

# **Clarity of Governmental Responsibility and Election Outcomes in OECD Countries: New Evidence Following the Great Recession of 2008-2009**

**Florence Bouvet**

Economics Department  
Sonoma State University, CA  
[bouvet@sonoma.edu](mailto:bouvet@sonoma.edu)

**Sharmila King**

Economics Department  
University of the Pacific, CA  
[sking1@pacific.edu](mailto:sking1@pacific.edu)

## **ABSTRACT**

This paper investigates the effects of income inequality on election outcomes. We estimate a fixed-effect panel voting function for 32 OECD countries from 1975 to 2012 to determine the importance of economic voting, and especially the relevance of income inequality. We examine specifically whether clarity of government responsibility and the Great Recession altered the degree of economic voting. Our measure of clarity of responsibility has two dimensions: government fragmentation in terms of parties, and whether the same party controls the national parliament and the government. We find that economic growth is the most robust variable for economic voting, before and after the crisis, and that after the Great Recession voters penalize incumbent governments less for rising income inequality. Our results confirm that economic voting is weaker when government responsibility is less easily identified. The less clear a government's responsibility is, the less likely voters are to penalize incumbent governments for lower economic growth, rising unemployment, and inflation.

Keywords: income inequality, parliamentary elections, incumbent, economic crisis

## **1. Introduction**

This paper examines the importance of economic voting in OECD countries' parliamentary elections. While there is robust empirical evidence that economic growth, unemployment, and inflation affect electoral outcomes (see Lewis-Beck, 1988 and Lewis-Beck and Stegmaier, 2000, 2013) their relative importance on election outcomes is mixed. Typically, one would expect incumbent parties to suffer electoral losses during economic downturns. However, the recent Great Recession was not followed by landslide electoral loss for incumbent parties, even during the financial and sovereign debt crises when numerous countries experienced their most severe recession in decades. Indeed, between 2008 and 2011, in 32 parliamentary elections held in the 34 OECD countries, 16 incumbent leading parties remained first parties in national parliaments.

Given the recent relatively good electoral results for incumbent parties, we examine how voters actually assess economic performance. Institutional differences across countries may explain some of the ambiguity of the relative importance of the economic voting in the literature. For example, voters in countries with multi-party coalitions or multi-levels of governance could have difficulty assessing which party is responsible for economic performance compared to voters in countries with a one-party rule. We specifically focus on whether the degree of government fractionalization affects the ability of voters to assign blame for poor economic performance or reward the incumbent party for good performance. If government responsibility for economic performance is unclear to voters, the usual economic indicators in an economic voting function will not explain voting behavior as well. The literature provides wide evidence

that economic voting is stronger when the clarity of responsibility is clear (Powell and Whitten, 1993; Lewis-Beck, 1986; Anderson, 2000; Van der Brug et al., 2007, and Lewis-Beck and Stegmaier, 2013).

Our study contributes to the literature in several ways. First, we develop a new measure to capture the clarity of governmental responsibility. Our index accounts for government fractionalization, as well as cohabitation situations, in which the party controlling the executive branch differs from the legislative branch (such as the U.S. or France). Second, we add a new dimension of economic voting by assessing whether voters care about income inequality. A study by McCall (2005) finds that over half of Americans think that inequality is too high and that this share increased when inequality rose in the US. This suggests that Americans are aware of changes in income inequality overtime. More recently, the media attention given to the “Occupy Wall Street” movement during the Great Recession and Thomas Picketty’s book, *Capital in the Twenty-First Century*<sup>1</sup>, has pushed inequality to the forefront of the public debate. While the 2008-2009 economic downturn brought the issue of rising income inequality back to the forefront of public debate, very few papers examine the relationship between income inequality and election outcomes. Lewis-Beck and Stegmaier (2000) argue that “...economic distribution may be an emerging relevant dimension. That is, what are the electoral effects of rising income inequality and insecurity? We can cite no published scientific paper on that exciting question.” (page 212). More recently, few papers investigate relationship between income inequality and electoral turnout (Stockemer and Scruggs, 2012; Galbraith and Hale, 2008). To our knowledge, no other paper has examined extensively the effect of income inequality on the vote share of incumbent parties. This article intends to fill this void. Finally, we

---

<sup>1</sup> Thomas Picketty (2014) *Capital in the Twenty-First Century*, Belknap Press.

examine whether the Great Recession, given its magnitude, changed economic voting, especially regarding income inequality.

The remainder of the paper is organized as follows: section 2 provides an overview of the literature on economic voting. Section 3 presents our empirical methodology and the economic and political variables used in the empirical analysis. We discuss in section 4 the estimated economic voting functions. In Section 5 we make concluding remarks.

## **2. Background**

Past studies have examined the effect of the economy on election outcomes by estimating a “vote function” which uses actual election outcome data. Typically, these studies employ the vote share as the dependent variable. The vote share is either the incumbent party vote share (Lewis-Beck and Stegmaier 2000) or the total vote share for left-wing candidates/parties (Alesina and Angeletos 2005, Beetsma and Van Der Ploeg 1996). The most common independent variables used to study economic voting are actual economic or political variables such as national GDP growth, unemployment, inflation, income inequality, dummy variables for the type of electoral system or voting laws, etc. (see Lewis-Beck, 1988 and Lewis-Beck and Stegmaier, 2000, Alesina et. al 2001). Economic variables capture two possible types of economic voting: egotropic or sociotropic voting. The idea behind egotropic economic voting is that voters care about their pocketbook or economic self-interest, whereas a sociotropic voter cares more about the national economic outcome than his/her own economic situation when he/she goes to the polls. In general, the literature supports sociotropic voting (Lewis-Beck and Stegmaier 2013). Ferejohn (1986) argues that sociotropic voting could also be a strategy used by voters to limit the incumbent’s ability to exploit division among voters with heterogeneous preferences.

On one hand, some voters may vote “retrospectively” basing their vote on past economic performance. Voters are often unable to observe the activities of officeholders directly and cannot distinguish their activities from exogenous shocks that could also affect voter welfare. Consequently, voters use past economic performance as a proxy for the incumbent government’s policy (Ferejohn, 1986). So, past economic performance determines the incumbent party’s electoral fate. This view is supported in previous literature which finds evidence that voters “myopically ignore any information beyond the recent past, say, prior to the election year” (Peltzman, 1990, p.27)<sup>2</sup>. This “rational ignorance”, as Peltzman calls it, is indeed rational because the cost of voting (mostly opportunity costs) can be high, while the benefits are small since a single vote is unlikely to alter an election outcome, especially in national or state elections. Consequently, “if [voters] are foolish enough to vote in the first place, they should not waste too many more resources informing themselves about candidates [and economic outcomes past a short horizon].” (Peltzman, 1990, p.28)<sup>3</sup> On the other hand, others vote “prospectively” based on what they believe is the most desirable future personal or national economic outcome. Therefore, policies shaping the future economy matter to these voters.

Additionally, the strength of economic voting on election outcomes depends on whether the incumbent government’s economic responsibilities can be clearly identified. In countries with multi-level governance, such as strong local governments (see Anderson, 2006) or coalition governments (Chappell and Viega, 2000; Lewis-Beck, 1988; Anderson, 2000), it is less clear which party is responsible for past or future economic performance. Under these circumstances,

---

<sup>2</sup> See Monroe (1979) for a survey of this literature.

<sup>3</sup> We should note here however that using data from U.S. gubernatorial, Senate, and presidential elections, Peltzman (1990) finds that in the case of the US, voters are not so myopic after all, as voters seem to use information about the economic outcomes over the entire term in office.

economic variables are less likely to play a role in determining election outcomes. Powell and Whitten (1993) develop clarity of responsibility index based on several institutional features (within party cohesion, role of committee in legislative work, existence of a bicameral opposition, minority government, coalition government). They find that the economic variables in countries with “low clarity” are less important in explaining voting decisions and economic variables in countries with “high clarity” are more important. One reason for the insignificance of economic voting in countries with coalition governments is that voters cannot assign blame to one single party. However, another reason could be voters switching their vote to parties within the coalition. Royed *et al.* (2000) and Anderson (2000) argue that the index developed by Powell and Whitten (1993) might be too complex to capture how voters perceive the government’s responsibility; voters are not aware of the institutional features captured by their index. Further, the index captures variations across countries, not variations in clarity over-time for each country since the sample is divided into low-clarity and high-clarity groups. Clarity of responsibility is dynamic within a country and can change from one election cycle to the next and so countries may switch between groups. Royed (2000) improves on Powell and Whitten’s (1993) measure by simply examining if a government is a single party or a coalition. We go one step further and create a clarity measure that includes two dimensions: government fractionalization and cohabitation situations between the executive and legislative powers. The more fragmented a government, the more difficult it is for voters to hold a specific party responsible for national economic performance. Our measure of clarity is presented in more detail in the next section.

### 3. Data and Methodology

#### 3.1. Empirical specification for the vote function

To model how voters use economic information when they cast their ballot, we assume that willingness to vote for the incumbent party depends on their party preference and on the extent to which their welfare has changed since the last election. If voters have strong party preferences, they may not change for whom they vote, even in light of new economic developments. As a result, only marginal voters would use information on economic outcomes to decide for whom to vote (Peltzman, 1990). In line with the political economy literature (see Peltzman (1990) for instance), we assume that incumbent governments' activities - their policies –which can affect voters' welfare, are not always directly observable by electors (and notably the marginal voters) who therefore vote based on the country's past economic performance. To test the importance of clarity of governmental responsibility, we construct a simple index of clarity based on two dimensions of government fractionalization. The first dimension is the probability that two deputies picked at random from among the government parties will be from different parties. The clarity of responsibility is also diminished if the upper-house and lower-house party differs from the executive (Whitten and Palmer 1999). The United States and France provide clear examples of this type of cohabitation situation. We also control for such cases. The clarity index we construct based on these two dimensions is discussed in more detail in section 3.2.

Consequently, we model the relationship between the dependent variable, the percentage point vote for the leading party in the incumbent government, and economic outcomes as follows.

$$Vote_{it} = F(Vote_{it-j}, \Delta W_{it}, Clarity_{t-1}) \quad (1)$$

Where  $Vote_{it}$  is the percentage vote share for the prime minister's party which is usually the dominant party in a coalition government. We chose to focus on the vote share received by the dominant party as opposed to total vote share to government parties because, as suggested by Lewis-Beck (1988) and Royed et al. (2000), if voters switch their support between parties within a coalition, one would find less evidence of economic voting within a coalition government. Being the dominant party in the national parliament should expose the prime minister's party to more blame or credit for bad or good economic developments.

$t$  refers to years when parliamentary elections took place in country  $i$ . So for instance in Australia,  $t=1977, 1980, 1983, 1984, 1987, 1990, 1993, 1996, 1998, 2001, 2004, 2007, 2010$ , and  $2013$  but for Finland,  $t=1995, 1999, 2003, 2007$ , and  $2011$ .  $j$  = the number of years between parliamentary elections.  $\Delta W_{it}$  presents the change in voters' welfare since the last election.  $Clarity_{t-1}$  is our measure of the incumbent government's clarity of responsibility.

We include the lagged vote share (the vote share received by the current incumbent leading party in the previous parliamentary elections) to capture voting inertia, or long-term trends that might be more favorable to one party. At this stage, it is therefore important that the reader understands that  $Vote_{it-j}$  is not the lagged value of  $Vote_{it}$  since it is not the percentage vote share received by the incumbent party in the previous national parliamentary election. For instance, in Germany, the first party in government was the SPD in 2002, and the CDU in 2005 and 2009. If  $Vote_{it}$  is the percentage vote share received by the CDU party in 2005 for the Bundestag elections,  $Vote_{it-j}$  would be the percentage vote share received by the CDU party in the previous election in 2002, and not the percentage vote share received by the incumbent SPD.

As explained earlier, we assume that voters assess change in their welfare based on the country's past economic performance. Like Peltzman (1990), we assume that voters use information on policy outputs (such as economic growth, inflation, unemployment, and income inequality) rather than policy inputs (such as budget deficits, and spending in different sectors: military versus social expenditure for instance). Income inequality is usually not included in the typical economic voting functions. Alesina *et. al* (2001) argue that inequality negatively affects individual utility even after controlling for income and that it is an overall measure of well-being. Therefore, it is reasonable that income inequality be included in the welfare function. As a result, change in voters' welfare is modeled as follows:

$$\Delta W_{it} = G(Gini_{it-1}, Gy_{it-1}, Unempl_{it-1}, Inflation_{it-1}) \quad (2)$$

Combining equations 1 and 2, we employ the following empirical specification for the voting function:

$$Vote_{it} = \beta_0 + \beta_1 Vote_{it-j} + \mathbf{X}'_{t-1} \boldsymbol{\beta} + \beta_6 Clarity_{t-1} + \gamma' Clarity_{t-1} \mathbf{X}'_{t-1} \varepsilon_{it} \quad (3)$$

Where  $Clarity_{t-1}$  is one of our indicators for the government's clarity of responsibility and  $\mathbf{X}_{t-1}$  is a vector of variables measuring the economic performance of the country:

$$\mathbf{X}'_{t-1} = (Gini_{it-1} \quad Gy_{it-1} \quad Unempl_{it-1} \quad Inflation_{it-1}) \quad (4)$$

We estimate equation 1 with a fixed-effect model. While several multi-country analyses (Lewis-Beck, 1988; Lewis-Beck and Nadeau, 2012; Royed et al. 2000) of economic

voting present OLS regression results<sup>4</sup>, we believe a fixed-effect model is more appropriate for our current panel data analysis for two reasons. First, country-fixed effects allow us to account for underlying differences in the levels of inequality and unemployment across countries. A five-percentage point increase in unemployment rate does not have the same implication in low-unemployment countries such as Japan compared to countries like Spain which are accustomed to higher unemployment rates. Thus, we focus on how macroeconomic changes affect voting within countries. Second, with fixed effects, we control for other idiosyncratic shocks not captured by the macroeconomic variables already included in the specification.

Given the persistence in vote shares received by incumbent parties<sup>5</sup>, our estimations could be affected by the Nickell bias. Nickell (1981) demonstrates for models with a lagged dependent variable as a regressor, the fixed effect estimator is inconsistent. The coefficient on the lagged dependent variable tends to be biased downward, and this issue tends to be more serious for short panels like ours (with  $T < 20$ ). Because the  $Vote_{it-j}$  variable is not the lagged value of the dependent variable, we cannot estimate a dynamic panel model, such as the Arellano-Bond GMM estimator. To address the possible aforementioned Nickell bias, we follow Anderson-Hsiao's (1981) recommendation to use the vote share received by the current incumbent party two elections ago as an instrument for the lagged vote share. For example, in the case of Germany when the dependent variable is the vote share obtained by the incumbent party in the 2009 elections, we instrumentalize the vote share for that same party (CDU) in the elections of 2005 by its vote share received in the 2002 Bundestag elections.

---

<sup>4</sup> More recent papers have included country dummy variables to control for fixed effects (Anderson, 2000; Chappell and Veiga, 2000)

<sup>5</sup> When we regress  $Vote_{it} = \rho Vote_{it-j}$ , the estimated coefficient is equal to 0.6)

### 3.2. Data

To conduct our empirical analysis, we use yearly data on 332 parliamentary elections and national economic indicators for a panel of 32 OECD countries<sup>6</sup>. These data run from 1975 to 2013. Election and political data are obtained from the Database of Political Institutions (DPI)<sup>7</sup>. The DPI contains 125 variables, mainly measuring aspects of national political systems and electoral rules. The database includes variables on the parties represented in the legislature (variables describing various aspects of the legislature and parties in the legislature, e.g. number of seats held by various parties, whether one party holds an absolute majority and date of elections.), electoral rules (e.g. plurality or proportional electoral systems), stability and checks and balances (notably polarization), and federalism (e.g., whether there are autonomous regions and whether municipal governments are locally elected.) Because it was last updated in January 2013 and includes elections up to 2012, we completed the data set in order to include in our analysis parliamentary elections that occurred in 2013. Because our analysis covers only democratic elections, our data set includes elections from Chile and Central and Eastern European countries after 1990.

Macroeconomic data and the Gini index are obtained from the OECD. Economic growth,  $Gy_{it-1}$ , is measured as the annual percentage change in real income per capita, adjusted for purchasing power parity and  $Unempl_{it-1}$  is the national unemployment rate.. The inflation rate,  $Inflation_{it-1}$ , is measured as the annual percentage change in the Consumer Price Index.

---

<sup>6</sup>The countries included in our analysis are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, South Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, the UK, and the USA.

<sup>7</sup> <http://www.nsd.uib.no/macrodatabguide/set.html?id=11&sub=1>

Income inequality ( $Gini_{it-1}$ ) is measured using the level of Gini index which is computed from disposable income data. Because income inequality data are not available for every year, we intrapolate the missing data with a linear trend (we obtained similar results using a cubic spline interpolation). Furthermore, while alternative income inequality measures are also available from the Luxembourg Income Study Database (<http://www.lisdatacenter.org/>), this database does not provide adequate observations after 2005, which prevents us from analyzing whether changes in income inequality since the Great Recession had an impact at the ballot box. In table 1 we list for each variable the period over which data are available in each country. By lagging the regressors, we focus on retrospective voting and test the extent to which voters respond to past economic performance when they cast their ballot.

Finally, in line with Royed et al. (2000), we do not measure economic outcomes relative to an international benchmark as is done in Powell and Whitten (1993), because as Bouvet and King (2014) show, there is no empirical evidence that voters in OECD countries use international benchmarks when they assess economic performance to decide for whom to vote.

-- Table 1 here --

To test the importance of clarity of governmental responsibility, we construct a simple index of clarity made of two components. The first component measures government fractionalization and is obtained from the DPI. It is equal to the probability that two deputies picked at random from among the government parties will be from different parties. It is used to control for the complexity of government coalitions. The more fragmented a government is, the more difficult it is for voters to hold a specific party accountable for national economic performance. While this measure of government fractionalization gives a good indication of

clarity of responsibility in countries with parliamentary systems, this is not the case for countries where the head of the executive branch is not the leader of the main party in the national parliament. The United States provides a clear example of this situation. With their two-party system, the government fractionalization for the US is always equal to 0. However, the presidential system implies that governmental powers are allocated between the US President and Congress. When the President and the majority in Congress (in the House of Representatives and/or Senate) are from different parties, like today, whom voters should hold accountable is not obvious. To account for this scenario, we create a dummy variable equal to one when the political party controlling the executive branch is not the main party in the national parliament. Our clarity index consists of a simple arithmetic average between the government fractionalization and the aforementioned dummy variable. A higher value of our clarity index indicates the government responsibility is less clear. Theoretically, our index range of values is  $[0,1]$ . In our sample of countries, the mean value is 0.2, the minimum is 0 and the maximum is 0.91. This clarity index is then interacted with the aforementioned macroeconomic variables to examine the extent to which different levels of clarity of responsibility affect economic voting.

Our clarity of responsibility measure differs from those used in the past literature. It is first simpler than the index used in Powell and Whitten (1993). An alternative strategy would consist on including a dummy variable for single-party or a dummy for coalition governments (Chappell and Veiga, 2000; Royed et al. 2000). However, the later for instance would not distinguish between a two-party coalition and a four-party where political responsibility is relative less easy to establish. Other papers have used a dummy variable for minority government (Anderson, 2006). This dummy variable is equal to 1 if the government parties controls less than 50% of the parliament seats. A minority government bears less blame for poor

economic outcomes if the legislative power is controlled by other parties. Finally, because economic voting has been found to be weaker in countries where multilevel governance is most prominent (Anderson, 2006), one can examine whether multilevel governance lowers the clarity of responsibility of the national governments. One can for instance control for the division of responsibility between central governments and regional/state government and test whether the federal structure of a country's institution dilutes the clarity of responsibility for these national governments. As a robustness check, we estimate equation 3 with these alternative measures of clarity of responsibility (these regression results are available upon request). However, when using these measures, there is no evidence that clarity of responsibility affects economic voting.

### 3.3 Empirical Hypotheses

We test three main hypotheses. First, we expect to find evidence of economic voting, more specifically, that voters are less likely to vote for an incumbent party if unemployment, inflation rates, and income inequality increase or if economic growth slows down during their term:

$$\beta_{unempl} < 0; \beta_{inflation} < 0; \beta_{econ.growth} > 0; \beta_{inequality} < 0$$

Second, we expect that lower clarity of responsibility (as a result for instance of higher government fragmentation) will temper economic voting.

$$\beta_{unempl*clarity} > 0 \quad ; \beta_{inflation*clarity} > 0 \quad ; \beta_{econ.growth*clarity} < 0 \quad ;$$

$$\beta_{inequality*clarity} > 0$$

Third, we examine whether the 2008-2009 Great Recession induced a shift in economic voting and in the government's clarity of responsibility. Voters may find it more difficult to assign blame for poor economic outcomes if the cause – whether national or international - of the deterioration in economic performance cannot be clearly established. The 2008-2009 economic downturn has been the longest and the most severe recession experienced by OECD countries over the last 30 years. As shown in table 2, the Great Recession has been synonymous with rising unemployment and income inequality, and a decline in per capita income. These economic problems and the global dimension of the crisis have “severely challenged the capacity of governments to steer the national economy and has had a strong impact on their electoral support” (Bellucci et al., 2012; page 469). To check whether the recession altered economic voting in OECD countries, we add to our model (equation 3) a time dummy variable equal to 1 if  $t = 2008$  and  $2009$ , and 0 otherwise. We interact this dummy variable with the economic variables, the clarity measure, and the interaction terms between the clarity and economic variables. A negative coefficient on the Great Recession dummy variable indicates, everything else equal, incumbent parties receive less support during the global economic downturn, and thus there is some asymmetry in economic voting. This leads to our third hypothesis. On the one hand, if the crisis exacerbates economic voting, then

$$\beta_{unempl \ast recession} < 0; \quad \beta_{inflation \ast recession} < 0; \quad \beta_{econ.growth \ast recession} > 0;$$

$$\beta_{inequality \ast recession} < 0$$

On the other hand, if voters judge that global dimension of the crisis diminished the capacity of governments to steer the national economy, and should therefore be held less accountable, we should find lower levels of economic voting in 2008 and 2009:

$$\beta_{unempl*recession} > 0; \beta_{inflation*recession} > 0; \beta_{econ.growth*recession} < 0;$$

$$\beta_{inequality*recession} > 0$$

$$\beta_{unempl*clarity*recession} > 0 \quad ; \beta_{inflation*clarity*recession} > 0 \quad ;$$

$$\beta_{econ.growth*clarity*recession} < 0 \quad ; \beta_{inequality*clarity*recession} > 0$$

-- Table 2 here --

## 4. Results

### 4.1 Clarity of responsibility

Table 3 reports the empirical estimations of equation 3 (baseline), first without any control for clarity of responsibility in the first three columns. In column 1, we report the results for the more traditional economic voting specification which does not include any measure of income inequality. In the last three columns we introduce our measure of clarity of responsibility and interact it with the macroeconomic variables. In the first column and throughout the rest of the table we find strong evidence of voting inertia, as suggested by the statistically significant coefficient on the lagged vote. In terms of economic voting, we find in most specifications that the vote share for the incumbent party increases with stronger economic growth and a declining unemployment rate. While the coefficient on economic growth is highly statistically significant, its economic significance is more limited: in column 1 a one-percentage point increase in per capita income growth (which would correspond to a 38% increase in economic growth) is associated with a one-percentage point increase in the vote share received by the major incumbent party. As for unemployment, a one percentage point increase in the unemployment rate (a 14% increase in the unemployment rate) is associated with a decrease in the incumbent's

vote share by 0.45 percentage points. The statistical insignificance of the inflation rate coefficient might be due to multicollinearity with the other macroeconomic variables in some countries (see Appendix A2).

The first augmentation consists of controlling for income inequality (column 2). Initially, we do not find evidence that economic voting is affected by income inequality. The most noticeable change in the result is that the coefficient on the unemployment rate becomes statistically insignificant, which might be due to a change in the sample covered for most countries and/or collinearity (see Appendix A2). To check whether the change in statistical significance is due to a change in the sample size or to collinearity, we run the specification presented in column 1 with the same observations used in column 2 and find that here again the coefficient on unemployment rate is statistically insignificant (column 3). This last result indicates that the observed statistical significance in unemployment for the baseline regression is due to a change in the sample size and period. As indicated in table 1, Gini data are available for most countries after 1995 (for 12 out of the 32 countries, the Gini index series starts in 2004). The unemployment rate is likely to be less volatile over shorter periods of time, which would explain why the coefficient on unemployment rate becomes statistically insignificant.

Once we include our measure of clarity of responsibility, but no measure of income inequality (column 4), we find that the vote share of the incumbent party is still negatively related with higher unemployment rate and positively related with economic growth. The vote for the incumbent party is negatively related to our clarity index, which is to be expected if voters have the ability to spread their support for the incumbent government over several parties.

The overall marginal effect of the clarity index on the vote share of the main incumbent party is given by:

$$\beta_{\text{clarity}} + \beta_{\text{unempl} \times \text{clarity}} * \overline{\text{unempl}} + \beta_{\text{inflation} \times \text{clarity}} * \overline{\text{inflation}} + \beta_{\text{econ.growth} \times \text{clarity}} * \overline{\text{econ.growth}}$$

Where  $\overline{\text{inflation}}, \overline{\text{unempl}}, \overline{\text{econ.growth}}$ , are the sample means of the above macroeconomic variables. With a simple back-of-the-envelope calculation, we find that when the clarity index goes from 0 (very high clarity: single party government also in control of the executive branch) to 1 (each government member is from a different party and the parliament is not controlled by the same party as the executive branch) the vote share for the main party in the incumbent government drops by 9 percentage points. So if the clarity index increases by 10 basis points (which implies a decrease in clarity), the vote-share of the leading incumbent party drops by slightly less than 1 percentage point. The incumbent vote share is negatively related to our clarity index because a higher clarity implies a more fragmented government in terms of party affiliation, which would imply less concentration in votes.

Moreover, the positive coefficient on the interaction term between unemployment rate and government clarity indicates that voters hold parties in more fragmented governments less accountable for rise in unemployment. Now, on average, a one-percentage point increase in the unemployment rate is associated with a 0.23-percentage point decrease in the incumbent's voting share. Similarly, the negative coefficients on the interaction terms with economic growth suggests that incumbent parties in fragmented governments are also not rewarded as much for growing per capita GDP: on average, a one-percentage point increase in the annual growth rate in per capita income is associated with a 0.92-percentage point increase in the incumbent vote

share. Our results therefore confirm that economic is weaker when a government's responsibility can be clearly identified.

Once we include a measure of income inequality (column 5), the coefficients on unemployment rate and economic growth remain significant, but not the coefficient on the interaction term with economic growth. We obtain similar results in column 6 when we estimate the specification without inequality measure but with the same 168 observations, suggesting again that the importance of government clarity is relatively robust to a change in the sample.

-- Table 3 here --

#### **4.2 Did the Great Recession alter economic voting and clarity of responsibility in OECD countries?**

In this last section, we examine whether the 2008-2009 Great Recession induced a shift in economic voting, in the government's clarity of responsibility and in how clarity of responsibility affects economic voting. To carry out this analysis, the specifications used in columns 4, 5, and 6 of table 3 are interacted with the recession dummy. The results are presented in Table 4.

Given the numerous interaction terms included in the specification, some computations with the coefficients presented in Table 4 are necessary to measure the overall marginal effects of the macroeconomic variables and of the clarity index on vote shares. These marginal effects

are reported in table 5. For an average level of clarity, we find that voters have held incumbents more accountable for increases in unemployment and inflation during the Great Recession. While there is no evidence that inflation affects voting prior to the Great Recession, incumbent governments were penalized for rising costs of living during the economic crisis. We do not find evidence of a shift in economic voting with regard to economic growth during the last recession. Voters therefore might have perceived the recession and decrease in GDP as an exogenous shock for which incumbent government should not be held accountable. Yet, the government's responsibility was high with respect to unemployment if voters considered that could be used to mitigate the effects of the crisis on the national labor markets.

Contrary to what one might have expected, voters held incumbent governments less accountable for increase in inequality during the Great Recession. A 10-percentage point increase in inequality growth triggers a decrease in the incumbent's vote share by 9 percentage points prior to 2008, and a decrease in this party's vote share by 6 percentage points during the Great Recession.

Finally, the triple interaction terms - between the clarity variable, the recession dummy, and the macroeconomic variables - provide some information on whether the Great Recession coincided with a change in the effect of clarity of responsibility on economic voting. Out of the four interaction terms, three have statistically significant coefficients. The negative coefficients on the interaction terms with unemployment and income inequality indicate that during the last economic recession, when the clarity of responsibility was less clear (i.e. the clarity index increased) incumbent governments would see their vote shares decrease more than in the years prior to the Great Recession for the same increase in the unemployment rate or income

inequality. The positive coefficient on the triple interaction term for inflation indicates that the opposite was true for increase in the price level.

-- Table 4 here --

-- Table 5 here --

## **5. Conclusion**

This paper examines the extent of economic voting in OECD countries after controlling for the clarity of responsibility of the government for national economic performance. We develop a measure of clarity of responsibility that accounts for the degree of fractionalization of a government as well as for situations in which the party in the executive branch of government differs from the leading party in the lower house of the national parliament. Overall we find that the most consistent variable in explaining economic voting is economic growth, and to a lesser extent, unemployment. This is robust before and during the Great Recession of 2008-2009. In line with the literature, economic voting is weaker when government responsibility is less easily identified. The less clear a government's responsibility is, the less likely voters are to penalize incumbent governments for lower economic growth and rising unemployment.

We also examine whether voters view income inequality as an important issue and whether this importance changed following the Great Recession.. We find that during the last economic downturn, voters penalize incumbent governments less for rising income inequality than before 2008. The shift in voter perception of increasing income inequality during the Great Recession is surprising despite the growing media coverage on this inequality issue, especially after the bank-bailouts. Whether income inequality remains to be an important issue in future

elections remains to be seen. Our analysis therefore suggests that voters did not discount the recent economic crisis as a complete exogenous shock, since they held incumbent parties partly responsible for the deterioration in the national economic conditions.

## References

- Alesina A., R. Di Tella, and R. MacCulloch. (2001). "Inequality and Happiness: Are Europeans and American's Different?" NBER Working Paper 8198.
- Anderson, C. D. (2000). "Economic voting and political context: a comparative perspective", *Electoral Studies*, 19, pp. 151-170.
- Anderson, C. D. (2006). "Economic Voting and Multilevel Governance: A Comparative Individual-Level Analysis", *American Journal of Political Science*, Vol. 50, Issue 2, pp.449–463.
- Anderson, T. W., and Hsiao, C. (1981). "Estimation of dynamic models with error components", *Journal of the American statistical Association*, 76(375), pp. 598-606.
- Bellucci, P., Costa Lobo, M., and Lewis-Beck, M.S. (2012). "Economic crisis and elections: the European periphery", *Electoral Studies*, 31, pp. 69-471.
- Bouvet, F. and S. King (2014). "Keeping up with the Joneses, Garcias, Martins and Müllers: Economic Benchmarking for Election Outcomes in OECD Regions.", mimeo
- Chappell, H.W. and Veiga, L. G. (2000). "Economics and elections in Western Europe: 1960–1997", *Electoral Studies*. 19, pp. 183–197.
- Duch, R.M.,and Stevenson, R. T. (2008). *The economic vote: how political and economic institutions condition election results*. Cambridge: Cambridge University Press.
- Lewis-Beck, M.S. (1988). *Economics and Elections: the Major Western Democracies*. Ann Arbor: university Michigan Press
- Lewis-Beck, M.S. and Steigmaier, M. (2000). "Economic Determinants of Electoral Outcomes", *Annual Review of Political Science*, 3, pp. 183-219.
- Lewis-Beck, M.S. and Nadeau, R. (2012). "PIGS or not? Economic voting in Southern Europe", *Electoral Studies*, 31, pp. 472-477.
- Lewis-Beck, M.S. and Steigmaier, M. (2013). "The VP-function revisited: a survey of the literature on vote and popularity functions after over 40 years", *Public Choice* 157, pp. 367-385.
- McCall L. (2005) "Do They Know and Do They Care? Americans' Awareness of Rising Inequality" Working Paper.

- Medgyesi, M. (2013). "Increasing income inequality and attitudes to inequality: a cohort perspective", GINI Discussion Paper 94, can be downloaded [www.gini-research.org](http://www.gini-research.org)
- Nickell, S.J. (1981). "Biases in Dynamic Models with Fixed Effects", *Econometrica*, 49, 1417-1426.
- Peltzman, S. (1990). "How Efficient is the Voting Market?", *Journal of Law and Economics*, Vol. 33, No. 1 (April 1990), pp. 27-63.
- Powell, Bingham G., and Guy D. Whitten. (1993). "A Cross-national Analysis of Economic Voting: Taking Account of the Political Context." *American Journal of Political Science* 37 (2), pp. 391–414.
- Royed t.J., K.M. Leyden and S. A. Borrelli. (2000). "Is 'Clarity of Responsibility' Important for Economic Voting? Revisiting Powell and Whitten's Hypothesis", *British Journal of Political Science*, Vol. 30, No 4, pp. 669-685.
- Stockemer, D. and L. Scruggs. (2012). "Income Inequality and Electoral Turnout: New evidence on a burgeoning debate", *Electoral Studies*, 31(4), pp. 764-773.
- Van der Brug, W., Van der Eijk, C., and Franklin, M. (2007). *The economy and the vote: economic conditions and elections in fifteen countries*. New York: Cambridge University Press.
- Whitten G. D. and H. D. Palmer (1999) "Cross-national analyses of economic voting" *Electoral Studies* 18, pp. 49-67.

## Figures and Tables

Table 1: Data Description

Countries	Elections covered	# of	Unempl. rate	Econ. growth	Inflation rate	Gini Index
		elections				
Australia	1977-2013	14	1975-2012	1976-2012	1975-2013	1995-2010
Austria	1975-2008	12	1975-2012	1976-2012	1975-2013	2004-2010
Belgium	1978-2010	10	1975-2012	1976-2012	1975-2013	2004-2010
Canada	1978-2011	11	1975-2012	1976-2012	1975-2013	1976-2010
Chile	1989-2009	6	1996-2011	1987-2012	1975-2013	2006-2011
Czech Rep.	1990-2013	8	1990-2012	1991-2012	1992-2013	1992-2010
Denmark	1975-2011	14	1975-2012	1976-2012	1975-2013	1985-2010
Estonia	1996-2011	6	1989-2012	1998-2013	1994-2013	2004-2010
Finland	1979-2011	9	1975-2012	1976-2013	1975-2013	1985-2010
France	1978-2012	9	1975-2012	1976-2012	1975-2013	1996-2010
Germany	1976-2013	11	1975-2012	1976-2013	1975-2013	1985-2010
Greece	1977-2012	12	1975-2012	1976-2012	1975-2013	1986-2010
Hungary	1990-2010	6	1992-2012	1992-2012	1981-2013	1991-2009
Iceland	1978-2013	11	1975-2012	1976-2012	1976-2013	2004-2010
Ireland	1977-2011	10	1975-2012	1976-2012	1975-2013	2004-2010
Israel	1977-2013	11	1995-2011	1996-2012	1975-2013	1985-2010
Italy	1976-2013	11	1975-2012	1976-2013	1975-2013	1984-2010
Japan	1976-2012	13	1975-2012	1976-2012	1975-2013	1985-2009
South Korea	1981-2013	9	1975-2012	1976-2012	1975-2013	2006-2011
Luxembourg	1979-2013	8	1985-2013	1976-2012	1975-2013	1986-2010
Mexico	1976-2012	13	1980-2012	1976-2012	1975-2013	1984-2010
Netherlands	1977-2013	14	1975-2012	1976-2012	1975-2013	1977-2010
New Zealand	1975-2011	13	1975-2012	1976-2012	1975-2013	1985-2009
Norway	1977-2013	10	1975-2012	1976-2012	1975-2013	1986-2010
Poland	1991-2011	7	1990-2012	1991-2012	1990-2013	2004-2010
Portugal	1976-2011	13	1975-2012	1976-2012	1975-2013	2004-2010
Slovakia	1994-2012	6	1994-2012	1993-2012	1992-2013	2004-2010
Slovenia	1992-2011	6	1996-2012	1996-2012	1981-2013	2004-2010

Spain	1977-2011	11	1975-2012	1976-2012	1975-2013	2004-2010
Sweden	1976-2010	11	1975-2012	1976-2012	1975-2013	1975-2010
UK	1979-2010	8	1975-2012	1976-2012	1975-2013	1975-2010
USA	1976-2012	19	1975-2013	1976-2012	1975-2013	1979-2010

<http://www.electionresources.org/>

Database of Political Institutions,

Sources:	2013	OECD	OECD	OECD	OECD
			Annual	Annual	
			percentage	percentage	
Variable			change in real	change in	Level of the
definition			GDP per	Consumer	national Gini
			capita, PPP	Price Index	index

note:\* because Poland's inflation rate was above 50% prior to 1992, we are excluding prior years from the analysis

For some countries, when Gini data are available from the OECD for sporadic years, the series is filled using linear interpolation

Table 2: sample mean of the macroeconomic variables before and since the Great Recession

Variable	Precrisis before 2008	Crisis since 2008
Gini index	0.300	0.313
Unempl. Rate	6.973	7.857
Inflation rate	13.392	2.515
Economic Growth	2.625	-0.264

Note: the means are obtained using data from the 32 OECD countries used in the analysis presented in this paper.

Table 3: Basic Economic Voting and Clarity of Responsibility

VARIABLES	(1) Basic	(2) Basic	(3) Basic	(4) Clarity	(5) Clarity	(6) Clarity
Lagged vote	0.451** [0.176]	1.055*** [0.278]	1.056*** [0.294]	0.367** [0.158]	0.921*** [0.282]	0.896*** [0.300]
Unemp. rate	-0.459* [0.240]	-0.543 [0.412]	-0.566 [0.429]	-0.925*** [0.277]	-0.894** [0.380]	-0.957** [0.401]
Inflation rate	0.093 [0.134]	-0.032 [0.160]	0.030 [0.154]	0.025 [0.141]	-0.071 [0.182]	-0.050 [0.155]
Econ. growth rate	1.076*** [0.252]	0.633** [0.302]	0.674** [0.299]	1.557*** [0.295]	0.739*** [0.240]	0.772*** [0.235]
Income Inequality		-69.137 [45.975]			-60.218 [47.834]	
Clarity				-31.175*** [8.177]	-44.366* [24.124]	-21.810** [9.351]
Unemp. Rate*clarity				3.437*** [0.754]	2.173* [1.093]	2.347** [1.141]
Inflation*clarity				0.602** [0.292]	0.316 [1.010]	0.427 [0.995]
Econ. growth rate*clarity				-3.156*** [0.976]	-1.160 [1.012]	-1.024 [0.986]
Inc. inequality*clarity					81.972 [81.983]	
Constant	18.785*** [5.788]	20.602 [18.817]	-0.659 [9.165]	26.027*** [5.616]	25.977 [20.714]	8.597 [9.856]
Observations	270	168	168	270	168	168
R-squared	0.165	0.280	0.259	0.290	0.319	0.303

Note: Robust standard errors in brackets

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Table 4 Economic voting, clarity of responsibility, and the Great Recession

VARIABLES	(1) Clarity	(2) Clarity	(3) Clarity
Lagged vote	0.357** [0.165]	0.860*** [0.275]	0.821** [0.300]
Unemp. rate	-0.912*** [0.308]	-0.877* [0.432]	-0.939* [0.479]
Inflation rate	0.020 [0.144]	-0.194 [0.190]	-0.126 [0.158]
Econ. growth rate	1.589*** [0.309]	0.665** [0.289]	0.778*** [0.268]
Inc. inequality		-86.667* [46.992]	
recession	-8.725 [5.157]	-51.446*** [17.470]	2.308 [11.389]
Unemp. Rate*recession	1.883*** [0.625]	4.091*** [1.078]	1.736 [1.180]
Inflation*recession	-0.943 [0.755]	-10.074*** [1.733]	-4.313* [2.216]
Econ. growth rate*recession	-1.537 [1.638]	-0.456 [2.242]	-1.797 [2.764]
Inc. inequality*recession		159.394*** [32.066]	
Clarity	- 34.962*** [7.337]	- -19.629 [23.826]	- 28.970*** [7.256]
Unemp. Rate*clarity	3.659*** [0.698]	2.636*** [0.799]	2.914*** [0.925]
Inflation*clarity	0.669** [0.291]	0.157 [1.115]	0.480 [1.056]
Econ. growth rate*clarity	-3.148*** [0.962]	-0.529 [1.135]	-1.000 [0.935]
Inc. inequality*clarity		-20.746 [83.736]	
clarity*recession	99.333*** [35.884]	296.991*** [94.699]	61.008 [60.944]
Unemp. Rate*clarity*Recession	-13.250** [5.568]	-23.301*** [6.892]	-13.933* [7.360]
Inflation*clarity*Recession	-0.888 [3.846]	35.465*** [8.225]	12.631 [9.413]
Econ. growth	2.908	-0.812	7.800

rate*clarity*Recession	[5.938]	[8.263]	[9.908]
		-	
Inc. Ineq.*clarity*Recession		674.896***	
		[152.903]	
Constant	26.431***	36.544*	11.661
	[5.829]	[21.214]	[10.091]
Observations	270	168	168
R-squared	0.321	0.432	0.389

Note: Robust standard errors in brackets

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5: Summary of the Marginal Effects obtained in the Recession specification (column 5 of table 4)

Column 5	During Great Recession	Other years
Unemployment rate	-0.79	-0.33
Inflation rate	-3.14	not stat. sign.
Economic growth	0.67	0.67
Inc. inequality	-59.15	-86.67
Clarity	110.74	18.97

## Appendix

### A1. Summary Statistics by country

The number of observations represents the number of years when elections took place.

#### Australia

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	14	5.76	4.24	0.20	13.30
Unempl. rate at t-1	14	6.98	1.88	4.77	10.73
Econ. Growth at t-1	14	1.66	1.86	3.73	3.37
Gini index at t-1	6	0.32	0.01	0.31	0.34
Gov. fractionalization at t-1	14	0.16	0.17	0.00	0.40

#### Austria

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	11	2.91	1.12	0.90	5.40
Unempl. rate at t-1	11	3.82	0.81	2.08	5.17
Econ. Growth at t-1	11	1.73	1.44	0.30	3.67
Gini index at t-1	2	0.26	0.00	0.26	0.27
Gov. fractionalization at t-1	11	0.36	0.21	0.00	0.50

#### Belgium

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	10	3.13	2.61	0.10	7.10
Unempl. rate at t-1	10	9.77	2.49	6.83	13.51
Econ. Growth at t-1	10	1.57	2.07	3.55	4.11
Gini index at t-1	2	0.26	0.00	0.26	0.26
Gov. fractionalization at t-1	10	0.73	0.08	0.57	0.83

#### Canada

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	11	3.83	2.91	1.50	9.10
Unempl. rate at t-1	11	8.50	1.82	6.03	12.02
Econ. Growth at t-1	11	1.88	1.27	0.33	4.15
Gini index at t-1	11	0.30	0.01	0.29	0.32
Gov. fractionalization at t-1	11	0.00	0.00	0.00	0.00

#### Chile

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	6	8.52	5.73	1.10	15.40
Unempl. rate at t-1	4	8.02	1.27	6.33	9.16
Econ. Growth at t-1	6	5.60	2.70	2.27	10.28
Gini index at t-1	1	0.51	.	0.51	0.51
Gov. fractionalization at t-1	5	0.38	0.35	0.00	0.66

#### Czech Rep.

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	6	4.75	3.38	1.00	9.10
Unempl. rate at t-1	7	6.16	1.71	4.07	8.21
Econ. Growth at t-1	7	0.26	6.40	11.15	6.47
Gini index at t-1	5	0.26	0.00	0.25	0.26
Gov. fractionalization at t-1	10	0.27	0.25	0.00	0.64

#### Denmark

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	13	4.82	3.65	1.20	12.30
Unempl. rate at t-1	13	6.84	2.01	3.90	10.72

Econ. Growth at t-1	13	2.07	1.95	0.60	5.82
Gini index at t-1	9	0.23	0.01	0.22	0.25
Gov. fractionalization at t-1	13	0.46	0.19	0.00	0.75

#### Estonia

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	4	4.93	2.58	3.00	8.70
Unempl. rate at t-1	6	10.47	3.57	5.93	16.96
Econ. Growth at t-1	6	6.98	2.52	2.59	10.33
Gini index at t-1	2	0.32	0.01	0.32	0.33
Gov. fractionalization at t-1	6	0.29	0.32	0.00	0.65

#### Finland

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	9	3.70	3.26	1.10	9.60
Unempl. rate at t-1	9	8.28	3.94	3.19	16.63
Econ. Growth at t-1	9	2.66	1.35	0.06	4.75
Gini index at t-1	7	0.23	0.02	0.21	0.26
Gov. fractionalization at t-1	9	0.63	0.06	0.57	0.72

#### France

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	9	4.67	4.23	1.60	13.60
Unempl. rate at t-1	9	7.85	1.90	4.28	10.16
Econ. Growth at t-1	9	1.47	0.72	0.72	3.11
Gini index at t-1	3	0.29	0.01	0.28	0.29
Gov. fractionalization at t-1	9	0.34	0.20	0.09	0.63

### Germany

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	11	2.95	1.77	0.10	5.90
Unempl. rate at t-1	11	6.83	2.21	3.24	10.34
Econ. Growth at t-1	10	1.34	1.65	1.72	4.12
Gini index at t-1	7	0.27	0.01	0.25	0.29
Gov. fractionalization at t-1	10	0.42	0.12	0.24	0.54

### Greece

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	12	10.42	7.26	2.60	24.70
Unempl. rate at t-1	12	8.34	3.76	1.91	16.32
Econ. Growth at t-1	12	1.80	3.55	7.04	5.60
Gini index at t-1	8	0.34	0.01	0.33	0.35
Gov. fractionalization at t-1	12	0.00	0.00	0.00	0.01

### Hungary

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	7	11.90	7.39	3.60	22.50
Unempl. rate at t-1	5	8.83	2.45	5.76	12.10
Econ. Growth at t-1	5	0.91	4.58	6.62	4.17
Gini index at t-1	5	0.29	0.01	0.27	0.30
Gov. fractionalization at t-1	8	0.18	0.21	0.00	0.47

### Iceland

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	11	17.73	17.01	1.60	50.20

Unempl. rate at t-1	11	2.45	1.96	0.29	6.04
Econ. Growth at t-1	11	2.57	2.99	1.33	7.99
Gini index at t-1	2	0.29	0.01	0.29	0.30
Gov. fractionalization at t-1	11	0.53	0.10	0.41	0.68

#### Ireland

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	10	7.52	7.99	0.90	20.40
Unempl. rate at t-1	10	10.97	4.69	3.87	17.15
Econ. Growth at t-1	10	2.40	3.08	1.51	8.95
Gini index at t-1	1	0.31	.	0.31	0.31
Gov. fractionalization at t-1	10	0.21	0.17	0.00	0.54

#### Israel

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	11	34.17	52.49	1.30	146.00
Unempl. rate at t-1	5	8.14	1.68	6.09	10.28
Econ. Growth at t-1	5	1.35	2.03	2.09	3.05
Gini index at t-1	7	0.35	0.02	0.33	0.38
Gov. fractionalization at t-1	11	0.55	0.23	0.00	0.78

#### Italy

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	11	6.98	5.62	1.80	17.00
Unempl. rate at t-1	11	9.22	2.13	5.92	11.73
Econ. Growth at t-1	10	1.16	1.98	2.66	3.61
Gini index at t-1	7	0.31	0.02	0.28	0.33

Gov. fractionalization at t-1	10	0.24	0.27	0.00	0.57
-------------------------------	----	------	------	------	------

#### Japan

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	13	2.17	3.31	0.90	11.80
Unempl. rate at t-1	13	3.24	1.24	1.88	5.37
Econ. Growth at t-1	12	2.08	2.37	1.09	5.68
Gini index at t-1	8	0.32	0.01	0.30	0.33
Gov. fractionalization at t-1	12	0.12	0.15	0.00	0.47

#### South Korea

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	9	6.51	8.65	0.80	28.70
Unempl. rate at t-1	9	3.67	1.33	2.06	6.34
Econ. Growth at t-1	9	5.83	4.64	3.41	11.17
Gini index at t-1	2	0.31	0.00	0.31	0.31
Gov. fractionalization at t-1	8	0.06	0.17	0.00	0.48

#### Luxembourg

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	8	3.24	2.40	1.00	8.70
Unempl. rate at t-1	6	3.26	1.70	1.35	6.07
Econ. Growth at t-1	8	2.22	3.53	2.46	7.54
Gini index at t-1	5	0.26	0.01	0.25	0.29
Gov. fractionalization at t-1	8	0.49	0.02	0.46	0.51

#### Mexico

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	13	27.88	35.58	3.40	131.80
Unempl. rate at t-1	8	3.60	1.08	2.49	5.25
Econ. Growth at t-1	12	2.18	2.15	0.49	6.28
Gini index at t-1	9	0.49	0.02	0.45	0.52
Gov. fractionalization at t-1	12	0.03	0.06	0.00	0.18

#### Netherlands

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	14	3.39	2.34	0.70	8.80
Unempl. rate at t-1	14	5.89	2.49	2.12	10.50
Econ. Growth at t-1	14	1.04	2.35	4.17	3.93
Gini index at t-1	11	0.28	0.01	0.27	0.30
Gov. fractionalization at t-1	14	0.55	0.09	0.42	0.70

#### New Zealand

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	12	6.13	5.67	1.00	17.20
Unempl. rate at t-1	12	5.32	2.70	0.32	10.62
Econ. Growth at t-1	12	0.91	2.00	4.30	2.88
Gini index at t-1	8	0.32	0.02	0.28	0.34
Gov. fractionalization at t-1	12	0.11	0.17	0.00	0.42

#### Norway

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	10	4.47	3.65	0.50	10.90
Unempl. rate at t-1	10	3.45	1.36	1.68	6.01

Econ. Growth at t-1	10	2.81	2.35	1.25	5.59
Gini index at t-1	6	0.25	0.02	0.23	0.28
Gov. fractionalization at t-1	10	0.33	0.21	0.00	0.57

#### Poland

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	7	93.00	210.00	1.30	567.90
Unempl. rate at t-1	7	12.96	4.09	6.47	18.97
Econ. Growth at t-1	6	4.57	1.68	2.34	6.31
Gini index at t-1	3	0.32	0.02	0.31	0.35
Gov. fractionalization at t-1	10	0.35	0.27	0.00	0.78

#### Portugal

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	13	11.77	9.30	1.40	28.40
Unempl. rate at t-1	13	7.01	1.99	4.04	10.85
Econ. Growth at t-1	12	1.96	2.13	2.21	4.74
Gini index at t-1	3	0.36	0.02	0.34	0.38
Gov. fractionalization at t-1	12	0.06	0.15	0.00	0.49

#### Slovakia

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	6	7.48	8.03	1.60	23.30
Unempl. rate at t-1	5	14.59	3.15	11.88	19.30
Econ. Growth at t-1	6	2.45	4.05	5.14	6.56
Gini index at t-1	2	0.27	0.01	0.26	0.28
Gov. fractionalization at t-1	6	0.58	0.19	0.28	0.74

### Slovenia

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	6	24.25	44.54	1.80	114.80
Unempl. rate at t-1	4	6.47	1.16	4.82	7.32
Econ. Growth at t-1	4	3.85	2.45	0.90	6.38
Gini index at t-1	2	0.24	0.00	0.24	0.25
Gov. fractionalization at t-1	6	0.48	0.24	0.00	0.63

### Spain

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	11	7.82	6.50	1.80	19.80
Unempl. rate at t-1	11	14.89	6.28	4.60	22.96
Econ. Growth at t-1	11	1.68	1.76	0.74	4.86
Gini index at t-1	2	0.32	0.02	0.31	0.34
Gov. fractionalization at t-1	10	0.02	0.08	0.00	0.25

### Sweden

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	11	5.66	4.56	0.50	12.10
Unempl. rate at t-1	11	5.03	3.29	1.62	10.19
Econ. Growth at t-1	10	0.68	2.99	5.83	4.13
Gini index at t-1	11	0.22	0.02	0.20	0.27
Gov. fractionalization at t-1	11	0.30	0.25	0.00	0.69

### UK

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	8	4.33	3.26	0.80	8.60

Unempl. rate at t-1	8	7.62	2.34	4.71	10.78
Econ. Growth at t-1	8	1.48	3.44	5.78	4.00
Gini index at t-1	8	0.33	0.03	0.28	0.35
Gov. fractionalization at t-1	8	0.00	0.00	0.00	0.00

## USA

Variable	Obs	Mean	Std. Dev.	Min	Max
Inflation at t-1	19	4.27	2.98	0.40	11.30
Unempl. rate at t-1	19	6.55	1.65	4.22	9.61
Econ. Growth at t-1	18	1.69	1.90	3.66	3.69
Gini index at t-1	16	0.35	0.02	0.31	0.38
Gov. fractionalization at t-1	18	0.00	0.00	0.00	0.00

## A2. Correlation Matrix by country

### Australia

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.4754	1		
Econ growth	0.5627	0.679	1	
Gini Level	0.2848	0.773	0.7826	1

### Austria

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.5558	1		

Econ growth	0.5768	0.1343	1	
Gini Level	0.8111	0.0627	0.3525	1

#### Belgium

		inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1				
Unemp. rate	0.4169	1			
Econ growth	0.4861	0.1351	1		
Gini Level	0.1922	0.3726	0.4449	1	

#### Canada

		inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1				
Unemp. rate	0.0577	1			
Econ growth	0.126	0.1182	1		
Gini Level	0.5186	0.5356	0.0246	1	

#### Chile

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.5323	1		
Econ growth	0.2399	0.8806	1	
Gini Level	0.2902	0.3323	0.5322	1

Czech Rep.

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.6678	1		
Econ growth	0.2025	0.1152	1	
Gini Level	0.7641	0.6625	0.271	1

Denmark

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.0154	1		
Econ growth	0.0339	0.009	1	
Gini Level	0.1907	0.4688	0.3633	1

Estonia

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.7063	1		
Econ growth	0.2732	0.4579	1	
Gini Level	0.1425	0.1345	0.6068	1

Finland

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.6579	1		

Econ growth	0.0163	0.0402	1	
Gini Level	0.515	0.1024	0.0639	1

#### France

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.6656	1		
Econ growth	0.0502	0.3095	1	
Gini Level	0.1502	0.3797	0.3671	1

#### Germany

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.2418	1		
Econ growth	0.1338	0.3019	1	
Gini Level	0.0854	0.5795	0.2221	1

#### Greece

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.5854	1		
Econ growth	0.2731	0.0935	1	
Gini Level	0.3567	0.3096	0.1549	1

#### Hungary

---

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.7432	1		
Econ growth	0.2734	0.6314	1	
Gini Level	0.1829	0.1227	0.5272	1

#### Iceland

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.2517	1		
Econ growth	0.6762	0.8621	1	
Gini Level	0.4482	0.7371	0.3001	1

#### Ireland

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.9563	1		
Econ growth	0.6871	0.8447	1	
Gini Level	0.8517	0.695	0.2418	1

#### Israel

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.4308	1		
Econ growth	0.1976	0.4059	1	

Gini Level	0.6515	0.0226	0.2152	1
------------	--------	--------	--------	---

#### Italy

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.5101	1		
Econ growth	0.4651	0.5851	1	
Gini Level	0.7909	0.4464	0.3148	1

#### Japan

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.8029	1		
Econ growth	0.4367	0.5471	1	
Gini Level	0.507	0.7347	0.6797	1

#### South Korea

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.2016	1		
Econ growth	0.1936	0.5435	1	
Gini Level	0.0847	0.8293	0.5078	1

#### Luxembourg

	inflation	Unemp.	Econ	Gini Level
--	-----------	--------	------	------------

	rate	Rate	growth	
Inflation rate	1			
Unemp. rate	0.4143	1		
Econ growth	0.0751	0.4812	1	
Gini Level	0.6482	0.0216	0.0715	1

#### Mexico

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.0468	1		
Econ growth	0.3032	0.0253	1	
Gini Level	0.4407	0.4665	0.3035	1

#### Netherlands

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.3672	1		
Econ growth	0.1828	0.1731	1	
Gini Level	0.8718	0.1123	0.302	1

#### New Zealand

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.3123	1		
Econ growth	0.3226	0.494	1	

Gini Level	0.6522	0.1934	0.0565	1
------------	--------	--------	--------	---

#### Poland

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.7313	1		
Econ growth	0.449	0.1082	1	
Gini Level	0.6298	0.9169	0.3063	1

#### Portugal

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.6483	1		
Econ growth	0.7487	0.0647	1	
Gini Level	0.7851	0.7768	0.4567	1

#### Slovakia

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.4121	1		
Econ growth	0.5056	0.0284	1	
Gini Level	0.3675	0.6506	0.3616	1

#### Slovenia

	inflation	Unemp.	Econ	Gini Level
--	-----------	--------	------	------------

	rate	Rate	growth	
Inflation rate	1			
Unemp. rate	0.7653	1		
Econ growth	0.5879	0.2189	1	
Gini Level	0.944	0.8055	0.5888	1

### Spain

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.7464	1		
Econ growth	0.7998	0.7618	1	
Gini Level	0.6656	0.9135	0.6179	1

### Sweden

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.7875	1		
Econ growth	0.2599	0.1072	1	
Gini Level	0.689	0.5455	0.0246	1

### UK

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.0828	1		
Econ growth	0.2718	0.1254	1	

Gini Level	0.8013	0.0216	0.0475	1
------------	--------	--------	--------	---

USA

	inflation rate	Unemp. Rate	Econ growth	Gini Level
Inflation rate	1			
Unemp. rate	0.1382	1		
Econ growth	0.1871	0.3077	1	
Gini Level	0.7446	0.3224	0.0601	1