Trust in Institutions and Economic Indicators in the Eurozone: the Role of the Crisis

Mariangela Bonasia[1], Rosaria Rita Canale[1], Giorgio Liotti[2], Nicola Spagnolo[3]

[1]*University of Naples "Parthenope"*
Via Generale Parisi, Naples, Italy
E-mail. bonasia@uniparthenope.it, rorita.canale@uniparthenope.it

[2]*University of Naples "Federico II"*
Via Rodinò 40, Naples- Italy
E-mail. giorgio.liotti@unina.it

[3]*Brunel University London*
Uxbridge UB8 3 PH, United Kingdom
E-mail. nicola.spagnolo@brunel.ac.uk

The paper investigates the role of economic indicators as determinants of trust in the European Central Bank (ECB), the European Commission (EC) and the European Parliament (EP) in eleven countries of the Eurozone, from 1999 to 2013, using country level data from the European Commission's Eurobarometer survey. This paper aims to shed light particularly on the role played by income distribution, together with standard economic indicators such as unemployment and inflation, in the consolidation of supranational institutions. The empirical analysis also controls for financial market shocks, including domestic bond yields and stock market returns. The additional contribution is to analyze whether the sensitiveness of trust has been strengthened during the recent crisis, associating binary dummies to explanatory variables. The main conclusions can be summarized as follows: a) income inequality negatively affects trust in the EC and the EP in normal times; in crisis times, this relation is strengthened and extended to the ECB for one of the two indexes of trust considered; b) inflation and unemployment significantly affect trust in all European Institutions after the crisis.
JEL classification: E02, E63, D63, C23.

Keywords*: Institutions, Trust, Inequality, Eurozone, Crisis.*

Introduction

Trust in institutions is a basic feature of modern democracies and plays a key role in guaranteeing social, economic and political stability. It creates a link between both citizens and political institutions and citizens and policy-makers. Institutions which enjoy a high degree of trust also enjoy a high degree of legitimacy. When trust declines, democracy is weakened and the whole economic system is undermined[1].

Due to its special features, the Eurozone represents a very particular field within which to analyze the trend and determinants of trust. At the beginning, it was formed as the outcome of convergent national interests sharing common economic and political institutions. However, following the recent economic crisis, the Eurozone was split into core and peripheral countries, revealing that it is difficult to find a convergence path between national interests and those of the whole currency union.

With the objective of creating an integrated and solid monetary union, the EC has been monitoring public opinion trends in its institutions within the Member States via the Eurobarometer[2]. This biannual survey covers a

wide range of topics, including questions ascertaining to what extent European citizens tend to trust in their main decision-making bodies, thus monitoring the process of integration and legitimacy. Following the recent literature (Walti, 2012; Roth *et al.*, 2014, among others) the decision making bodies, such as ECB, EC and EP, have been considered. The ECB is responsible for the centralized monetary policy; the EC is the "EU politically independent executive arm. It is alone responsible for drawing up proposals for new European legislation, and it implements the decisions of the EP and the Council of EU". Finally, the "EP passes the EU laws together with the Council of EU, based on EC proposals". [4] The degree of legitimacy, however, after an initial enthusiasm lasting more or less

---

Germany: 1500, Luxembourg: 500, United Kingdom 1300 including 300 in Northern Ireland) and reports published twice yearly. The entire dataset is available at http://ec.europa.eu/public_opinion/archives/eb/eb81/eb81_en.htm

[3] The Council of EU and the European Council have not been included in the empirical analysis. The first one can be considered, for its functions, an institutional body comparable to the EP while the second one is not either directly responsible for the implementation and compliance of the policy roles or represents a legislative body.

[4] *http://www.europa.eu/about-eu/institutions-bodies* . The Council of EU and the European Council have not been included in the empirical analysis. The first one can be considered, for its functions, an institutional body comparable to EP while the second one is not either directly responsible for the implementation and compliance of the policy roles or represents a legislative body.

---

[1] Cfr. OECD (2014)
[2] The standard Eurobarometer was established in 1973. Each survey consists of approximately 1000 face-to-face interviews per Member State (except

until 2008, seems to have declined in recent years. According to data collected in the whole European Union from the birth of the Eurozone to the present day (1999–2013), 43 % of citizens were prepared to place their trust in the European Central Bank (ECB) in 1999 and 50 % in 2008, declining to 34 % at the end of 2013, while those who stated they distrusted the ECB increased from 29 % in 1999 to 49 % in 2013; those confident in the European Parliament (EP) decreased from 53 % in 1999 to 39 % in 2013, and those lacking confidence increased from 28 % in 1999 to 48 % in 2013. Finally, trust in the European Commission (EC) decreased from 50 % to 35 % while distrust increased from 29 % to 47 % in the same years (in all three cases the percentage of those who responded "I don't know" decreased)[5].

Considering selected Eurozone countries and using as a synthetic indicator the net trust, i.e. the simple difference between the percentage of those who trust minus the percentage of those who distrust, this process of decline has been much more marked especially since the crisis. In particular, looking at Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal and Spain, net trust in the ECB, the EP, and the EC was positive following the introduction of the Euro. When the financial crisis hit Europe a general decline in net trust occurred. These are the years during which the Eurozone witnessed weakening economic fundamentals. Several countries, in the aftermath of the crisis, after having used fiscal policy as a stabilization instrument, were forced to implement fiscal retrenchments. The decline in confidence is shown in Figures 1, 2 and 3. Net trust in all three European institutions after the crisis declined and became negative not only in peripheral countries, namely Ireland, Greece, Italy, Portugal and Spain, which were those suffering the most from the macroeconomic turmoil, but also in some of the core countries, such as Germany and France, in particular for the EC and EP[6].

In the same period income inequality increased, with some exceptions, in most of the selected Eurozone countries considered, not only after the crisis, but even in the middle of the 2000s. Using as a measure of inequality the Gini coefficient, it may be observed that from 1999 to 2013 (figure 4) the income distribution became more unequal in some cases even before the crisis (Austria, Germany and Spain) and in others after the macroeconomic turmoil (France, Italy, Ireland, Greece and Portugal). In Belgium and Finland the Gini coefficient remained stable, while only in the Netherlands can a slight improvement be observed.

The aim of this paper is to investigate to what extent income inequality should be considered a determinant of trust in the ECB, EP and EC in eleven countries of the Eurozone, from 1999 to 2013, using country level data from the European Commission's Eurobarometer survey[7].

The eleven Eurozone countries considered were selected because they shared the same policy rules from the introduction of the common currency. In terms of macroeconomic policies, belonging to EMU means to have a common monetary policy run by the ECB and to limit the domestic fiscal policies, aimed to address government deficit and debt issues, as stated by the Stability and Growth Pact. Therefore, they represent a homogeneous sample to evaluate the opinion about the policy choices. [8] The empirical analysis relies on the literature attributing to economic outcomes a central role in defining trust. Indeed, alongside unemployment and inflation, widely recognized as the main determinants among economic variables, it considers the Gini coefficient as a proxy for income inequality. Therefore, this paper aims to shed some light on the role played by income distribution in the consolidation of supranational institutions. The empirical analysis also controls for financial market shocks, including domestic bond yields and stock market returns.

The additional contribution is to analyze whether the sensitiveness of trust to explanatory variables is strengthen during the crisis, associating binary dummies to explanatory variables. The advantage of such an approach is to consider the whole sample size available rather than splitting it into a pre and post crisis period[9]. The main conclusions can be summarized as follows: a) an increase in income inequality negatively affects trust in the European Commission and the European Parliament in normal times. In crisis times this relation is strengthened and extended to the European Central Bank for one of the two indexes of trust considered; b) inflation and unemployment, as suggested by the previous literature, significantly impact on trust in all European Institutions after the crisis. European citizens therefore seem to perceive supranational political institutions (EC and EP) as responsible, especially after the crisis, for greater income inequality, and as unable to respond to the population's needs.

To summarize, the novel contribution of the paper is threefold: *i*) to control for the effect of the recent financial crisis; *ii*) to consider the role played by the Gini coefficient as a measure for income inequality; *iii*) to perform a panel data analysis robust to cross sectional dependence.

The paper is organized as follows. Section 2 briefly recalls the main literature concerning the economic determinants of trust, referring both to national and European institutions. The third section presents the data and the methodology in subsection 3.1, and the empirical results in section 3.2. Finally, the fourth section concludes.

---

[5] Data are available through the interactive search system at http://ec.europa.eu/public_opinion/cf/index_en.cfm.

[6] Here the net trust is calculated as the simple difference between the percentages of those who trust minus those who do not trust available on the Eurobarometer website. In the pages below, further indexes with their relevant implications are considered.

[7] Following the literature on Eurozone, Luxemburg is excluded from this analysis for its peculiar features. Among others see de Grauwe and Ji (2013).

[8] Further investigations can be performed on the Eurozone including countries such as Cyprus, Estonia, Latvia, Lithuania, Malta, Slovakia and Slovenia. They all joined the EU in 2004, but adopted the Euro in different years. Therefore their inclusion would raise issues related to the sample homogeneity.

[9] Ehrmann *et al.* (2013) used a similar technique to explain the trust in ECB in normal and crisis times as being dependent on a set of micro and macroeconomic variables. They conclude that the evolution of the macroeconomy is sufficient to explain the decline of trust and that there was no sufficient change in the regularities of the coefficient between normal times and those of crisis.
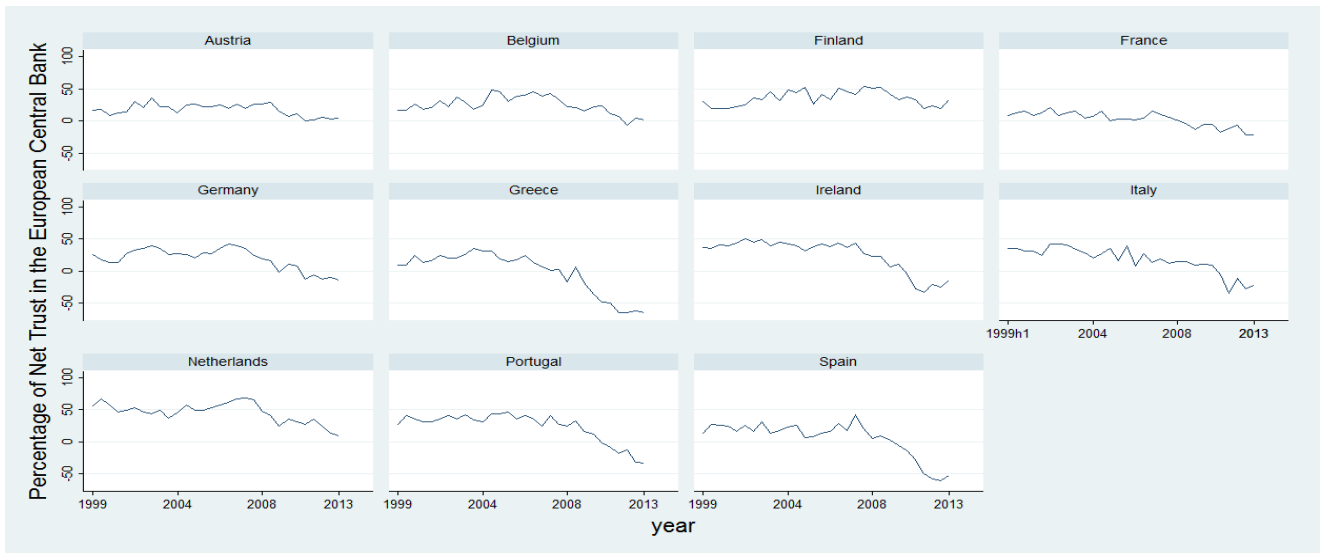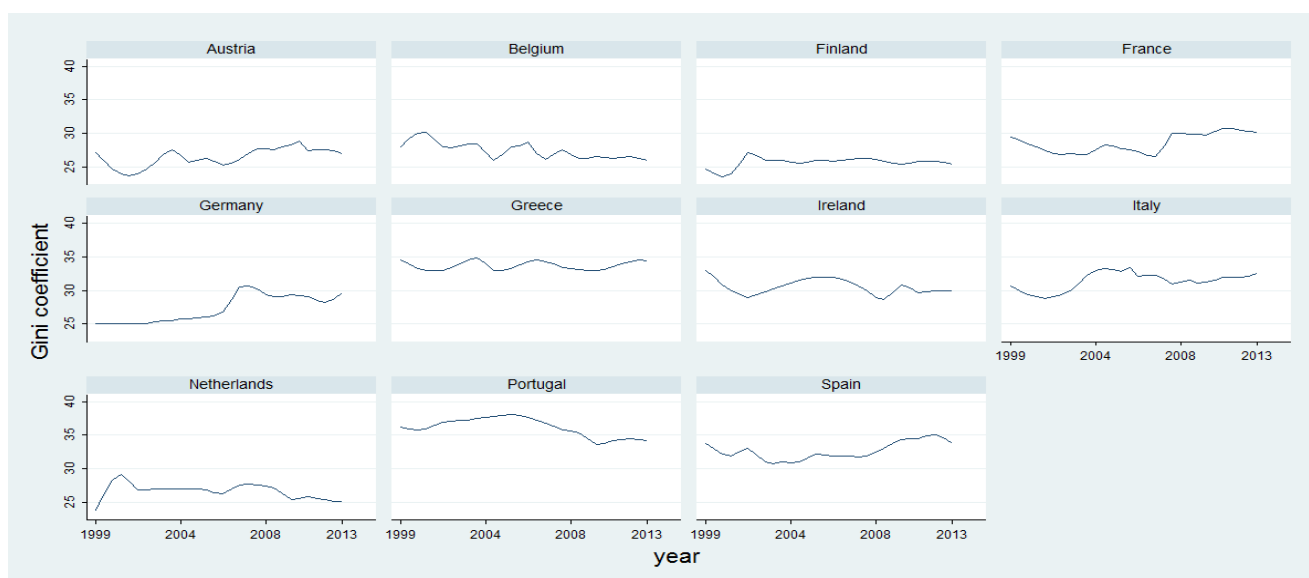
Figure 1. Net Trust in the European Central Bank 1999–2013
Source: Own calculation on Eurobarometer dataset
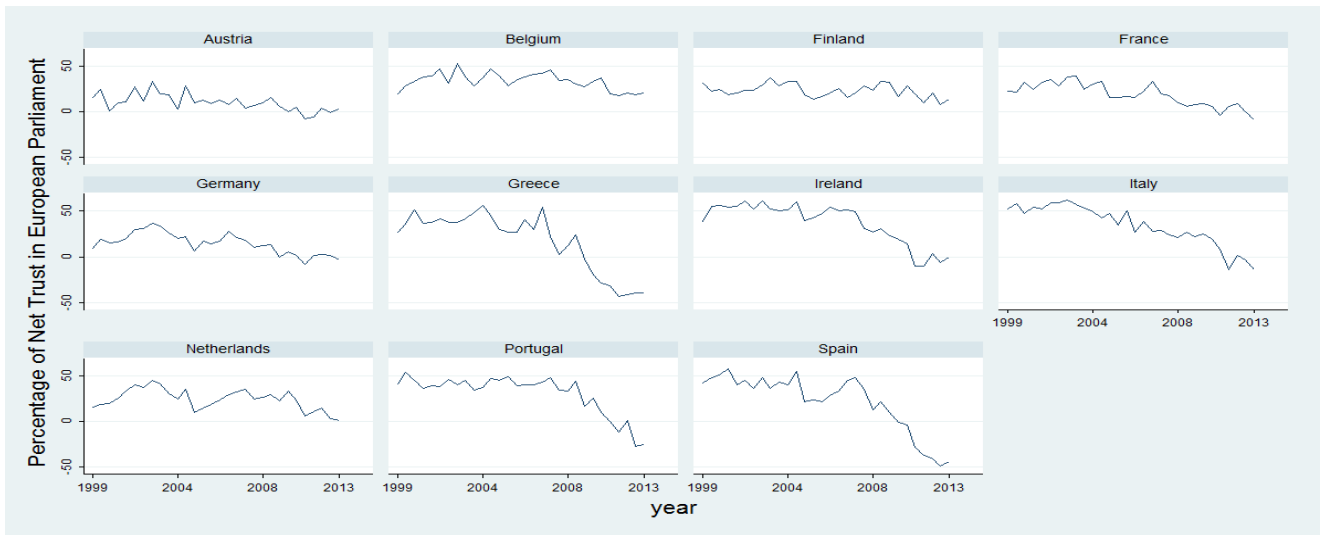
Figure 2. Net Trust in the European Parliament 1999–2013
Source: Own calculation on Eurobarometer dataset
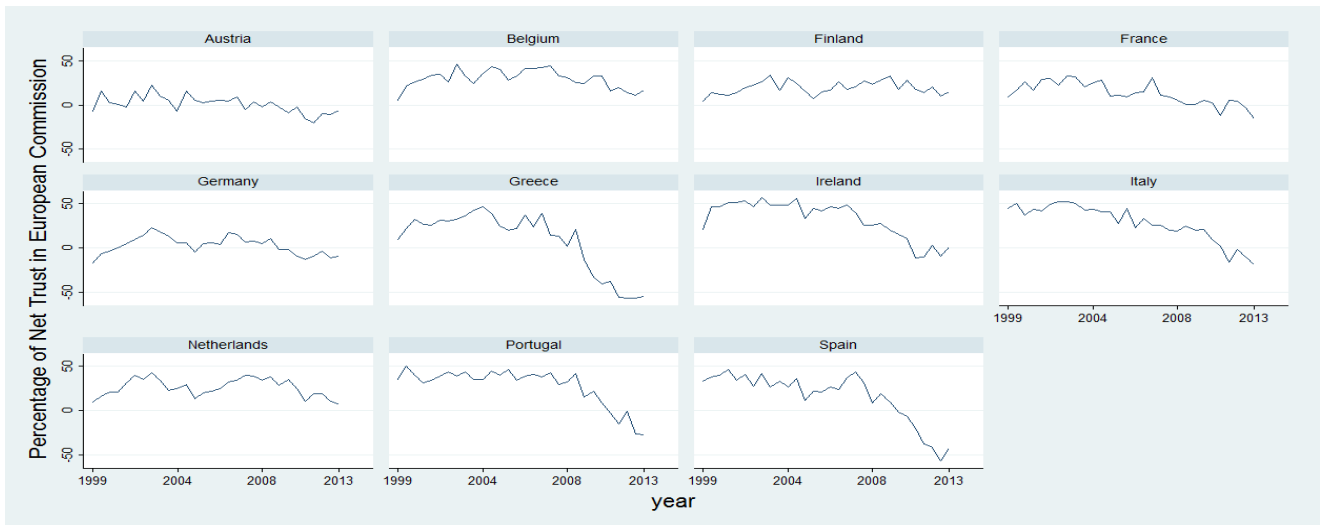
Figure 3. Net Trust in the European Commission 1999–2013
Source: Own calculation on Eurobarometer dataset

Figure 4. The Gini coefficient 1999–2013
Source: Own calculation on IMF outlook database

2. Trust and Economic Performance

The literature on trust in institutions is vast and an exhaustive review of the theoretical and empirical contributions goes beyond the scope of this paper. However, it may be helpful to outline the main findings elsewhere in order to contextualize the contribution of this analysis. The prevailing literature analyses trust through the "Vote and Popularity" (VP) function, according to which the soundness of an institution is examined on the basis of a set of both economic and political determinants. In the absence of survey interviews, voting is used as a proxy of trust since "political trust is a central indicator of the underlying public's feeling about its politics" (Newton & Norris, 2000).

Since the 1970s, the "rationality hypothesis" and the centrality of "economic man" shifted the attention mainly toward the economic side of the analysis. The uncontroversial result is that the two main variables considered to be relevant to trust are the so-called "big two" (Paldam, 2004), namely inflation and unemployment. Both these variables are believed to affect negatively the level of trust[10].

However, the recent empirical literature, concentrating especially on trust in national governments and parliaments, has reached mixed results (for a complete review see Nannestad and Paldman, 1994). The results suggest that people: a) are mainly "sociotropic", i.e. are interested in the economic situation of the whole nation; b) are retrospective with static expectations; c) assign the greatest importance to the unemployment rate (Veiga & Veiga, 2004).

Conversely & Sanders (2000), using data for the United Kingdom, found that expectations about future economic performance play a key role in affecting the net trust in national governments. Kirchgassner (2009), examining the behavior of German voters, found that up to

1998, unemployment and inflation had opposite sign effects on trust. On the contrary, with the Schröder Government the results changed since unemployment became non-significant and the inflation rate switched to the opposite direction (the higher inflation rate increased the net trust in the government). Stevenson and Wolfers (2011) analyzed the decline of trust in the USA public institutions from 1972 to 2010 – also documented by National Election Studies by Miller (1974), Alford (2001) and Pew Research Center (2010) - over the business cycle and confirmed the pro-cyclical nature of trust.

The first study about the European Union as a whole using Eurobarometer surveys was that of Hudson (2006). Investigating several institutional aspects from a microeconomic perspective at national and supranational level, he finds, as the main result, that in 15 European countries the institutional performance affects individual happiness. The approach considering the economic outcomes of institutions has been privileged by subsequent studies. The main focus of the analyses is the ECB because of its institutional arrangements relying on independence and accountability. However, since the birth of the Eurozone is relatively recent, empirical analysis starts in 1999 and applies panel data methodology with the aim of capturing the degree of strengthening of European institutions. Adopting a macroeconomic perspective, Fisher and Hahn (2008) concentrate on trust in the ECB using Eurobarometer data from 1999 to 2004. In the period preceding the financial crisis, the main issue defining trust in the ECB is the inflation rate (positive sign) although some real variables, namely GDP and unemployment, have to be taken into account. With the eruption of the financial crisis, the issue of trust and its link with the economic variables became increasingly important. Walti (2012) empirically shows that the decline of trust in the ECB appears to be significantly evident in countries which have experienced increasing sovereign bond yields and financial turbulence. This leads to the apparently counterintuitive result that country-specific variables affect trust in a

---

[10] For a detailed review of the literature on the VP function see Nannestad and Paldam (1994) and Paldam (1981).

supranational institution. Through a micro-founded empirical model and taking into account many factors influencing individual economic situations, Ehrmann *et al.* (2013) prove that the decline in trust in the ECB is due to the combination of the following three effects: i) the deterioration in economic conditions during the crisis; ii) the overall decline in public trust in the European project during the crisis, because citizens saw Europe as being unable to address issues related the global crisis and iii) the fact that the ECB was associated to the troubles of the financial sector. However, they conclude that the evolution of the macroeconomy is sufficient to explain the decline of trust and that there was not sufficient change in the regularities of the coefficient between normal and crisis times. Berlemann (2013) finds that the recent decline of trust in the ECB is attributable to financial and sovereign debt crises, even controlling for national macroeconomic factors. Focusing on the institutional commitments of the ECB, Kaltenthaler *et al.* (2010) conclude that the citizens' lack of trust in the ECB is due to i) the deterioration of the economic situation; ii) the decline in belief in the European project and iii) the association of the ECB with troubles in the financial sector (Kaltenthaler *et al.,* 2010, p.10). The first two factors are also relevant to non-crisis times[11].

Roth (2009) and Roth *et al.* (2011) analyze the determinants of trust for the three European Institutions, the ECB, EC and EP. They consider, as possible determinants, besides inflation and unemployment, a set of macroeconomic variables, such as debt and GDP growth. They conclude that unemployment and growth affect citizens' trust, whereas debt and inflation do not have any effect during periods of economic distress. In particular, Roth *et al.* (2014) detect a negative and significant relationship between unemployment and trust in the ECB in times of crisis using a panel data analysis on 12 Eurozone countries. They argue that the loss in trust is strongly driven by the significant increase in unemployment rates in the four peripheral countries Greece, Ireland, Portugal and Spain.

Income inequality has been considered as a possible determinant of trust in institutions, with the broad sense of democracy. As a matter of fact, many studies have investigated the relation between democracy and economic variables conditional on political systems for several countries worldwide. In his seminal paper, Lipset (1959) showed that a high degree of democracy was associated with a high level of growth, the emergence of a middle class and high political participation.

The more recent literature is most extensive and the most widely used index to measure inequality is the mean to median ratio. Among others, (Acemoglu *et al.,* 2001; Acemoglu & Robinson, 2001, 2006; Rodrik & Wacziarg, 2005) analyze the relation between democracy and inequality inside the framework of game theory: it is the redistributive threat by part of the population that brings

about a democratic equilibrium[12]. Jung and Sunde (2014) add to this literature an interesting result: non-democratic regimes emerge, not only when productive resources are distributed unequally, but also when institutions do not ensure political commitments. Inequality affects democracy through the reduction of the wage share (direct effect, Rodrik, 1999), the increase of socio-political instabilities (indirect effect, Alesina & Perotti, 1996), and per capita GDP growth (Barro, 1998, confirming the path of the Kuznets curve).

The effect of income inequality (using the Gini coefficient) on trust in European institutions using the Eurobarometer dataset has never before been analyzed, nor the effect of the recent global crises on the causality dynamic between trust in institutions and their determinants. This is quite surprising as the literature on democracy and economics suggests that if inequality negatively affects trust, institutions are weakened and democracy is undermined. This paper aims to fill this gap in the literature.

3. Empirical Analysis

This paper focuses on eleven Eurozone countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal and Spain that joined the Euro from the beginning (Greece in 2001)[13]. Trust in the European Central Bank, in the European Commission and in the European Parliament are regarded as dependent variables; the Gini coefficient, inflation and unemployment are considered as the independent variables. Furthermore, in order to capture the effect of financial distress, bond yields and stock price index returns are included in the regression. The contribution of the paper is twofold: 1) the introduction of the Gini coefficient as a trust determinant, and 2) controlling for the recent global financial crisis. The sample period goes from the first semester in 1999 until the second semester in 2013 (t=30 and n=11, for a total of 330 observations).

3.1. Data and Methodology

Data on trust in European Institutions were collected from the Standard Eurobarometer survey. The survey was established in 1973 and has been progressively refined in the course of the years. Each survey consists in approximately 1000 face-to-face interviews per Member State and reports are published twice yearly[14]. It is structured around a wide range of questions. The question this paper is concerned about is: "For each of the following European bodies, please tell me if you tend to trust it or tend not to trust it," (question 16). The possibility of responding "I don't know" is also given. In order to construct an index ranging from zero to one, two methods were considered. The first is calculated as the simple difference between the number of those who answered "tend to trust" minus those who answered "tend to not-trust" as a percentage of the total population interviewed,

---

[11] A study about the institutional commitments of a Central Bank may be found in Hayat *et al.* (2011), estimating the probability of removal of a central banker in 103 countries worldwide. The main conclusion is that "central bankers' removals are related to banking and currency crises, to elections and the change in the strength of democracy, and to inflation performance and globalization" (Hayat *et al.,* 2011 p.17)

[12] For a more detailed review of the literature and theoretical implications, see Savoia *et al.* (2010).
[13] See note 4.
[14] Germany is represented by 1500 individuals.

including those who answered "don't know". Hereafter the index is called NTP, from "Net Trust as a percentage of total population" including 'I don't know' (Roth, 2009, Roth *et al.,* 2011; 2014). The second index is constructed as the ratio between the net trust and the sum of those who answered "tend to trust" plus those who answered "tend to not trust" without considering those who do not know (Walti, 2012). Hereafter the index is called NEDK, from "Net Trust as a percentage of total population excluding "I don't know".

The two indexes are quite different since the NTP index is calculated as a percentage of the total population interviewed, while the NEDK index is calculated as a percentage of those showing some knowledge about European institutions. Both have advantages and drawbacks: the NTP index is not affected by the width of the sample, but includes in it even those who do not have enough information to express an opinion. The NEDK index overcomes this limit, although it does not control for variation in the number of those who know nothing about the institution across the different survey waves[15]. Each of these two indexes captures different feelings of the population interviewed, assigning a different meaning to the undecided respondents. In the case of the NTP index they are supposed to be included since they express a sense of disaffection toward the institution's performance; in the case of the NDEK index they are supposed to be excluded because they do not have enough instruments to express a judgment. An agnostic approach is taken and both are considered, in turn, as a proxy for trust in institutions.

Data about unemployment, inflation and the Gini coefficient were collected from the IMF outlook database, bond yields from Eurostat, and stock price returns from IFS (International Financial Statistics). Since the Eurobarometer Survey runs twice a year (April and October, or May and November, or June and December) the independent variables have to be transformed in order to make them consistent with the dependent variables. Therefore, similarly to Walti (2012), inflation, unemployment, bond yields and share prices are calculated as the averages between the months before two consecutive surveys were run. For instance, when surveys were run in June and December, the explanatory variables were calculated as the monthly averages between May and November. In addition, data on inflation are calculated as the deviation from the ECB target value of 2% (see Walti, 2012). Since the Gini coefficient data are collected annually, the missing values were calculated using the linear interpolation method[16].

A Panel Data framework is adopted and the following equation is estimated:

$$Trust_{j,i,t} = \alpha + (\beta_1 + D * \beta_1^*)UN_{i,t} + (\beta_2 + D * \beta_2^*)INF_{i,t} + (\beta_3 + D * \beta_3^*)Gini_{i,t} + (\beta_4 + D * \beta_4^*)Z_{i,t} + \varepsilon_{i,t} \quad (1)$$

Equation 1 follows Driscoll and Kraay (1998) methodology. The empirical analysis relies on a nonparametric variance-covariance matrix estimator with random effects. It produces heteroskedasticity and autocorrelation-consistent standard errors that are robust to general forms of spatial and temporal dependence[17].

The Trust index is, in turn, the NTP index and the NEDK index. UN is unemployment, INF is inflation, Gini is the Gini coefficient, Z is the matrix of financial indicators used as control variables and $\varepsilon_{i,t}$ is the error term. The suffix t indicates the time period, i represents each country, j identifies the European institution considered. In equation (1), β_1, β_2, β_3 and β_4 are the coefficients of the independent variables for the whole period considered, while β_1^*, β_2^*, β_3^* and β_4^* are the coefficients associated to the dummy D, such that the values of β^* assume the value of zero before the year 2009 and represent the estimated coefficients during the crisis. Therefore, the effect of the financial crisis is measured by the parameters $(\beta + D * \beta^*)$. This allows the sample not to be split into a pre- and post-crisis period, overcoming the well-known limitations of having to compare results from two separate samples, and gaining in terms of robustness of the parameter estimates. Furthermore, it allows us to investigate to what extent the crisis impacted on causality dynamics within the same framework. The exact date for the beginning of the crisis is still an open question. Bekaert *et al.* (2014) suggest September 2009 as the beginning of the debt crisis. Instead, Caporale *et al.* (2014) select September 2008, the day of the collapse of Lehman Brothers, as the beginning of the global crisis. A sequential dummy analysis running from mid-2007 to mid-2010 (not reported in the paper) was performed; it confirms that the parameter shifts took place in 2009. Furthermore, supposing the variance of the coefficient estimates could be inflated by the multicollinearity among some of the predictors (unemployment and inflation), the variance inflation factor and the correlation matrix were computed. They assume values consistent with the absence of multicollinearity and confirm, in this respect, the validity of the empirical model.

3.2. Empirical Results

As discussed in the previous section, two indexes were considered: the NTP Index and the NEDK Index. Table 1 presents Eq. (1) parameter estimates of the dependent variables considering trust in the three main European institutions being proxied by the NTP Index.

Considering the whole sample, neither inflation nor unemployment affects trust in ECB, EP and EC with all coefficients being not statistically significant. The Gini coefficient does not appear to be relevant to trust in the ECB, whereas it has a negative and highly significant impact on trust in the European Parliament ($\beta_3=-0.800$) and the European Commission ($\beta_3=-0.524$). Bond yields are not relevant to trust in any of the three European institutions, while stock price returns appear to be relevant

---

[15] The empirical literature on the subject sometimes uses the NTP index (Roth 2009, Roth et al., 2011, 2014), and sometimes the NEDK index (Walti 2012). Ehrmann *et al.* (2013) use an index derived from a two-step method treating the number of "I don't know" as a measurement error. However, comparing results from the use of both indexes allows differences, if any, to be detected.

[16] Changes in the Gini coefficient occur slowly, such that the linear interpolation can be considered a good approximation to fill the missing data. For a detailed review of interpolation methods see Meijering (2002).

[17] The choice of random effect is confirmed by the result of the Breusch-Pagan (1980) Lagrange Multiplier (LM) Test for Random Effect. The presence of cross sectional dependence was tested by means of the Friedman (1937), Frees (1995) and Pesaran (2004) tests.

only to the European Parliament and European Commission, with very small negative values -0.0618 and -0.0551 respectively.

The absence of relevance of these two last indicators for the ECB could be considered the signal that country-specific economic variables – such as financial market fluctuations - do not affect trust in the conduct of monetary policy. On the contrary, some political responsibility is assigned.

Looking at the crisis effects on trust of unemployment and inflation, the "crisis dummy" successfully detects a shift in the causality dynamic, linking this set of explanatory variables with the trust index. The deviation from the inflation target and unemployment become highly significant and with the expected negative sign for all the three European institutions (β_1^* =-4.247 and β_2^*=-1.533 for ECB, β_1^* =-4.699 and β_2^*=-2.65 for EP and β_1^* =-5.418 and β_2^*=-2.173 for EC).

These findings can be interpreted by the fact that citizens view all European institutions as responsible for the deterioration of macro fundamentals. As far as the main objective of the paper is concerned, the Gini coefficient pre-crisis relationship with trust is further strengthened ($\beta_3 + \beta_3^*$ = -1.495 for EP and $\beta_3 + \beta_3^*$ =-1.319 for EC). This reinforcement of the value of the coefficient of the Gini index is a clear signal of the importance of income distribution for trust in political institutions.

The results are qualitatively similar for unemployment, inflation and the Gini coefficient when the NEDK index is considered (Table 2).

Table 1

Trust (NTP index) in ECB, EP and EC

Independent Variables	ECB	EP	EC
Constant	48.595** (16.565)	66.275*** (9.975)	53.335*** (10.755)
β_1 (INF)	0.208 (0.578)	0.072 (0.884)	0.802 (0.904)
β_2 (UN)	1.271 (0.719)	-0.406 (0.551)	-0.765 (0.497)
β_3 (GINI)	-0.271 (0.445)	-0.800*** (0.243)	-0.524* (0.257)
β_4 (Bond Yields)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
β_4 (Stock Price Returns)	0.012 (0.019)	-0.062** (0.024)	-0.055* (0.028)
β_1^* (INF)	-4.247*** (1.335)	-4.699*** (0.900)	-5.418*** (1.244)
β_2^* (UN)	-1.533*** (0.580)	-2.654*** (0.497)	-2.173*** (0.452)
β_3^* (GINI)	-0.517 (0.385)	-0.695* (0.326)	-0.795*** (0.368)
β_4^* (Bond Yields)	-0.596 (0.529)	0.037 (0.342)	-0.229 (0.369)
β_4^* (Stock Price Returns)	0.935 (0.127)	0.258** (0.102)	0.302** (0.113)
Observations	330	330	330
Number of groups	11	11	11
R squared	0.737	0.758	0.751
Driscoll-Kraay standard errors	yes	yes	yes

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. The NTP index is calculated as the difference of those who trust minus those who do not, expressed as a percentage of the total population interviewed.
INF, UN, Bond Yields and Stock Price returns are calculated as the average of monthly data between the month before the fieldwork t and the first month after the fieldwork t-1. In addition, monthly INF data are calculated as the deviation from the 2% ECB target.

Table 2

Trust (NEDK index) in ECB, EP and EC

Independent Variables	ECB	EP	EC
Constant	64.945** (20.575)	82.473*** (11.235)	81.965*** (13.365)
β_1 (INF)	0.317 (0.769)	0.327 (1.116)	1.232 (1.159)
β_2 (UN)	-1.763* (0.886)	-0.787 (0.659)	-1.094 (0.613)
β_3 (GINI)	-0.291 (0.570)	-0.930*** (0.268)	-0.608* (0.319)
β_4 (Bond Yields)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
β_4 (Stock Price Returns)	-0.041** (0.017)	-0.089** (0.032)	-0.082 (0.032)
β_1^* (INF)	-5.034*** (1.419)	-5.739*** (1.081)	-6.942*** (1.377)
β_2^* (UN)	-1.469* (0.697)	-2.856*** (0.611)	-2.518*** (0.575)
β_3^* (GINI)	-1.063** (0.458)	-0.967** (0.347)	-1.179*** (0.415)
β_4^* (Bond Yields)	-0.320 (0.619)	0.361 (0.376)	0.268 (0.418)
β_4^* (Stock Price Returns)	0.171 (0.144)	0.299** (0.109)	0.386** (0.130)
Observations	330	330	330
Number of groups	11	11	11
R squared	0.737	0.758	0.751
Driscoll-Kraay standard errors	yes	yes	yes

Notes: See Notes Table 1. The NEDK index is calculated as the difference of those who trust minus those who do not trust expressed as a percentage of the population interviewed excluding those who don't know.

The potential biases associated to the different indexes – despite some distinctions - do not seem to alter the overall patterns. Inflation and unemployment are not statistically different from zero in the pre-crisis period except for ECB (β_2= -1.763). They become significant and rather high in time of crisis for all three European institutions (for ECB, β_1^*= -5.034 and β_2^*=-1.469 for EP, β_1^*=- 5.739 and β_2^*=- 2.856 for EC, β_1^*=- 6.942 and β_2^*=-2.518). The whole sample Gini coefficient parameter value for EP (β_3= -0.930) and EC (β_3=-0.682) indicates that citizens view the Eurozone political institutions as being responsible for income inequality. In the crisis period the responsibility is attributed – differently from the NTP index - to all three European institutions (for ECB β_3^*= -1.063; for EP β_3^*=-0.967 and for EC, β_3^*=-1.179). Finally, parameters associated to the control variables confirm the previous findings where the NTP index was considered.

Conclusions

Academics agree that economic outcomes affect trust in institutions. The institutional configuration of the Eurozone makes this link uncertain and raises the question whether European citizens hold supranational institutions responsible for their economic situation. This paper clarifies that this link is present at least in the 11 Eurozone countries examined and detects a novel economic indicator affecting trust: income inequality.

Our results support the general conclusion that citizens of the Eurozone countries consider supranational institutions responsible for the national macroeconomic performances and in particular: i) unemployment and inflation are major factors in defining the wave of trust in times of crisis; as a matter of fact the coefficient of unemployment is always negative, whatever the index and the period considered. Furthermore it is higher (in absolute terms) in the case of political institutions. Deviation from the objective of 2 % of inflation is very relevant in crisis times; ii) income inequality plays a meaningful role especially for political institutions, whose responsibility is attributed not only in declining macroeconomic conditions, but also in normal times; iii) in regard to financial indicators estimates show mixed results: surprisingly bond yields are not relevant at all, while stock price returns, when the coefficients are significant, assume very low values.

This suggests that the European integration project requires greater political effort. The objective of creating a solid monetary union governed by reliable institutions cannot be achieved without taking due consideration of real, rather than financial economic outcomes.

References

Acemoglu, D., & Robinson, J. A. (2001). A Theory of Political Transitions. *The American Economic Review*, 91(4), 938–963. http://dx.doi.org/10.1257/aer.91.4.938.

Acemoglu, D., & Robinson, J. A. (2006). Economic Origins of Dictatorship and Democracy. Cambridge, UK: Cambridge University Press.

Acemoglu, D., Johnson, S., & Robinson, J.A. (2001). The Colonial Origins of Comparative Development: An Empirical Investigation. *American Economic Review*, 91(5), 1369–1401. http://dx.doi.org/10.1257/aer.91.5.1369

Alesina, A., & Perotti, R. (1996). Income distribution, political instability, and investment. *European Economic Review*, 40(6), 1203–1228. doi:10.1016/0014-2921(95)00030-5.

Alford, J. R., (2001). We're All in This Together: The Decline of Trust in Government, 1958–1996. In Hibbing, J. and Theiss-Morse, E. (eds.). What is it about government that Americans dislike? New York: Cambridge University Press, pp. 28–46.

Barro, R. J. (1998). Determinants of Economic Growth: A Cross-Country Empirical Study. MIT Press Books, the MIT Press, ed. 1(1), n. 0262522543, April.

Bekaert, G., Ehrmann, M., Fratzscher M., & Mehl, A. (2014). The Global Crisis and Equity Market Contagion. *The Journal of Finance*, 69(6), 2597–2649. http://dx.doi.org/10.1111/jofi.12203 .

Berlemann, M. (2013). Trust in the European Central Bank throughout the world-wide financial crisis and European debt crisis' in Maltritz D. and Berlemann M. (eds.) Financial Crises, Sovereign Risk and the Role of Institutions, Springer, London, pp. 25–48. http://dx.doi.org/10.1007/978-3-319-03104-0_3

Breusch, T., & Pagan, A. (1980) The Lagrange multiplier test and its applications to model specification in econometrics. *Review of Economic Studies*, 47(1), 239–253. http://dx.doi.org/10.2307/2297111

Caporale, G. M., Spagnolo, F., & Spagnolo, N. (2014). Macro News and Bond Yield Spreads in the Euro Area, CESifo Working Paper No. 5008.

De Grauwe, P., & Ji, Y. (2013). Self-fulfilling crisis in the Eurozone: An empirical test. *Journal of International Money and Finance*, 34, 15–36, http://dx.doi.org/10.1016/j.jimonfin.2012.11.003 .

Driscoll, J. C., & Kraay, A. C. (1998). Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data. *Review of Economics and Statistics*, 80(4), 549–560. http://dx.doi.org/10.1162/003465398557825 .

Ehrmann, M., Soudan, M., & Stracca, L. (2013). Explaining EU citizens' trust in the ECB in normal and crisis time. *Scandinavian Journal of Economics*, 115(3), 781–807. http://dx.doi.org/10.1111/sjoe.12020 .

Fischer, J., & Hahn, V. (2008). Determinants of Trust in the European Central Bank. Working Paper Series in Economics and Finance 695, Stockholm School of Economics.

Frees, E. W. (1995). Assessing cross-sectional correlation in panel data. *Journal of Econometrics*, 69(2), 393–414. Doi:10.1016/0304-4076(94)01658-M.

Friedman, M. (1937). The use of ranks to avoid the assumption of normality implicit in the analysis of variance. *Journal of the American Statistical Association*, 32, 675–701. http://dx.doi.org/10.1080/01621459.1937.10503522 .

Hayat, M. A., & Farvaque, E. (2011). When are central bankers removed? *Revue Economique*, 62(3), 471–478. http://dx.doi.org/10.3917/reco.623.0471 .

Hudson, J. (2006). Institutional Trust and Subjective Well-Being across the EU. *Kyklos*, 59(1), 43–62. http://dx.doi.org/10.1111/j.1467-6435.2006.00319.x

Jung, F., & Sunde, U. (2014). Income, Inequality, and The Stability of Democracy — another look at the Lipset hypothesis. *European Journal of Political Economy*, 35, 52–74. Doi: 10.1016/j.ejpoleco.2014.03.004.

Kaltenthaler, K., Anderson C. J., & Miller W. J. (2010). Accountability and Independent Central Banks: Europeans and Distrust of the European Central Bank. *Journal of Common Market Studies*, 48(5), 1261–1281. http://dx.doi.org/10.1111/j.1468-5965.2010.02112.x .

Kirchgassner, G. (2009). The Lost Popularity Function: are Unemployment and Inflation no longer relevant for the Behaviour of German Voters? CESifo Working paper No.2882, pp. 1–18.

Lipset, S. M. (1959). Some Social Requisites of Democracy: Economic Development and Political Legitimacy. *The American Political Science Review*, 53, 69–105. http://dx.doi.org/10.2307/1951731

Meijering, E. (2002). A chronology of interpolation: from ancient astronomy to modern signal and image processing. *Proceedings of the IEEE*, 90(3), 319–342. Doi: 10.1109/5.993400

Miller, A. H. (1974). Political Issues and Trust in Government: 1964-1970'. *American Political Science Review*, 68(3), 951–72. http://dx.doi.org/10.2307/1959140

Nannestad, P., & Paldam, M. (1994). The VP function: a survey of the literature on vote and popularity functions after 25 years. *Public Choice*, 79(3), 213–245. http://dx.doi.org/10.1007/BF01047771 .

Newton, K., & Norris P. (2000). Confidence in Public Institution: Faith, Culture, or Performance? In Pharr, S.J. and Putman, R.D. (eds), Disaffected Democracies: What's troubling the Trilateral Democracies? New Jersey: Princeton University Press, pp. 52–73.

OECD (2014). Overview Paper on Resilient Economies and Societies. Report paper on the Ministerial Country Meeting 2015, available at: http://www.oecd.org/mcm/mcm-2014-chair-summary.htm.

Paldam, M. (1981). A Preliminary Survey of the Theories and Findings on Vote and Popularity Functions. *European Journal of Political Research*, 9(2), 181–199. Special Issue on Economic Approaches to Politics. Doi: 10.1111/j.1475-6765.1981.tb00598.x

Paldam, M. (2004). Vote and popularity functions. In Rowley, C. K. and Schneider, F. (eds), The encyclopedia of public choice. New York: Kluwer Academic, pp. 49–59.

Pesaran, M. H. (2004). General diagnostic tests for cross section dependence in panels. University of Cambridge, Faculty of Economics, Cambridge Working Papers in Economics No. 0435.

Pew Research Center. (2010). Distrust, Discontent, Anger and Partisan Rancor: The People and Their Government. Washington, DC: Pew Research Center for the People and the Press.

Rodrik, D. (1999). Democracies Pay Higher Wages. *The Quarterly Journal of Economics*, MIT Press, 114(3), 707–738. http://dx.doi.org/10.1162/003355399556115 .

Rodrik, D., & Wacziarg, R. (2005). Do Democratic Transitions Produce Bad Economic Outcomes? *American Economic Review*, 95(2), 50–55. http://dx.doi.org/10.1257/000282805774670059 .

Roth, F. (2009). The Effect of the Financial Crisis on Systemic Trust. *Intereconomics*, 44(4), 203–208. http://dx.doi.org/10.1007/s10272-009-0296-9

Roth F., Nowak-Lehmann, F. D., & Otter T. (2011). Has the financial crisis shattered citizens' trust in national and European governmental institutions? Evidence from the EU member states. CEPS working document no.343, June.

Roth F., Gros, D. & Nowak-Lehmann F. D. (2014). Crisis and Citizens' Trust in the European Central Bank — Panel Data Evidence for the Euro Area, 1999–2012. *Journal of European Integration*, 36(3), 303–320. http://dx.doi.org/10.1080/07036337.2014.886400 .

Sanders, D. (2000). The Real Economy and The Perceived Economy in Popularity Function: How much do voters need to know? A Study of British data, 1974–1997. Working paper of the Institut de Ciències Polítiques i Socials No. 170.

Savoia, A., Easaw, J. & McKay, A. (2010). Inequality, democracy, and institutions: A critical review of recent research. *World Development*, 38(2), 142–154. http://dx.doi.org/10.1016/j.worlddev.2009.10.009

Stevenson, B., & Wolfers, J. (2011). Trust in Public Institutions over the Business Cycle. *American Economic Review Papers & Proceedings*, 101(3), 281–287. http://dx.doi.org/10.1257/aer.101.3.281 .

Veiga, L., & Veiga, F. (2004). Political business cycles at the municipal level. ERSA conference papers ersa04 p427, European Regional Science Association.

Walti, S. (2012). Trust no more? The Impact of the Crisis on Citizens' Trust in Central Banks. *Journal of International Money and Finance*, 31(3), 593–605. Doi:10.1016/j.jimonfin.2011.11.012.