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# Coping with Structural Weakness and EMU Citizen Support for the Euro: Opportunities for Change

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## Abstract

This paper aims to establish whether the Economic and Monetary Union (EMU) citizen net support for the euro is based on cost–benefit analysis and the extent to which this support is influenced by competitiveness. We estimate the model for assessing the net benefit of using the euro based on the method reported by Collignon (2002) and by applying a dynamic panel Generalised Method of Moments (GMM) over the period between 2001 and 2018. We have specifically estimated the impact of structural factors, including competitiveness, on public support for the euro. No previous empirical studies have evaluated public support for the euro from the perspective of a cost-benefit analysis focusing on the importance of coping with structural weakness using a dynamic panel GMM. EMU citizen net support for the euro is found to be based on cost–benefit analysis, which is influenced by the economic scale of the EMU and each country's competitiveness. Although far-right populist and nationalist parties call for withdrawal from the eurozone and for a return to national currencies, we find that national identity does not have a significant impact on net support for the euro within the EMU countries, the opposite is true outside of the EMU. Our analyses indicate that, to increase net citizen support for the euro, Eurozone countries should accelerate structural reforms aimed at improving competitiveness and economic expansion.

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# 1. Introduction

The sustainability of the euro has received considerable attention since the global financial and sovereign debt crises, as these events exposed major weaknesses in the design and implementation of the economic governance framework of the euro area. The euro, however, survived these crises through several emergency measures and further implemented certain structural reforms. The ratification of the European Stability Mechanism (ESM) and the European Central Bank's announcement of outright monetary transactions (OMT) contributed to financial stability in the Eurozone. This was further strengthened by the decision of the European Council to create a Banking Union in 2012. Moreover, the EU responded by taking a wide range of measures, including the European Semester, the Euro Plus Pact, the Six-pack and the Treaty on Stability, Coordination and Governance (TSCG), also known as 'Fiscal Compact' in order to strengthen its governance and facilitate a return to sustainable economic growth. After the recession in 2012, while the European economy stabilised slowly over the course of the first half of 2013, euro area countries in severe financial distress were not able to devalue the euro to attempt to counter further economic and debt crises. As a result, some EMU countries were forced to reduce spending and implement austerity programmes despite weak economic environments, leading to economic misery and popular anger. However, despite economic hardship in the south, and widespread frustration in the north of the Economic Monetary Union (EMU) during the sovereign debt crisis, a majority of people in Eurozone countries continue to support the euro, and no empirical evidence can be presented of strong opposition in times of crisis (Hobolt and Leblond, 2014; Roth et al., 2016). Overall, each of the 19 eurozone countries maintain majority support for the euro, as shown in a recent Eurobarometer survey.

In a trend that runs counter to sustained majority support for the euro, Eurosceptic parties have recently made major electoral gains in several Eurozone countries, potentially undermining the euro and destabilising financial markets. Against this backdrop, it is crucial to investigate the impact of economic developments and national identities on public support for the euro. Public trust in the euro is indispensable for the smooth functioning and long-term stability of the EMU. In the Eurozone, public support for the common currency is a barometer of the willingness of citizens to transfer national power to the European level (Kaltenthaler and Anderson, 2001) .

Previous studies have shown that attachment to the nation and, particularly, to exclusive national identity, were powerful predictors of negative attitudes towards European integration (Hooghe and Marks, 2004; McLaren, 2006). Hooghe and Marks (2009) further suggested that national identity would become increasingly relevant to attitudes regarding European integration as a consequence of the EU becoming increasingly politicised in the domestic arena. Conversely, Kuhn and Stoeckel (2014) have shown that both utilitarian considerations and national identity influenced support for European economic integration during the sovereign debt crisis. Focusing on economic indicators affecting public support for the euro and derived from the Eurobarometer data for 2000–2007, Banducci et al. (2009) found that inflation had a negative impact on support for the euro. These researchers additionally demonstrated that, while national identity had a negative impact on support for the euro outside the Eurozone, it had no significant impact on support within. Hobolt and Wratil (2015) conducted the empirical analysis from a cost–benefit perspective based on multilevel logistic regression with random intercepts at the country level for the period 2005–2013. They showed that public attitudes were increasingly driven by utilitarian considerations whereas concerns related to national identity were becoming less important. Furthermore, their analysis revealed a growing divide between 'insiders and outsider', whereby citizens inside the euro area not only remained more

supportive of the euro than those outside, they also appeared to be more readily persuaded by utilitarian arguments in favour of the euro. From these results, the researchers concluded that, as citizens received more information about the economic consequences of monetary integration, their attitudes towards the euro were more likely to be based on a systematic evaluation of the costs and benefits of the integration process. Currently, based on the fact that the European Commission (2018) has shown that more than two-thirds of Eurobarometer survey respondents indicated a need for significant reforms to improve economic performance, EMU citizen interest in economic policy appears to be relatively high. Roth et al. (2019) showed that both macroeconomic and microeconomic development, including unemployment and inflation, were important drivers of public support for the euro in the period spanning 1999–2017.

Our research assesses whether the attitudes of citizens of the economic monetary union (EMU) towards the euro are based on considerations of its net economic benefits. We apply the dynamic panel Generalised Method of Moments (GMM). We specifically target the impact of structural factors, including competitiveness, on public support for the euro.
We investigate competitiveness as part of our study because, as stated by Draghi (2012), although structural reforms can result in adjustments to wages and prices, competitiveness is fundamentally important to the lives and long-term prosperity of all Eurozone citizens. Regarding the relationship between competitiveness and long-term prosperity, various previous studies have shown that exchange-rate appreciation has a negative impact on employment (Branson and Love, 1988; Revenga, 1992; Burgess and Knetter, 1998; Gourinchas, 1999; Alexandre et al., 2017). Furthermore, an overvalued currency has generally been found to hamper economic growth (Gala, 2008; Vieria and MacDonald, 2012; Comunale, 2017). No previous empirical studies have evaluated public support for the euro from the perspective of a cost-benefit analysis focusing on the importance of coping with structural weakness using a dynamic panel GMM. Further, we examine whether national identity is an important factor in net support for the euro. While net economic benefits can promote support for the euro, national identity is largely independent from considerations of economic benefits and may pose constraints on the process of European integration. We also investigate whether there is a difference in net support for the euro between citizens in EMU and non-EMU countries. Thus, the empirical analysis presented herein provides crucial information regarding policy implementation that can strengthen support for the EMU.

The rest of this paper is organized as follows: Section 2 provides data and econometric methodology; Section 3 provides the results derived from our empirical models; and, Section 4 summarises and concludes the paper.

## 2. Data and Econometric Methodology

### 2.1 Net benefits of the euro

We assume that an individual's attitude towards the euro is dependent on its net benefits, which we model based on the work of Collignon (2002). While Collignon (2002) focused on the net economic benefits of the euro by considering the role of political preference for output stability over price stability, thus explaining monetary disruption, the model indicates that economic structural weakness can increase the cost of remaining in the EMU and reduce the net economic benefits. Although Collignon (2002) did not directly discuss the role of competitiveness, our paper presents an empirical investigation into whether coping with structural weakness can have an important role in support for the euro.

From the point of view of an individual in our model, economic benefits of the euro ($B$) are a function of the economic size of the EMU ($S$) and its degree of openness ($m$).

$$B_i = B(S, m_i) \quad B_s > 0, B_m > 0. \tag{1}$$

In terms of specific benefits, we assume that a large currency area would provide investment and employment opportunities with a reduction of transaction costs and the elimination of exchange rate volatility. In this scenario, citizens could benefit from a currency used over a large area because there would be no need to exchange money when traveling. Moreover, citizens could benefit from increased trade, which would provide greater choice for customers. Increased trade would further increase price transparency and cut prices for producers. Thus, based on these assumptions, increases in economic scale and trade openness would raise economic welfare.

As for costs associated with joining the EMU, we assume that the most significant would be the loss of independent monetary and exchange rate policy. In this context, the cost attributed to loss of the instrument used for economic adjustments would depend on the relationship between wage flexibility and prices. For instance, in the case of nominal wage rigidity, depreciation can reduce real wages and increase output and employment, meaning that the cost of the loss of independent monetary policy in such circumstances would be huge. Conversely, in the case of real wage rigidity, such as wage indexation of 100%, nominal depreciation cannot change real wages, output or employment, signifying that the cost of adopting the euro under these conditions would be small.

Here, we assume that the utility of the exchange rate instrument could be described by the government's objective function according to the following form:

$$-[\frac{A}{2}(\bar{y} - y)^2 + \frac{dp^2}{2}], \bar{y} - y \geq 0 \tag{2}$$

where $\bar{y}$ and y are desired and actual output levels; $dp^2$ is the rate of inflation; and A is a positive parameter reflecting the authorities' relative preference for output over price stability. We assume that A is a structural factor/rigidity. Higher A values would thus correspond to a greater preference from authorities to keep output at a desired level.

CPI is defined as follows:

$$p = (1 - \mathrm{m})p^d + m(p^* + e) \tag{3}$$

where p is the CPI; m is the degree of openness; $p^d$ is the GDP deflator; $p^*$ represents foreign CPI; and e is the nominal exchange rate. Here, if we assume that foreign prices remain constant ($dp^* = 0$), then the country's expected inflation would be given by:

$$dp^e = (1 - \mathrm{m})\mathrm{E}(\mathrm{d}p^d) + mE(de) \tag{4}$$

Thus, the short run trade-off between output and inflation is expressed as:

$$\bar{y} - y_s = \varphi(dp - dp^e), \varphi > 0 \tag{5}$$

where $\varphi$ is the slope of the Lucas supply curve; $y_s$ is the output level subsequent to the real shock. By assuming that domestic inflation is fixed in the short run, we obtain the following equation:

$$\bar{y} - y_s = \varphi m[de - E(de)] \tag{6}$$

By substituting equation (6) into equation (2), the objective of the government becomes:

$$max_{de}\text{-}\{\frac{A}{2}[(\bar{y}-y_s)-\varphi m(de-E(de))]^2+\frac{de^2}{2}\} \quad (7)$$

The first order condition for the maximisation problem in equation (7) further implied that:

$$de=\frac{A\varphi m}{1+A\varphi^2m^2}(\bar{y}-y_s)+\frac{A\varphi^2m^2}{1+A\varphi^2m^2}E(de) \quad (8)$$

Thus, given that the output objective is higher than the post shock level (i.e. $\bar{y}>y_s$), government will devalue, even if this measure is not expected ($E(de)$ = 0). Under rational expectations, however, we assume that $E(de)=de$, and we thus obtain the following equilibrium rate of devaluation:

$$de=\mathrm{A}\varphi\mathrm{m}(\bar{y}-y_s)>0 \quad (9)$$

In this way, the utility of the exchange rate as a potential means of adjustment is found to depend on the preference of government (public) for output stabilisation over price stability (A > 0), the short-run effect of devaluation on output (φm > 0) and the real shock effect on output ($\bar{y}-y_s>0$). It follows that, according to our model, the total cost of joining the EMU is higher, when the concern for stable output is larger (higher A), when the degree of openness (m) is higher, and when the negative output gap ($\bar{y}-y_s$) is larger.

We show the cost of abandoning the exchange rate instrument in the EMU as:

$$C_i=C(A_i,m_i,gap_i)$$

$$C_A>0\ ,\ C_m>0,\ C_{gap}<0 \quad (10)$$

And the net benefits for a country remaining in the EMU as:

$$NB_i=B_i(S,m_i)-C_i(A_i,m_i,gap_i)>0 \quad (11)$$

The assessment of net advantages depends on the following variables: the size of the currency union, openness, the relative preference for output against price stability, and the output gap. We assume that $A_i$ represents structural weakness and is negatively correlated to competitiveness, and that the value of A is high in countries with low competitiveness, such as in cases of a high real effective exchange rate.

**2.2 Data**

We investigate whether the EMU citizens' net support for the euro is based on net economic benefits shown in equation (11).

We compile a data set spanning 28 EU countries, including 19 Eurozone countries, over the 18 year period (2001–2018) using data from a number of different sources. The sample was drawn from an unbalanced panel because of limited data for some countries. To examine public support for the euro, we rely on data from the Eurobarometer that are published twice yearly on behalf of the European Commission. Based on our theory of the determinants of net support for the euro described in the previous section, the macroeconomic variables considered for our estimations are the following:

$EURON_{it}$ is derived from respondent answers to the question of whether they are 'for' or 'against' an EMU with the euro as a single currency. The variable is defined as the difference between 'for' and 'against' responses.

$LEY_t$ represents the EMU GDP size ($S$). The variable is inserted into natural logarithms.

$IMR_{it}$ represents openness $(m)$. The variable is calculated with reference to total country imports as a share of GDP.

$REER_{it}$ represents the real effective exchange rate $(A)$. The purpose of this variable is to assess a country's price or cost competitiveness relative to its principal competitors in international markets. It corresponds to the nominal effective exchange rate (NEER) deflated by selected relative price or cost deflators. For this variable, a real exchange rate appreciation represents a loss of competitiveness, which in turn can strengthen government output preference. We use a 3-year moving average of unit labour cost based (ULC based) REER relative to 37 countries (index: 2010 = 100) to smooth out short-term fluctuations and highlight long-term trends.

$YGAP_{it}$ is the output gap relative to potential GDP $(gap)$.

$NAT_{it}$ represents national identity. To quantify national identity, we use respondent answers to the question 'In the near future, do you see yourself as: nationality only; nationality and European; or, European only?' The nationality variable is then defined as the number of the respondents who chose the 'nationality only' response. National identity has been identified as a hindrance to support for the EU and as a source of Euroscepticism (Hooghe and Marks, 2004; McLaren, 2006). Identification with national identify was 50% in the UK in 2018, the highest in the EU for that year. We fill in missing data for the period 2006–2009 and for 2011 using linear interpolation. We obtain data for the years 2010 and 2012 from spring surveys because autumn survey data were not reported.
We introduced a number of control variables for global factors, including world exports of goods and services to GDP ratio $(WT_t)$, world GDP excluding that of the eurozone $(LNW_t)$, crude oil prices $(BRENT_t)$ and Trade Weighted U.S. Dollar Index $(DOL_t)$. These variables are independent from domestic actions in the EMU but can affect net support for the euro.

$EURON_{it}$ and $NAT_{it}$ variables are obtained from the Eurobarometer, published by the European Union.
$LEY_t$ , $REER_{it}$ , $YGAP_{it}$ variables are taken from the European Commission website.
$IMR_{it}$, $WT_{it}$ , $LNW_{it}$ variables are obtained from the World Bank website.
$BRENT_{it}$ and $DOL_{it}$ are obtained from the FRED data from Federal reserve bank of St. Louis.

Table 1 shows the descriptive statistics of data from Eurozone countries over the period 2001–2018.

Table 1: Summary statistics

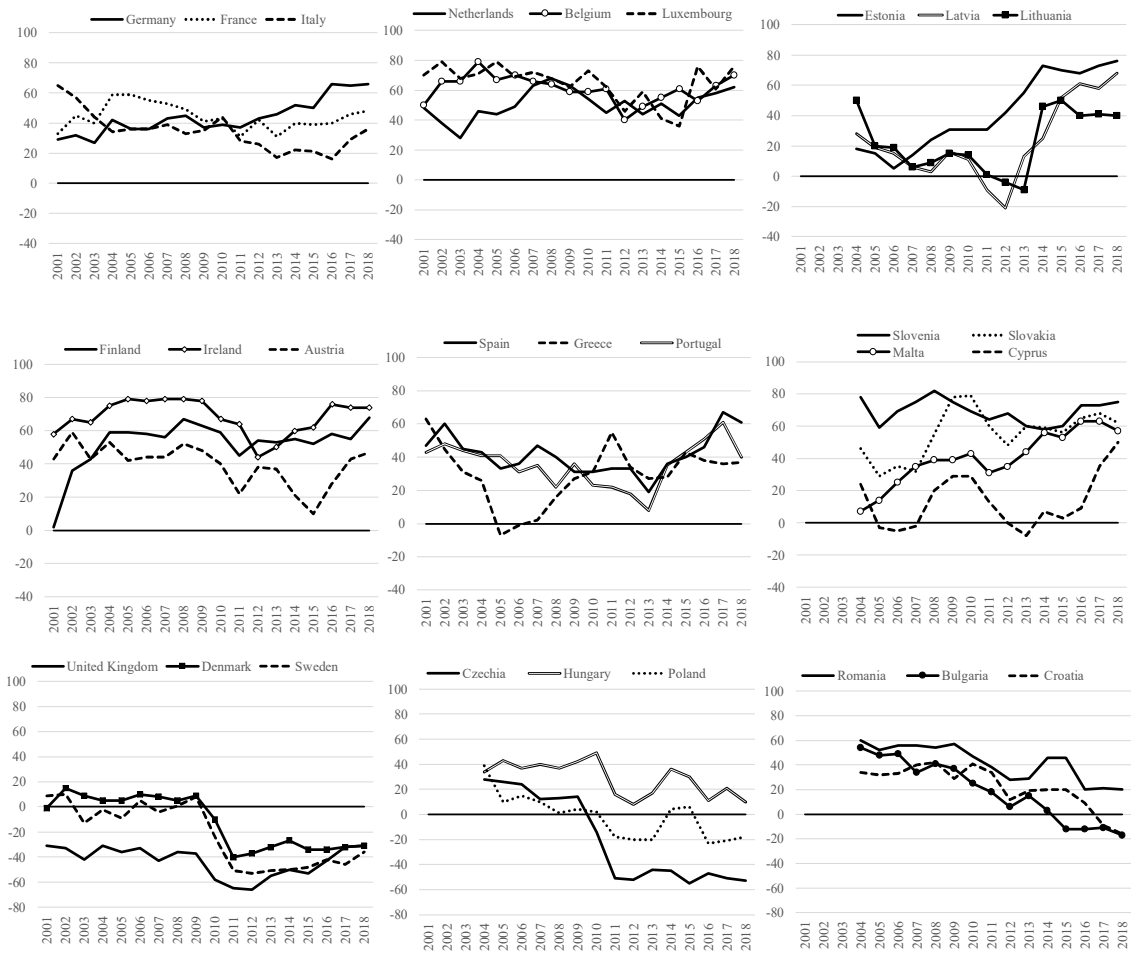
| | EURON | LEY | IMR | REER | YGAP |
|---|---|---|---|---|---|
| Mean | 29.864 | 30.140 | 58.044 | 97.977 | ▲ 0.511 |
| Median | 37.000 | 30.169 | 48.800 | 99.103 | ▲ 0.309 |
| Maximum | 82.000 | 30.279 | 191.500 | 129.073 | 11.410 |
| Minimum | ▲ 66.000 | 29.812 | 22.900 | 67.884 | ▲ 15.901 |
| Std.Dev. | 32.995 | 0.111 | 31.048 | 8.263 | 3.431 |
| Observations | 435 | 435 | 435 | 435 | 435 |

| | NAT | WT | LNW | BRENT | DOL |
|---|---|---|---|---|---|
| Mean | 40.718 | 23.097 | 10.872 | 73.081 | 107.075 |
| Median | 40.000 | 23.320 | 10.998 | 71.060 | 103.770 |
| Maximum | 70.000 | 25.570 | 11.188 | 111.650 | 119.900 |
| Minimum | 11.000 | 19.630 | 10.311 | 28.880 | 95.450 |
| Std.Dev. | 9.530 | 1.605 | 0.251 | 25.345 | 8.306 |
| Observations | 435 | 435 | 435 | 435 | 435 |

***Source :*** *Author's calculations*

Figure 1 illustrates the values of $EURON_{it}$. As Roth et al. (2016) have pointed out, public support for the euro slightly declined in many EMU countries during the financial and sovereign debt crisis period that ended in 2012. Since then, support has recovered, with the *EURON* variable in Estonia, Luxemburg, Slovenia, Ireland and Belgium being particularly high. Net public support for the euro in Italy, a country in which a Eurosceptic coalition was victorious in the election in 2018, has risen gradually.

Figure 1: Net support for the euro

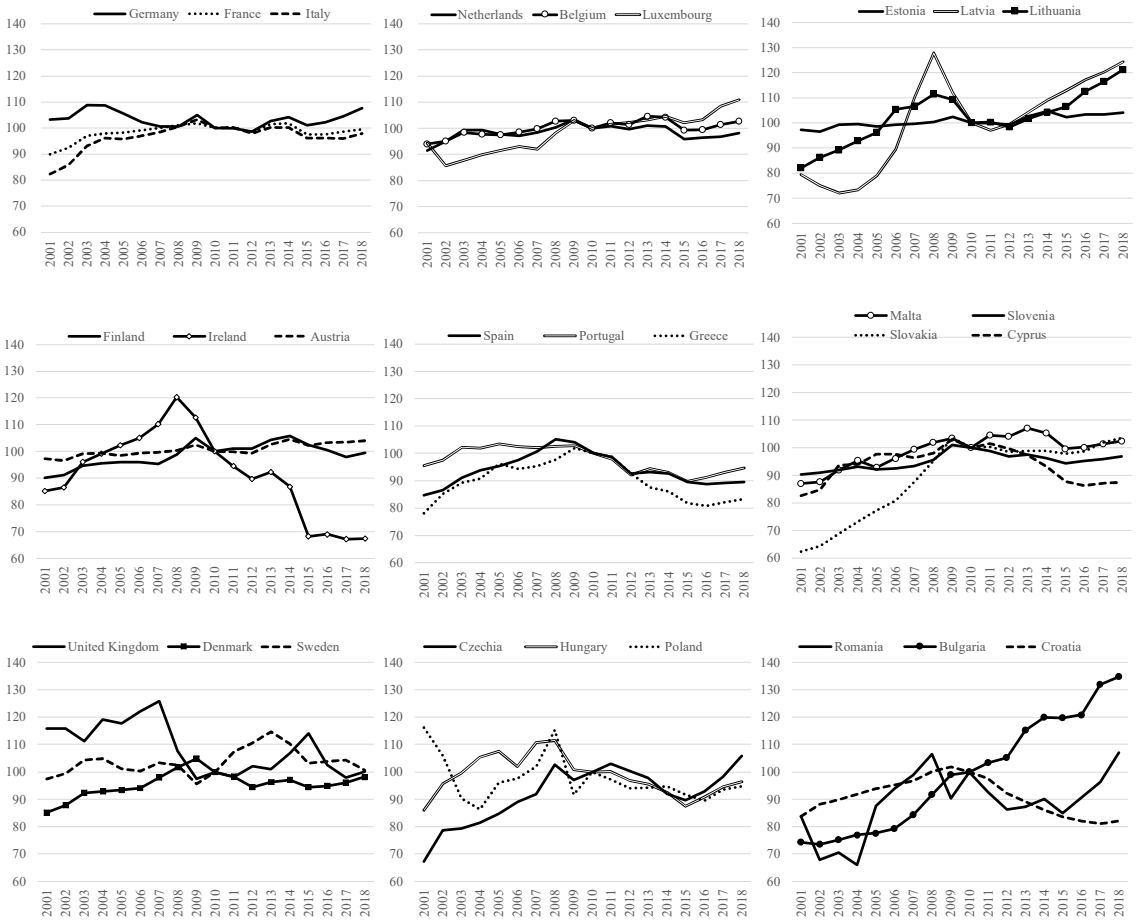



Regarding countries outside the euro area, a majority of citizens in all Central and Eastern European Countries supported the euro in the years preceding the financial and sovereign debt crises. Since then, majority opinions in those same countries have turned against the euro. While net support for the euro was always negative in the UK, the downward trend in public opinion in Sweden and Denmark after the financial crisis in 2008 was consistent with developments across non-EMU Central and Eastern European Countries.

Figure 2 plots the values of REER obtained for EU countries. In the plots, a rise in index signifies real appreciation or structural weakness. During the period preceding the financial crisis, a deterioration in competitiveness was generally observed. We further observe that the competitiveness of Ireland, Spain and Portugal deteriorated until 2008, before improving in subsequent years. While the REER was relatively high in Latvia, Lithuania and Luxemburg, the REER has been lower than 90 in Ireland, Greece and Spain since 2015. The recovery of

competitiveness is found to be more pronounced in euro area countries in severe financial distress.

Figure 2 : REER




## 2.3 Econometric Methodology

We considered net public support for the euro to be based on the equation (12):

$$EURON_{it} = \alpha_1 EURON_{it-1} + \alpha_2 LEY_t + \alpha_3 IMR_{it} + \alpha_4 REER_{it} + \alpha_5 YGAP_{it} + \alpha_6 NAT_{it} + \\ + \alpha_7 WT_t + \alpha_8 LNW_t + \alpha_9 BRENT_t + \alpha_{10} DOL_t + DUM + \varepsilon_{it}$$

$$|\alpha_1| < 1, i = 1, \ldots \ldots N,\ t = 1, \ldots, T \qquad (12)$$

where $\varepsilon_{it}$ is the error term.
Our model also includes a dummy variable ($DUM$) for the effects of the global financial and sovereign debt crises. This takes the value of 1 for the crisis period 2008-2012. It is otherwise 0.

We apply the two-step system GMM estimator mentioned above, which utilises both the differences and levels of equations such as (12) in a system that can consistently estimate a set

of parameters (Arrellano and Bond, 1991; Arrellano and Bover, 1995; Blundell and Bond, 1998). The GMM estimator has further been shown to solve the problems of serial correlation, heteroskedasticity, and endogeneity of certain explanatory variables (Leitao, 2010). For this study, we employ an orthogonal deviations set-up, as the first differences produced biased estimators.

# 3. Empirical Results

### 3.1 Basic results

The GMM estimation framework described above was developed for strictly stationary data. To assess the stationarity of panel data, the LLC (Levin, Lin and Chu) and IPS (Im, Pesaran and Shin) tests were employed (Levin, Lin and Chu, 2002; Im, Pesaran and Shin, 2003). As Table 2 clearly illustrates, the null hypothesis that each variable had a unit root was rejected in most cases. Although the nationality variable was not rejected in levels in IPS, it was rejected when including trend. Given these results, an approach that does not presume non-stationarity remains valid.

Table 2 : Panel Unit Root Tests

| | Levin, Lin and Chu (LLC) | | Im, Pesaran and Shin (IPS) | |
|---|---|---|---|---|
| **Variable** | **Levels** | **First Differences** | **Levels** | **First Differences** |
| EURON | -3.645 *** | -14.818 *** | -1.942 ** | -12.151 *** |
| LEY | -15.350 *** | -10.730 *** | -10.286 *** | -7.538 *** |
| IMR | -2.937 *** | -18.473 *** | -2.402 *** | -14.671 *** |
| REER | -3.900 *** | -6.079 *** | -2.062 ** | -5.759 *** |
| YGAP | -4.695 *** | -13.812 *** | -4.743 *** | -11.049 *** |
| NAT | -1.363 * | -19.350 *** | -0.804 | -16.888 *** |
| WT | -5.769 *** | -20.721 *** | -4.450 *** | -14.528 *** |
| LNW | -9.576 *** | -12.590 *** | -2.135 *** | -8.703 *** |
| BRENT | -2.091 ** | -15.386 *** | -1.646 ** | -10.125 *** |
| DOL | -6.007 *** | -9.118 *** | -3.882 *** | -5.536 *** |

***Source :*** *Author's calculations*
***Note:*** *All these tests were used to examine the null hypothesis of unit roots. Trend is not inclued in all tests.*

As Hobolt and Wratil (2015) have indicated, the behaviour of citizens in the euro area during the financial and sovereign debt crises possibly changed as a result of receiving more information about the economic consequences of monetary integration. To account for this possible structural break in public behaviour, we carry out split-sample analyses.

Table 3 reports and compares the empirical results derived from our model for the full sample (2001-2018) and sub samples (2001–2008, 2009-2018).

Table 3 : Determinants of net support for the euro

| **Dependent Variable: EURON**<br>**Method: Panel Generalized Method of Moments**<br>**Transformation: Orthogonal Deviations**<br>**White period instrument weighting matrix**<br>**Coefficient covariance method : White period standard errors and covariance** | | | | | | |
|---|---|---|---|---|---|---|
| | **Eurozone** | | | **Non Eurozone** | | |
| **Variable** | **2001-2018** | **2001-2008** | **2009-2018** | **2001-2018** | **2001-2008** | **2009-2018** |
| EURON(-1) | 0.558 *** | 0.518 ** | 0.371 * | 0.329 | 0.053 | -0.026 |
| | (0.080) | (0.202) | (0.210) | (0.298) | (0.312) | (0.823) |
| LEY | 56.540 ** | 108.740 | 89.236 *** | -26.321 | -36.020 | 73.638 * |
| | (25.171) | (166.684) | (28.111) | (70.342) | (93.305) | (250.905) |
| IMR | 0.343 | -2.120 * | -0.277 | 0.549 | -0.166 | -0.385 |
| | (0.658) | (1.248) | (0.435) | (1.350) | (0.449) | (3.137) |
| REER | -1.172 ** | 0.488 | -1.126 ** | -0.315 ** | -0.262 | 0.444 |
| | (0.562) | (2.151) | (0.555) | (0.137) | (0.381) | (1.065) |
| YGAP | -0.829 | 0.397 | -1.235 | 0.414 | 0.732 | -3.839 |
| | (1.266) | (2.844) | (1.414) | (1.407) | (1.274) | (3.456) |
| NAT | -0.340 | 0.470 | -0.961 | -1.238 ** | -1.230 ** | -3.868 * |
| | (0.671) | (1.459) | (0.699) | (0.566) | (0.552) | (2.141) |
| WT | 1.549 | 13.060 *** | 4.442 ** | -5.424 | 2.969 | 15.760 |
| | (2.637) | (4.528) | (2.080) | (3.916) | (6.150) | (11.984) |
| LNW | -18.454 | -209.267 | 20.574 | 21.187 | 3.024 | -152.578 * |
| | (16.963) | (166.003) | (23.909) | (46.052) | (153.227) | (85.694) |
| BRENT | -0.345 | -0.391 | -0.793 *** | -1.419 *** | 0.312 | -1.352 |
| | (0.259) | (0.579) | (0.214) | (0.415) | (0.249) | (1.103) |
| DOL | -0.323 | -1.558 | -1.053 ** | -2.368 ** | 0.638 | -1.237 |
| | (0.683) | (3.682) | (0.486) | (1.063) | (2.153) | (2.263) |
| DUM0812 | 0.285 | | 1.419 | 18.509 | | -3.460 |
| | (1.645) | | (4.072) | (12.405) | | (18.303) |
| Periods included | 12 | 5 | 9 | 14 | 5 | 10 |
| Cross-sections included | 19 | 15 | 17 | 16 | 16 | 12 |
| Total Panel observations | 190 | 64 | 150 | 150 | 50 | 103 |
| S.E. of regression | 9.833 | 11.737 | 9.791 | 15.703 | 6.402 | 18.478 |
| Wald Test (p-value) | 0.000 | 0.450 | 0.001 | 0.149 | 0.845 | 0.477 |
| J-statistic | 8.190 | 7.556 | 4.908 | 9.807 | 5.648 | 0.264 |
| Prob(J-statistic) | 0.415 | 0.182 | 0.557 | 0.081 | 0.464 | 0.608 |
| Instrument rank | 19 | 15 | 17 | 16 | 16 | 12 |

**Note:** Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1
Wald Test Null Hypothesis: Net benefit of the Euro Total Effect=0

For unbalanced panels, the forward orthogonal deviations transformation described by Arrellano and Bover (1995) has been more commonly used. To confirm the characteristics of public behaviours in the Eurozone countries, we further apply our model to estimate results for the non-Eurozone countries.

As shown in the first column, we found that, for the whole sample, the coefficients of LEY and REER were statistically significant at the five percent level, but the coefficients of IMR, YGAP, NAT and global factors were not estimated to be statistically significant.

For the subsamples, coefficients for the LEY variable were estimated to be insignificant for 2001-2008 but positive and statistically significant for 2009-2018. This indicates that expansion in EMU GDP can boost net support for the euro in the more recent sample.

Regarding the impact of openness, the coefficient of the IMR variable was found to be negative and statistically significant at the 10 percent level for the 2001-2008 subsample. This indicates that increased openness results in a decrease in net support for the euro, further suggesting that

the cost of EMU membership is significant. Conversely, the coefficient for IMR was estimated to be negative and not statistically significant for the full sample and the 2009-2018 subsample. Thus, in the post-crisis period, the negative effect of openness is not evident.

More importantly, we found that the coefficient for the REER variable was negative and statistically significant for the whole sample and the 2009-2018 subsample. Previous studies have suggested that increased support for the euro during periods of real depreciation may have been the result of increased competitiveness that led to improvements in the labour market (Branson and Love, 1988; Revenga, 1992; Burgess and Knetter, 1998; Gourinchas, 1999; Alexandre et al., 2017). Our own results indicate that since the crisis, depreciation has improved competitiveness and reduced the cost of remaining in the EMU, leading to an increase in net support for the euro. These results further suggest that a reduction in REER could increase employment and real GDP per head of growth.

The coefficients for the YGAP variable were estimated to be statistically insignificant for the full sample and both subsamples. This indicates that output gap or cyclical factor in each country did not influence net support for the euro.

Moreover, we found that coefficients for the nationality variable were insignificant for the full sample and both subsamples. Despite calls from far-right populist and nationalist parties for withdrawal from the eurozone and a return to national currencies, we found that national identity does not have a dominant impact on net support for the euro in the EMU countries. This is consistent with the work published by Banducci et al. (2009).

With regards to global factors, the estimated coefficients for the world trade, oil price and dollar variables were statistically significant for the 2009-2018 subsample. These results indicate that an expansion of world trade, decline in oil price and dollar depreciation can increase net support for the euro. These factors can also have impacts on economic welfare. The eurozone economy has heavily depended on the international trade, meaning that global factors are non-negligible for net support for the euro. The eurozone's export share of the extra-EU export of goods to GDP ratio increased from 9.2 percent in 2000 to 10.6 percent in 2008 and 13.2 percent in 2018.

The results of our calculations, particularly those for the more recent subsample, indicate that public support for the euro in the EMU has been influenced not by national identity, but by utilitarian considerations. This is in line with the findings of Hobolt and Wratil (2015). Our results further suggest that, as the global financial crisis and subsequent eurozone crisis raised public awareness by various means, and as citizens received increased information about the economic consequences of EMU membership, public attitudes towards the euro were increasingly influenced by evaluations of costs and benefits as opposed to national identity.

Turning to non-eurozone countries, we estimated the coefficients for REER to be negative and statistically significant for the full sample and the coefficients of the LEY to be statistically significant for the 2009-2018 subsample. Interestingly, coefficients associated with the nationality variable were estimated to be negative and statistically significant for the full sample and both subsamples, contrasting with the results obtained for the Eurozone countries. These findings are in line with observations published by Banducci et al. (2009).

**3.2 Robustness checks**

Next, we examined which of the factors related to net economic benefits of the euro are more important to net support. We picked two periods with lower and higher economic variables

over the full sample. We then calculated how much the estimated impacts of each factor changed. We estimated the model by excluding the insignificant variables shown in Table 3 in order to keep a reasonable degree of freedom. The results are shown in Table 4.

Table 4: Determinants of net support for the euro (robustness checks)

**Dependent Variable: EURON**
**Method: Panel Generalized Method of Moments**
**Transformation: Orthogonal Deviations**
**White period instrument weighting matrix**
**Coefficient covariance method : White period standard errors and covariance**

| | Eurozone | Eurozone | | Eurozone | | Eurozone | | Eurozone | |
|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **2001-2018 All** | **2001-2018 LEY≦30.2** | **2001-2018 30.2＜LEY** | **2001-2018 IR≦50** | **2001-2018 40＜IR** | **2001-2018 REER≦99** | **2001-2018 99＜REER** | **2001-2018 YGAP≦-1** | **2001-2018 -1＜YGAP** |
| EURON(-1) | 0.582 *** | 0.370 *** | 0.733 *** | 0.940 | 0.648 *** | 0.223 | 0.469 *** | 0.367 *** | 0.288 ** |
| | (0.105) | (0.124) | (0.115) | (2.050) | (0.237) | (0.216) | (0.066) | (0.117) | (0.127) |
| LEY | 42.929 *** | 37.766 *** | 134.801 *** | -7.452 | 21.775 | 63.095 ** | 16.931 * | 18.491 | 50.383 *** |
| | (10.304) | (11.858) | (28.167) | (150.145) | (28.683) | (24.385) | (9.829) | (14.679) | (12.610) |
| IMR | -0.191 | -0.406 | -0.485 *** | -8.645 | -0.144 | -1.428 *** | -0.209 ** | -0.467 *** | -0.302 ** |
| | (0.145) | (0.282) | (0.100) | (25.476) | (0.262) | (0.431) | (0.102) | (0.114) | (0.152) |
| REER | -0.694 *** | -0.842 ** | -0.393 ** | -4.320 | -1.163 * | -1.703 *** | -0.231 | -0.394 | 0.366 |
| | (0.247) | (0.404) | (0.167) | (5.198) | (0.604) | (0.429) | (0.400) | (0.588) | (0.375) |
| YGAP | 0.015 | -0.519 | 0.940 ** | 0.973 | 0.815 | -1.344 * | 1.292 | 0.694 | 2.304 * |
| | (0.443) | (0.610) | (0.455) | (8.331) | (1.195) | (0.779) | (0.963) | (0.883) | (1.205) |
| WT | 0.963 | 2.993 | -1.315 | 19.830 | -1.690 | 8.565 * | -1.184 | 1.977 | -6.277 *** |
| | (0.120) | (2.134) | (1.723) | (53.649) | (2.972) | (4.584) | (1.320) | (1.846) | (1.785) |
| BRENT | -0.230 *** | -0.375 ** | -0.017 | -0.552 | 0.022 | -0.736 * | -0.056 | -0.209 | 0.106 |
| | (0.081) | (0.168) | (0.123) | (1.158) | (0.235) | (0.394) | (0.093) | (0.143) | (0.122) |
| DUM0812 | -0.151 | 1.550 | -8.272 *** | 49.857 | 2.306 | 11.028 | -3.214 *** | 3.834 | -2.490 |
| | (1.312) | (2.693) | (2.090) | (181.564) | (2.050) | (7.648) | (1.104) | (3.056) | (1.735) |
| Periods included | 12 | 8 | 4 | 12 | 12 | 10 | 12 | 10 | 12 |
| Cross-sections included | 19 | 19 | 48 | 9 | 14 | 15 | 19 | 17 | 19 |
| Total Panel observations | 190 | 123 | 67 | 94 | 109 | 74 | 116 | 101 | 89 |
| S.E. of regression | 9.122 | 9.513 | 9.173 | 32.616 | 10.687 | 9.759 | 8.219 | 7.910 | 8.824 |
| Wald Test (p-value) | 0.000 | 0.000 | 0.000 | 0.651 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| J-statistic | 10.518 | 12.463 | 6.711 | 0.179 | 4.430 | 3.347 | 15.400 | 6.070 | 14.963 |
| Prob(J-statistic) | 0.485 | 0.330 | 0.752 | 0.672 | 0.619 | 0.851 | 0.165 | 0.733 | 0.184 |
| Instrument rank | 19 | 19 | 18 | 9 | 14 | 15 | 19 | 17 | 19 |

**Note:** Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1
Wald Test Null Hypothesis: Net benefit of the Euro Total Effect=0

It is important to pay attention to the time in which variables related to considerations of net economic benefit succeed in increasing net support for the euro.

We found that coefficients for LEY were positively and statistically correlated with net support for the euro for all levels of LEY. Specifically, the coefficient value for larger LEY was higher than for smaller LEY. In addition, the coefficient for LEY was statistically significant for lower REER (no more than 99) and higher YGAP (above -1.0 percent).

With regards to the response to competitiveness, we found that the coefficients for REER were estimated to be negative and statistically significant for all levels of LEY. On the other hand, REER was statistically significant for the higher IMR (above 40 percent) and lower REER (no more than 99). This indicates that, in cases with higher levels of IMR and lower levels of REER, decline in REER, indicative of internal devaluation, can lead to a rise in net support for the euro. However, in conditions with much lower levels of IMR and higher levels of REER, decline in REER may not lead to a rise in net support for the euro.

With regards to the response to openness, we found that the coefficients for IMR were highly statistically significant for higher LEY, lower REER and lower YGAP. We also found that the coefficients for YGAP were statistically significant for higher LEY, lower REER and higher YGAP.

These results indicate that, while the GDP size of the Eurozone is important to net support for the euro, competitiveness is also an influential factor in support for the euro. Specifically they

show that an improvement in competitiveness would be expected to increase net support for the euro in cases with higher levels of openness and lower levels of REER.

The panel GMM estimates pass the specification tests.
The robust estimator and the Sargan test of overidentifying restrictions both confirm the appropriateness of the instruments selected for this study. As is clear from Table 3 and Table 4, the overidentifying restrictions cannot be rejected at the 10% level.
In addition, Wald tests suggest that, for the full sample, the coefficients of the net benefits of the euro (LEY, IMR, REER and YGAP) are jointly significant for the EMU in most cases.

We further examine the robustness of our main results, focusing on the impacts of structural factors on public support for the euro. The examination included an evaluation of the following parameters: alternative measures of structural factor 'A'; the Harmonised Competitive Indicators (HCI) of the European Central Bank (ECB); the non-accelerating wage rate of unemployment (NAWRU); and real GDP growth per head, or labour productivity (RCAP). For these parameters, NAWRU was a measure of structural unemployment, while the HCI of a specific country took into account both intra- and extra-euro area trade, with the caveat that euro effective exchange rates were based on extra-euro area trade only. The data for HCI were obtained from the ECB website and the data for NAWRU and RCAP were obtained from the European Commission website. We estimated our model including the global factors. Coefficients for the HCI and NAWRU parameters was negative and statistically significant, and the coefficient for the RCAP parameter was positive and statistically significant as we expected.
In other words, our results indicate that an improvement in competitiveness based on HCI, a drop in NAWRU, and a growth in real GDP per head would increase net support for the euro.

The results of our robustness checks further indicate that coping with structural rigidities could boost future income and increase the likelihood of future employment, which would lead to an increase in net support for the euro. Overall, the checks reported in this section reinforce the confidence that we already had in the results of our basic estimations.

## 4. Conclusion

This study examined whether net support for the euro in EMU citizens is based on cost-benefit considerations and the extent to which this support is influenced by competitiveness. Furthermore, we examined whether national identity is an important factor and whether there is a difference in support between citizens in EMU and non-EMU countries. Several important conclusions derive from our analysis.

Firstly, our empirical results suggest that recent net citizen support for the euro in the 19 EMU countries has been influenced by cost-benefit considerations. Specifically, it has been influenced by the economic scale of the EMU and competitiveness. An increase in the EMU's GDP and each country's competitiveness is expected to contribute positively to support for the euro in many cases. These results demonstrate that demand-side economics and an improvement in competitiveness or structural factors are important drivers of public support for the euro. Given our empirical results, the perceived net benefits of the EMU could be increased via internal devaluation to improve competitiveness and economic expansion.

Secondly, we found that while national identity does not have a significant impact on net support for the euro within the EMU countries, the opposite is true outside of the EMU. Our

results suggest that this difference is due to citizens within the EMU considering monetary integration in a more objective framework of cost-benefit analysis.

As the Five Presidents' report (Juncker et al., 2015) pointed out, to compensate for the national adjustment tools that countries surrendered by entering the EMU, further steps must be taken both individually and collectively to ensure that all members gain from the euro. The present study has demonstrated that acceleration of structural reforms aimed at improving the competitiveness and economic expansion of Eurozone countries will contribute to increased public support for the euro.

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