04-05/2006, 09-10/2006, 04-05/2007, 09-10/2007, 03-05/2008, 10-11/2008, 01-02/2009, 06-07/2009, 10-11/2009, 05/2010, 11/2010, 05/2011 and 11/2011.

$$Support_euro_{i,t} = \alpha_i + \beta Inflation_{i,t} + \gamma Growth_{i,t} + \mu Unemployment_{i,t} + \psi Z_{i,t} + w_{i,t}, \quad (2)$$

with w_{it} being the iid-N error term with the properties of the classical linear regression model.

Controlling for endogeneity requires the decomposition of the error term into the endogenous changes of the right-hand side variables, which are correlated with w_{it} .⁹ This leads to the following equation¹⁰ in which all explanatory variables from the baseline model can be considered exogenous:

$$\begin{aligned} Support_euro_{it} = & \alpha_i^* + \beta_1 Inflation_{it} + \chi_1 Growth_{it} + \delta_1 Unemployment_{it} + \phi_1 Z_{i,t} + \\ & \sum_{p=-1}^{p=+1} \beta_{2p} \Delta Inflation_{it-p} + \sum_{p=-1}^{p=+1} \chi_{2p} \Delta Growth_{it-p} + \sum_{p=-1}^{p=+1} \delta_{2p} \Delta Unemployment_{it-p} + \\ & \sum_{p=-1}^{p=+1} \phi_{2p} \Delta Z_{it-p} + v_{i,t} \end{aligned} \quad (3)$$

with α_i representing country fixed effects and Δ indicating that the variables are in first differences; the error term v_{it} should fulfil the requirements of the classical linear regression model (it should be free from autocorrelation!). Equation (3) represents the fixed effects dynamic ordinary least squares (DOLS) approach and estimators are called FE-DOLS estimators.

Inflation, growth and unemployment become exogenous and the coefficients β_1 , χ_1 , δ_1 and ϕ_1 follow a t-distribution. This property allows us to draw statistical inferences on the impact of inflation, growth and unemployment on support for the euro. β_2 , χ_2 , δ_2 and ϕ_2 are coefficients that belong to the endogenous part of the explanatory variables and do not follow a t-distribution but we are not interested in the influence of these “differenced variables” on support for the euro.

Yet the application of DOLS is not so standard. A prerequisite for using the DOLS approach is that the variables entering the model are non-stationary (in our case all series are integrated of order 1, i.e. they are I(1) – results are depicted in Table A3 in the Appendix) - and that the series are in a long-run relationship (they are cointegrated; results are depicted in Table A4 in the Appendix).

5.2 Omitted variables and autocorrelation

Having found that support for the euro and the economic variables (inflation, growth and unemployment) are non-stationary and cointegrated, we can be sure that omitted variables (which are lumped together in the error term) do *not* systematically influence our long-run relationship between support for the euro and macroeconomic variables. Omitted variables could be political factors: disappointment with politics in general, trust in other institutions (e.g. the European Central Bank, national government; national parliament; EU commission; EU parliament; trust in the European Union) but also other economic factors (accumulation of

⁹ Usually the leads and lags of the variables in first differences are inserted as well (a classical DOLS procedure). We apply a simple, reduced DOLS, which contains only the unlagged and unled first differences. This was necessary since in the crisis period we only have a limited number of observations.

¹⁰ We started with one forward lead and one backward lag in the first differences, but ended up running a simplified DOLS with an unlagged first difference when multicollinearity was present.

public debt, worldwide exchange rate developments, a crash in stock markets, a crash in the banking sector etc.).

Even though the error term is stationary [I(0)], a characteristic of cointegration, autocorrelation might still be a problem that must be fixed.¹¹ We do so by applying the FGLS procedure. Correcting for swings in the error term leads to the following equation:

$$\begin{aligned} Support_euro_{it}^* &= \alpha_i^* + \beta_1 Inflation_{it}^* + \chi_1 Growth_{it}^* + \delta_1 Unemployment_{it}^* + \phi_1 Z_{it}^* + \\ &\sum_{p=-1}^{p=+1} \beta_{2p} \Delta Inflation_{it-p}^* + \sum_{p=-1}^{p=0+1} \chi_{2p} \Delta Growth_{it-p}^* + \sum_{p=-1}^{p=+1} \delta_{2p} \Delta Unemployment_{it-p}^* + \\ &\sum_{p=-1}^{p=+1} \phi_{2p} \Delta Z_{it-p}^* + u_{it} \end{aligned} \quad (4)$$

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 error term u_{it} fulfils the requirements of the classical linear regression model (it is free from autocorrelation). Equation (4), which is an improved version of equation (3), represents the fixed effects dynamic feasible generalized least squares (DFGLS) approach and the estimates will be produced with FE-DFGLS estimators.

$$\begin{aligned} Support_euro_{it}^* &= Support_euro_{it} - \rho_1 Support_euro_{it-1} \\ Inflation_{it}^* &= Inflation_{it} - \rho_1 Inflation_{it-1}, \\ Growth_{it}^* &= Growth_{it} - \rho_1 Growth_{it-1}, \\ Unemployment_{it}^* &= Unemployment_{it} - \rho_1 Unemployment_{it-1}, \\ Z_{it}^* &= Z_{it} - \rho_1 Z_{it-1} \text{ and } u_{it} = v_{it} - \rho_1 v_{it-1} \end{aligned} \quad (5)$$

The differences of the explanatory variables are transformed in exactly the same way as the variables in levels. Note that the new error terms u_{it} are free of autocorrelation and that swings in the error term are eradicated by transforming the variables. Since the coefficient ρ_1 is usually unknown (as in our case), it has been estimated by means of, e.g. the Cochrane-Orcutt method, an FGLS procedure.¹² In addition, we use country-specific fixed effects, α_i^* , in our analysis.

5.3 Econometric results from fixed-effects DFGLS estimation (macro analysis)

Table 2 shows the results for the determinants of support for the euro in a panel analysis covering the EA-12 countries for the period from spring 2002 to autumn 2011 with the total number of observations being 240. We view this time period as the most appropriate one for our set of tests as from January 2002 onwards European citizens could actually use the

¹¹ We found first order autocorrelation to be existent.

¹² FGLS is not compatible with time fixed effects but picks up shocks and their influence over short-to medium term periods.

euro as a “real” money in daily business. As we have argued above, a distinction of four different time periods seems to be appropriate, our analysis will include the 3rd and 4th time period. Similar to other studies in the field (Gärtner, 1997; Kaltenthaler and Anderson, 2001; Banducci et al., 2009; Kaelberer, 2007 and Hobolt and Leblond, 2009), we expect that the price stability (inflation) should be a key influence on support for the euro. However, based on the popularity function literature we would also expect unemployment and growth of GDP per capita to exert a significant influence (see here e.g. Kaltenthaler and Anderson, 2001; Banducci et al., 2009 and Hobolt and Leblond, 2009).

Equation 1 in Table 2 includes inflation, unemployment and growth of GDP per capita as the explanatory variables and analyses our full sample. Inflation is negatively and significantly related to support for the euro at the 99% level. Growth of GDP per capita and unemployment are not significantly related to support for the euro when estimating the observations in our full sample. An increase of 1 percentage point of the harmonized index of consumer prices is associated with a decrease of 0.62 percentage points of net support for the EMU and the euro. As we have argued the pre-crisis period (2002-08) should be kept distinct from the crisis period (2008-11)¹³ equations 2 and 3 split the full sample into a pre-crisis period and a crisis period to explore the impact of the financial crisis on popular support for the euro.¹⁴ Splitting the full sample into a pre-crisis period and a crisis period reveals that the significant negative effect of inflation on support for the euro seems to be driven strongly by the pre-crisis period, in which inflation exhibits a strongly negative and significant (99% level) effect on support for the euro. As expected from the literature on popularity functions, GDP growth is strongly and positively associated with support for the euro in the pre-crisis sample. In the crisis sample, column 3, we detect no impact from unemployment and growth of GDP but again a significant negative impact from inflation on support for the euro. As the negative significant association from inflation on support for the euro is significant in the pre-crisis as well as crisis period we thus conclude that inflation is the most robust driver of support for the euro.

¹³ A Chow test for a structural break confirms that the pre-crisis should be kept distinct from the crisis period sample. Our test statistic, which is chi-square distributed, of 5.36 rejects the null hypothesis indicating that there is a significant structural break. Results for the chow-test are depicted in Table A5 in the Appendix. As inflation remains significantly negative among all three equations this result is driven by the fact that growth of per capita GDP is positively significant the pre-crisis period but insignificant in the crisis period.

¹⁴ We have tested for cointegration in all periods (full sample/pre-crisis/crisis period). We found cointegration for all periods (full sample/pre-crisis/crisis period). Results for the full sample are depicted in table A4 in the Appendix. Results for the pre-crisis and crisis sample are available upon request.

Table 2. Relationship between inflation, unemployment, GDP per capita growth and net support for the euro. Panel analysis (aggregated level), 2002-11

<i>Support for the euro</i>	(1) Full sample spring 2002 – autumn 2011	(2) Before the crisis spring 2002 – spring 2008	(3) After the crisis autumn 2008 – autumn 2011
<i>Inflation</i>	-0.62*** (-3.08)	-1.26*** (-3.62)	-1.16** (-2.06)
<i>Unemployment</i>	-0.37 (-0.68)	-2.29 (-1.48)	0.86 (1.31)
<i>GDP per capita growth</i>	-0.33 (-0.51)	3.03** (2.31)	-0.84 (-1.16)
Durbin-Watson statistic	2.18	2.41	2.05
Observations	240	156	84
Number of countries	12	12	12
Adjusted R-squared	0.81	0.81	0.86

Notes: FE-DFGLS: we utilise a fixed-effects model that we estimate by means of the DOLS-approach (accounting for endogeneity) and control for autocorrelation of the disturbances, which renders DFGLS estimates. No time fixed effects are utilised because FGLS makes time fixed effects redundant. T-values are in parentheses. Model specification: EURO Net Support_{i,t} = $\alpha_i + \beta$ Inflation_{i,t-1} + γ Unemployment_{i,t-1} + Ω Growth of GDP per Capita_{i,t-1} + $w_{i,t}$. In equation 1 the 240 observations come from 12 countries and 20 time series. The sample ranges from spring 2002 to autumn 2011. *** p<=0.01, ** p<=0.05, * p<=0.10

5.4 Econometric results from the probit-regression (micro analysis)

So far we have examined the macroeconomic determinants of popular support for the euro over time (within effects). In equation (6) we study the support for the euro based on a probit model and individual panel data. The data set at hand does not allow us to track individuals over time. The dependent variable S (support for the euro) takes on 1 if the individual supports the euro and 0 if the individual does not support the euro. j stands for the individual, c for country and t for time. P represents the probability with which the euro was supported empirically in the overall sample given certain individual and certain country characteristics in the time period studied.

$$P(S_{jct}=1) = \alpha \text{ micro controls}_{jct} + \beta \text{ macro controls}_{(j)ct} + \lambda \text{ inflation}_{(j)ct} + \eta \text{ country}_c + \theta \text{ semester}_t + \varepsilon_{jt}, \quad (6)$$

Our micro controls are age, gender, political orientation, education, individual employment situation and the macro controls are unemployment and GDP per capita growth. These controls are in line with the literature, see for example Banducci et al. (2003; 2009). In Table 3 we present results of the micro-level approach and mainly analyse the impact of inflation – our main determinant of support for the euro – based on a cross-section analysis of respondents in all EA-12 countries. Controlling for the socio-economic variables of age, gender, education, left/right placement and the macroeconomic variables of unemployment and GDP growth per capita as well as for country and time fixed-effects (including 166,812 individual observations), inflation has the expected effect in all three samples. Respondents in a country with higher inflation tend to support the euro less than respondents who live in a

country with more moderate inflation. Banducci et al., (2003) and Hobolt and Leblond (2009) argue that support is determined by both socio-tropic and ego-centric motives. Citizens are on the one hand concerned about the situation in their country, while at the same time they also care about their personal situation. Moreover, Banducci et al. (2009) posit that the actual economic reality – as summarised in official economic statistics – does not necessarily agree with the perceived economic situation. Therefore, to account for citizens’ perceptions towards inflation, columns 2 and 3 include citizens’ perceptions towards their country’s situation (socio-tropic view) and their personal situation (ego-centric view).¹⁵ Columns 2 and 3 analyse whether perceptions of inflation also impact on net support. Our results confirm that this is the case. All coefficients have the expected signs.

Table 3. Inflation and net support for the euro – Probit analysis (individual level), 2002-11

	Official rate	inflation	Perception of the state of the national economy	perception of the state of the private economy
Full sample				
<i>Inflation</i>	-0.004*** (-11.9)		-0.149*** (-15.9)	/
Total Observations	166,812		136,587	
Before Crisis				
<i>Inflation</i>	-0.005*** (-10.0)		-0.159*** (-13.9)	/
Total Observations	113,615		92,389	
After Crisis				
<i>Inflation</i>	-0.005*** (-6.2)		-0.143*** (-8.9)	-0.172*** (-12.5)
Total Observations	53,197		44,198	44,198

Notes: The data are from individual Eurobarometer files, available via Gesis Zacat. The reported coefficients originate from a probit regression. The dependent variable is a 0-1 variable, 1 implying “yes, I do support the euro” and 0 implying “no, I do not support the euro”. Z-statistics are placed beneath the coefficients between parentheses. *** p<0.01; ** p<0.05; * p<0.1

5.5 What is novel about our findings?

The literature has not yet analysed the impact of the financial crisis on citizens’ support for the euro. We find that the financial crisis – at least so far – has had no impact on public support for the euro when analysing aggregated data descriptively and with a fixed-effects DFGLS panel analysis. Our findings from the pre-crisis and crisis period confirm a negative and significant relationship between inflation and support for the euro. A similar result has

¹⁵ The best proxy for giving us information on 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” and “unemployment” as two possibilities. The classic question asking about the “current situation” does not include inflation in the Standard Eurobarometers.

been established, inter alia, by Banducci et al. (2009). In addition, in accordance with Banducci et al. (2009), perceived inflation also has the expected highly negative signs.

Beyond this consensus, we are able to show that on the aggregate level other variables, such as the budget deficit, the exchange rate, attitude towards the EU, euros in circulation, etc. are unable to influence the support for the euro in any consistent way. This result is due to the cointegration relationship between support for the euro and macroeconomic variables and stands in contrast to the findings of Banducci et al. (2003; 2009) and Hobolt and Leblond (2009), who identify the exchange rate and the attitude towards EU membership as significant drivers of support for the euro.

Our analysis confirms that in contrast to a dramatic fall in citizens' trust in the ECB (Roth, Gros and Nowak-Lehmann D., 2011) driven by the financial crisis, public support for the euro has remained stable so far.

6. Conclusions

Our analysis shows that the financial and sovereign debt crisis that started in Europe in 2008 has not affected popular support for the euro within the euro area. This finding is in contrast to the dramatic fall in public trust and support for European institutions, the European Union per se and in particular the ECB, the central bank issuing the euro. At the aggregate level, support for the euro can be explained adopting a popularity function approach, stressing the role of inflation and growth, when the economy runs smoothly as in normal times. During the recent crisis, only inflation still appears to drive the support for the euro. Furthermore, we find no evidence that omitted variables (exchange rates, budget deficits, trust in the EU and European institutions) change our estimates.

The crisis has not reduced the support for the euro within the euro area. However, outside the euro area, the public attitude towards the euro has become significantly more critical. Outside the euro area, the crisis is taken as proof that closer monetary integration is *not* the route to be taken. Inside the euro area, the opposite holds.

To conclude, the European single currency, the euro, has so far enjoyed an astonishing overall support throughout the crisis, in sharp contrast to the dramatic fall in public trust in the ECB and also to the negative response among EU countries outside the euro area. This pattern is consistent with the view that Europeans in the euro area want the euro to continue to be their currency while they are critical of the policies of the ECB during the crisis. Thus, the data suggest that European public opinion does not hold the euro responsible for the crisis.

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Appendix

Table A1. Summary statistics for the aggregate data analysis, 2002-2011

Variable	N	Mean	Std. Dev.	Min	Max
<i>Net support for EMU</i>	240	48.1	18.3	-7	85
<i>GDP per capita growth</i>	240	0.4	1.7	-8.4	4.1
<i>Unemployment rate</i>	240	7.8	3.2	2.1	21.5
<i>HICP</i>	240	102.9	6.7	89.0	121.5

Table A2. Summary statistics for the individual analysis, 2002-2011

Objective state of the national economy

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Age</i>	166,812	49.6	16.5	15	99
<i>Gender</i>	166,812	0.48	0.50	0	1
<i>L-R placement</i>	166,812	1.9	0.75	1	3
<i>Education</i>	166,812	18.3	4.7	2	85
<i>GDP per capita growth</i>	166,812	0.42	1.6	-6.5	4.0
<i>Inflation</i>	166,812	102.4	6.1	89.0	119.6
<i>Unemployment</i>	166,812	7.8	2.9	2.1	20.6

Perception of the state of the national economy

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Age</i>	136,587	49.7	16.5	15	99
<i>Gender</i>	136,587	0.48	0.50	0	1
<i>L-R placement</i>	136,587	1.9	0.75	1	3
<i>Education</i>	136,587	18.3	4.7	2	85
<i>GDP per capita growth</i>	136,587	0.30	0.46	0	1
<i>Inflation</i>	136,587	0.22	0.41	0	1
<i>Unemployment</i>	136,587	0.43	0.50	0	1

Perception of the state of the private economy

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Age</i>	44,198	50.6	16.5	15	97
<i>Gender</i>	44,198	0.49	0.50	0	1
<i>L-R placement</i>	44,198	1.9	0.75	1	3
<i>Education</i>	44,198	18.5	4.7	2	73
<i>GDP per capita growth</i>	44,198	0.27	0.45	0	1
<i>Inflation</i>	44,198	0.41	0.49	0	1
<i>Unemployment</i>	44,198	0.17	0.38	0	1

† Education is measured as “How old were you when you stopped full-time education?”. Only a few observations had extreme values for education (like 85).

Table A3. EU-12 country sample, Augmented Dickey-Fuller (ADF) panel unit root tests

Variable	Total observations	(balanced)	ADF-Fisher Chi-square	Probability
<i>Net support for the euro</i>	240		20.88	0.65
<i>Inflation</i>	240		9.64	0.99
<i>Unemployment</i>		240	30.18	0.18
<i>Growth</i>		240	25.34	0.39

Note: H_0 = series has a unit root (individual unit root process).

Source: Own calculations.

Table A4. EU-12 country sample, Kao residual cointegration test

Cointegration between the following set of variables:	Included observations	ADF-t-statistic	Probability
Net support for euro, GDP per capita growth, unemployment rate, inflation rate,	240	-1.41	0.08

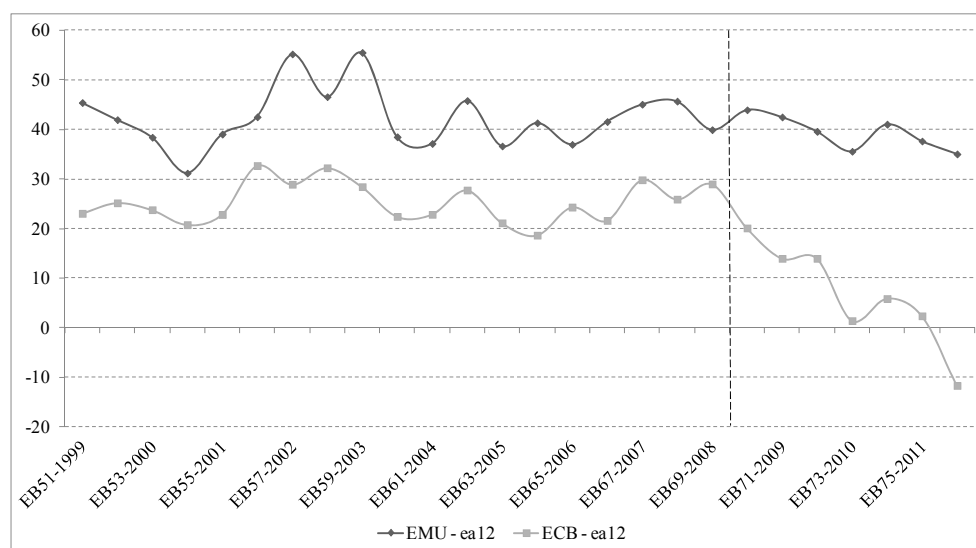
Note: H_0 = no cointegration

Source: Own calculations.

Table A5. Test on structural break in autumn 2008 (Chow-test)

Period	Sum squared residuals	of Type model	of Number of observations	of K+1 regressors	R-squared
Spring 2002–Autumn 2011	14199.95	Restricted	240	7	0.82
Spring 2002–Spring 2008	9463.02	Unrestricted	156	7	0.83
Autumn 2008–Autumn 2011	2627.94	Unrestricted	84	7	0.89

Figure A1. Net trust trend in the ECB and net support in the euro, 1999-2011



Notes: Net support levels of above 0 indicate that a majority of citizens supports the euro/trusts the ECB. Standard EB's 51-76. As Special EB 71.1 (January/February 2011) has no information on support for the euro, it was not included in the time trend. However, it has to be pointed out that the inclusion of the special EB 71.1 would show a dramatic decrease/structural break of citizens' trust in the ECB (see here also Gros and Roth, 2009 and 2010, Roth, 2009 and Jones, 2009).

Figure A2. Support for the euro in nine EA-12 countries, autumn 1990- autumn 2011

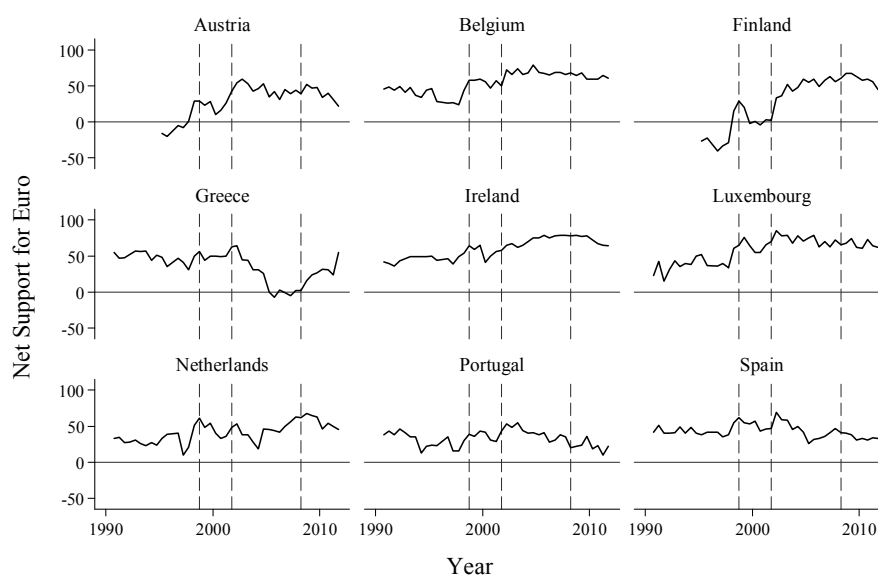


Figure A3. Support for the euro in five euro area countries that joined EMU after 2001, autumn 2004 - autumn 2011

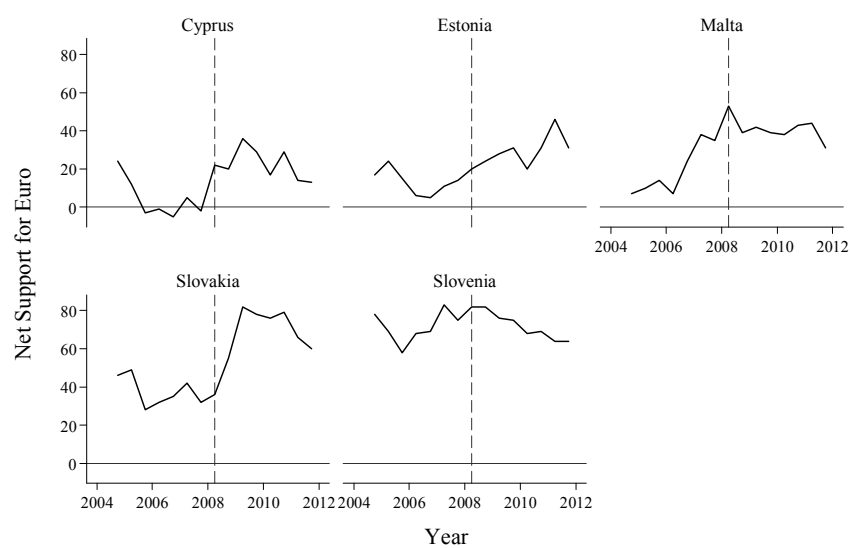
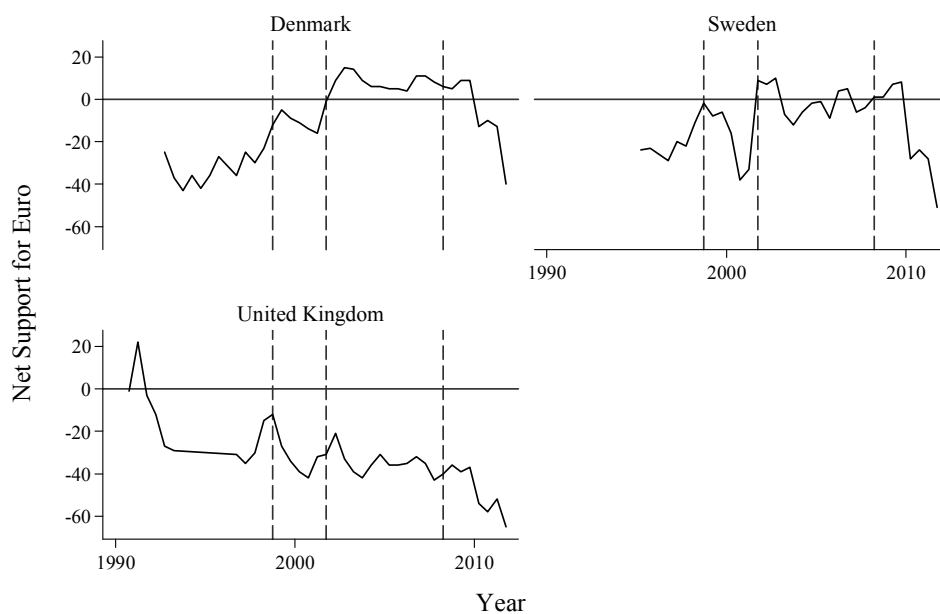


Figure A4. Support for the euro in the United Kingdom, Sweden and Denmark, autumn 1990 - autumn 2011



Note: For the UK data from autumn 1993 to autumn 1995 (EB40-44) are missing and have been interpolated.

Figure A5. Support for the euro in the seven transition and non-euro area countries, autumn 2004 – autumn 2011

