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Punishing without Rewards?

A Comprehensive Examination of the Asymmetry in Economic Voting

Abstract

It has been controversial whether incumbents are punished more for a bad economy than they are

rewarded for a good economy due to mixed results from previous studies on one or handful

number of countries. This paper makes an empirical contribution to this lingering question by

conducting extensive tests on whether this asymmetry hypothesis is a cross-nationally

generalizable phenomenon using all currently available modules of the Comparative Study of

Electoral Systems survey from 122 elections in 42 representative democracies between 1996 and

2016, as well as macro-economic indicators and individual-level economic perception. In

general, this paper finds little support for the asymmetry hypothesis; although the evidence of

such asymmetric economic voting is found in some subpopulations using certain economic

indicators, these conditional effects are largely inconsistent, suggesting that it is still safe to

assume a linear relationship between economic conditions and support for the incumbent.[1]

Keywords: Economic voting; grievance asymmetry; negativity effect; economic perception

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Previous literature on economic voting suggests that voters tend to punish an incumbent when the economy is bad more than they reward him or her when the economy is good, an expectation I refer to as the "the asymmetry hypothesis" or "asymmetric economic voting" (Bloom & Price 1975; Claggett 1986; Nannestad & Paldam 1997). This phenomenon is also known as a "grievance asymmetry" or "negativity effect" (Lau 1985; Nannestad & Paldam 1997). However, some studies do not find support for this phenomenon (Kiewiet 1983; Lewis-Beck 1988). Thus, the evidence for the asymmetry hypothesis in economic voting is still inconclusive (Lewis-Beck & Stegmaier 2013).[2]

Given that past studies find evidence of this asymmetry in some countries at some points in time using certain economic indicators, but not in other contexts, the generalizability of asymmetric economic voting remains an unanswered question, and most of existing voting models continue to assume a linear effect of economic conditions on support for the incumbent. However, if the asymmetry hypothesis holds and the relationship between economic conditions and support for the incumbent is non-linear, several important theoretical implications manifest. First, as economic conditions fluctuate, the incumbent loses more support in every downturn than he accrues in each upturn, which suggests that economic stability is the key to maintaining office. In addition, since the incumbent is more likely to lose than to gain support by managing the economy, there is a cost of ruling which explains turnover in government (Nannestad and

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[2] Similar inconsistency is found in the literature studying the effect of economy on the popularity of or the attitude toward the government or the incumbent: The asymmetric pattern is found in Berlemann, Enkelmann, and Kuhlenkasper (2015) and Mueller (1970) while it is not observed in Campbell et al. (1960), Enkelmann (2014), Headrick & Lanoue (1991) and Hibbs (1974).

Paldam 1997, 92-94). Because of both the lack of empirical clarity concerning and the potential implications of asymmetric economic voting, it is important to assess the generalizability of the asymmetry hypothesis. This paper makes an empirical contribution by testing the asymmetry hypothesis with the largest cross-national data set we have come to study the asymmetry so far and with various macro- and micro-level economic indicators with multiple thresholds, and by investigating the contexts and constituencies in which the pattern is most likely to emerge.

There are many potential reasons why extant studies have yielded mixed results. For example, inconclusiveness may be a consequence of case selection; some countries or elections may be more susceptible to the asymmetry hypothesis than others. This problem can be addressed in two ways. First, we can include a broad cross-section of countries and examine whether such asymmetry persists as a general trend across representative democracies. The second is to consider contextual- and individual-level variables that may condition the asymmetric pattern, such as whether asymmetric economic voting is more likely to manifest across different systems of government or among individuals who are co-partisans of the governing coalition.

Mixed results for the asymmetry hypothesis may also stem from differences in the level of observation selected for analysis. Whereas some studies employ aggregate-level data using objective economic indicators, others utilize individual-level data using survey respondents' subjective economic evaluations. For example, in the U.S. elections, aggregate-level studies by Bloom and Price (1975) and Claggett (1986) find evidence for asymmetric economic voting, but Kiewiet (1983) using the individual-level American National Election Studies does not. Still, the results are not conclusive among individual-level analyses: Nannestad and Paldam (1997) find support for the asymmetry in Danish election surveys while Kiewiet (1983) in the American

context and Lewis-Beck (1988) in a cross-national European sample does not.

Both of these potential explanations for ambiguous results are intertwined and should be addressed simultaneously. In order to address the issue of case selection, this paper utilizes Modules 1, 2, 3, and 4 of the Comparative Study of Electoral Systems (CSES) covering 122 elections in 42 countries from 1996 to 2016, to test whether the asymmetry hypothesis holds across democracies cross-nationally. Additionally, it investigates whether the magnitude of asymmetric economic voting varies across certain contextual- or individual-level conditions. The contextual-level conditions that are analyzed include the level of economic development, the maturity of the democratic regime, the system of government, and the partisan composition of the government. Further, individual-level affiliation with the incumbent's party is considered as an individual-level moderator. To address the issue of case selection, this paper models asymmetric economic voting with three different macroeconomic indicators and individual voters' perceptions of economic conditions. Additionally, the paper utilizes multiple thresholds of good and bad economic conditions to check the robustness of the findings.

In summary, this paper makes three novel empirical contributions to the economic voting literature: 1) it analyzes the phenomenon across the largest number of countries tested so far using various indicators for economic conditions and thresholds to delineate positive and negative economic conditions, 2) it explores how several contextual- and individual-level variables moderate voters' asymmetric responses to economic conditions, and 3) it finds no systematic evidence in support of the asymmetry hypothesis.

1. Theoretical background

The negativity effect refers to a psychological phenomenon concerning how people tend to weigh negative information more heavily than positive information in various information-processing tasks (Aragones 1997, 189). In political science, this negative effect is found in studies on turnout and voting (Aragones 1997; Kernell 1977), attitude formation toward electoral candidates in U.S. elections (Holbrook et al. 2001; Lau 1982, 1985), support for the government and government officials (Berlemann, Enkelmann, and Kuhlenkasper 2015; Mueller 1970), electoral campaigns (Fridkin and Kenney 2004), and news coverage and public opinion (Soroka 2006). When applied to economic voting, the negativity effect, which I refer to as the asymmetry hypothesis, suggests that voters tend to punish the incumbent for a bad economy at a greater extent than they reward him or her for a good economy (Hypothesis 1).

Scholars have suggested largely three possible reasons for this asymmetric effect.[3] First, psychologists argue that it is a general phenomenon of human behavior that negative stimuli are perceived to be non-normative, more salient, more easily remembered, and weighed more heavily when making judgments (Fiske 1980; Kanouse & Hanson 1972; Kanouse 1984). Second, loss-aversion in behavioral economics implies that people tend to suffer losses more intensely than they enjoy equivalent gains (Kahneman and Tversky 1979). Third, the predominance of negative news, which may be a result of the relative salience of the negativity that psychologists suggest or the institutional function of the mass media as a watchdog, is another potential factor

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[3] See Kanouse and Hanson (1972), Kanouse (1984), and Lau (1985) for more discussion.

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amplifying the asymmetric electoral behavior (Soroka 2006). These mechanisms are not necessarily competing but may work simultaneously (Lau 1985).

These theories, however, are not particularly useful to predict the contexts in which asymmetric economic voting manifests. However, past studies on heterogeneity in economic voting show that the prevalence of economic voting behavior is conditioned by the political and economic contexts surrounding a given election in a given country. I draw on several lines of extant research to generate hypotheses on moderating effects of political and economic contexts on economic voting. In essence, I expect that in systems where economic voting, with the symmetric effect of economic conditions assumed, is found to be stronger the asymmetry is more likely to be pronounced if it is the true nature of the relationship between the economy and voting for the incumbent.

First, Powell and Whitten (1993) suggest that incumbents are more likely to be rewarded or punished based on their economic performance in systems with greater "clarity of responsibility." The authors measure the clarity of responsibility, which describes the extent to which the government controls the economy, by aggregating five variables: lack of voting cohesion of a major governing party or parties, an opposition committee chair, significant bicameral opposition, a minority government, and the number of government parties. Analyzing 102 elections in 19 industrialized democracies, they find evidence of economic voting in countries with a high level of clarity of responsibility but not in those with a low level of clarity of responsibility. Subsequent research reaffirms the moderating effect of the clarity of responsibility on economic voting (Akarca & Tansel 2007; Anderson 1995; Duch & Stevenson 2008; Hobolt et al. 2011; Nadeau et al. 2002; Palmer & Whitten 2003; Tilley et al. 2008; Tillman 2008; van der Brug et al. 2007; Whitten & Palmer 1999). Thus, I expect that asymmetric

economic voting will be strongest in a single party majority government and weakest in a multi-party minority government such that the order of strength will be as follows: single party majority > single-party minority or multi-party majority > multi-party minority (Hypothesis 2).[4]

Second, apart from the clarity of responsibility, students of economic voting have also investigated institutional variations across and within democratic regimes. First, Hellwig and Samuels (2007a) compare economic voting patterns among pure and semi-presidential systems and parliamentary systems, arguing that, while the clarity of responsibility of a political system accounts for voters' ability to assign responsibility for economic conditions, the extent to which voters can act on their judgment is substantially restricted by constitutional design. For example, while executives are directly elected in presidential or semi-presidential systems, in a parliamentary system, executives are selected and held accountable by members of parliament, not voters, such that voters cannot hold executives in parliamentary systems accountable directly even though the attribution of responsibility is clear. Their findings suggest that electoral accountability for the economy is stronger in separation-of-power systems than in parliamentary systems. Thus, I expect that asymmetric economic voting will be stronger in presidential systems than in parliamentary systems (Hypothesis 3).

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[4] For the modules 1, 2 and 3, I constructed a clarity of responsibility measure following the original coding rule by Powell and Whitten (1993). However, neither the combined measurement as in their work nor each of the five variables individually have a moderating effect with the expected sign except for the single party government indicator and its interaction with the majority status of the government. Thus, the choice of the clarity of responsibility measurement I employ among the five is empirically motivated.

Third, scholars have also studied the heterogeneity across economic contexts. One line of research argues that voters in less developed countries place a stronger weight on economic conditions when making voting decisions. Brender and Drazen (2008) find that the positive relationship between GDP growth and the incumbent's probability of reelection is observed only in developing countries and new democracies, but not in developed countries except for the United States. Singer (2011a) further shows that the economy is a more salient consideration for voters than other issue dimensions, especially under economic recession, volatility, or underdevelopment. Therefore, I expect that the asymmetric effect of economic voting is stronger in developing countries than in developed countries (Hypothesis 4).

Next, I consider how the maturity of a democratic regime conditions the asymmetric effects of economic voting. Through the lens of the clarity of responsibility hypothesis, economic voting should be stronger in established democracies than new democracies since voters of the former may have better information about and more trust in the government, which tend to increase economic voting (Duch 2001). In addition, the unstable party systems in new democracies may hinder voters' ability to hold the incumbent party responsible for the economy (Gelineau 2007). On the other hand, however, because new democracies tend to be developing countries which tend to display stronger patterns of economic voting, as discussed earlier, economic performance may be a more important determinant of vote choice in new democracies. With this complication in mind, I expect that asymmetric economic voting will be stronger in established democracies than new ones (Hypothesis 5).

Another stream of research on the heterogeneity in economic voting considers individual-level factors such as partisanship (Kayser & Wlezien 2011), income (Palmer & Whitten 2011), assets (Lewis-Beck & Nadeau 2011), employment status (Grafstein 2005; Hellwig 2001; Jordahl

2006), and sophistication (Hobolt et al. 2013; Gomez & Wilson 2001, 2003, 2006). Among these, partisanship is the most important factor given its endogenous relationship to voters' assessment of economic conditions as well as its moderating effect.

Studies have suggested that the relationship between voters' economic perceptions and vote choices is endogenous; voters' subjective economic assessments are in the middle of the causal path from an objective economic condition to their vote choices, and their assessments are largely biased by their partisan preferences (Anderseon et al. 2004; Evans & Pickup 2010; Johnston et al. 2005; Wilcox and Wlezien 1996; Wlezien, Franklin, and Twiggs 1997; Tilley & Hobolt 2011). However, other works that account for this endogeneity still recover a causal effect of economic perceptions on voting (Hansford & Gomez 2015; Lewis-Beck et al. 2008; Tilley et al. 2008).

Building upon the existing findings of partisan bias in economic perceptions, whereby in-partisans perceive the economy more positively than out-partisans, I argue that out-partisans punish the incumbent more strongly than in-partisans when the economy is weak, but that in-partisans confer greater rewards on the incumbent than out-partisans when the economy is strong. . Thus, I expect to find stronger evidence of asymmetric economic voting among out-partisans than among in-partisans (Hypothesis 6). Further, consistent with Kayser and Wlezien (2011), I expect that independents free from partisan bias display symmetry in their economic voting behavior, such that the rewards and punishments they offer the incumbent for good and poor economic performance are of similar magnitude.

2. Data

This study utilizes all currently available modules of the Comparative Study of Electoral Systems survey: Modules 1, 2, 3 and 4. For a fair comparison across electoral cases, it includes only the most important elections as defined by Tucker (2006) - presidential elections in presidential and semi-presidential systems in which the president is endowed with more power, and parliamentary elections in parliamentary and semi-parliamentary systems in which more power is given to the parliament – because economic voting may not function in the same way in elections of varying importance (see Appendix A for further explanations on the case selection). With this case selection criterion, the data includes 122 elections in 42 countries from 1996 to 2016 with 145,798 respondents. It is important to note that the data is cross-sectional, as opposed to panel, in nature, so that the set of respondents interviewed in each election study varies.[5]

Vote Choice (Dependent Variable)

The dependent variable is the binary vote choice of individual respondents: 1 if a respondent voted for the incumbent chief executive, a candidate of his or her party, or the party itself, and 0 otherwise. If the incumbent chief executive's party was part of a coalition, only the votes cast for the candidate of his or her party or the party itself were coded as 1. The party of the incumbent

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[5] Nannestad and Paldam (1997, 87) in their study of a grievance asymmetry argue that this very concept has to be analyzed on individual-level data with a time-series feature rather than cross-sectional data because the latter does not have good or bad economic conditions to be compared with for each polity. However, in order to test whether the asymmetry is a general phenomenon found in most of the representative democracies and to find context-level conditional effects that vary across elections, it is inevitable to choose cross-sectional data.

chief executive was determined based on the EXECME variable in the Database of Political

Institutions (DPI) 2015. For the cases unavailable in the dataset, I followed the DPI's coding

rule. Throughout the paper, I refer to this variable voting for the incumbent.[6]

Macro-economic indicator

To measure economic conditions, I use the annual GDP growth rate, inflation rate and

unemployment rate.[7] Following the practice by Hellwig and Samuels (2007b), I use these

indicators measured in the year before the election $(t - 1)$ for the elections held in the first six

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[6] In order to address coalition governments, I constructed another vote choice variable that takes

1 if a respondent voted for the incumbent chief executive, a candidate of his or her party, his or

her party itself, candidates of any of the government parties, or any of the government parties as

defined in the DPI dataset, and 0 otherwise. Following the suggestion of the DPI coding rule, for

pure presidential systems only the votes cast for the incumbent, a candidate of his or her party, or

the party itself was coded as 1. Using this as a dependent variable, the major findings are

consistent with those presented in this paper: no evidence of asymmetric economic voting is

found using any of the four economic variables.

[7] Although the third and fourth modules of the CSES data include these macroeconomic

indicators collected from the World Bank, each module varies in the baseline year used to

compute GDP growth rate and inflation rate because the World Bank updates these measures

annually using a new baseline year. Thus, to have consistent measures across modules, I

retrieved the data for all of the cases covered in this analysis in September 2017 from the World

Bank. For the cases with missing values in unemployment rate, I searched and filled them

independently.

months of a calendar year and use the data from the election year for those held in the latter half of the year. For example, the economic performance measured in $t - 1$ may not reflect the current state of the economy voters who vote in an election held in November. This operationalization of the economic indicators ensures that the economic conditions as described in the data accurately reflect those present in the run-up to the election.

In the literature on asymmetric economic voting, there are two traditions in setting the thresholds that are used to determine whether economic conditions are "good" or "bad": economic conditions at the time of the incumbent's inauguration (Mueller 1970) and economic conditions in the year prior to the election (Bloom & Price 1975, Stanig 2013).[8] I use the latter for the following reasons.

First, given that the dataset includes various types of elections in many countries, the time which elapses between elections varies widely across countriesThus, Mueller's approach is inappropriate for the current study.

Second, the assumption that voters vote on current economic conditions compared to those in the previous year(s) is based on Jordan (1965)'s psychological approach: Voters sense that the economy is bad (good) when it is worse (better) as compared to their experience in the prior year rather than comparing it to a fixed baseline. The strength of this approach is that the baseline is less arbitrary. Therefore, I set the baseline as the economic performance in the second

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[8] See Nannestad and Paldam (1997) for more discussion. Also note that Mueller (1970) tests the effect of economic conditions on the incumbent's approval rate and Stanig (2013) on economic perceptions, not on voting for the incumbent.

year preceding the election year ($t - 2$) for the elections held in the first half of the year and the year before the election year ($t - 1$) for those held in the latter half. When the baseline GDP growth rate is lower (higher) than the election-proximate growth rate, or the inflation or unemployment rates are higher (lower) than the election-proximate rates, then the election-proximate economy is deemed to be "good" ("bad").

Economic Perception

Individual respondents' subjective evaluations of economic conditions are also used to test the asymmetry hypothesis. The variable used to measure these subjective evaluations is included only in Modules 1 and 4. The wording of the relevant survey question is as follows: "Would you say that over the past twelve months, the state of the economy in [country] has gotten better, stayed about the same, or gotten worse?" Thus, the variable is measured on a 3-point scale: 3 for the responses saying "gotten better", 2 for "stayed the same" and 1 for "gotten worse."

Control Variables

Individual-level controls include a set of demographic variables typically used to study voting behavior: a binary variable for respondents' partisan affiliation with the party of the incumbent chief executive, household income on a 5-point scale as originally coded in the CSES dataset (e.g. 5 for the top quintile and 1 for the bottom quintile), the level of education attainment on an 8-point scale, age on a 5-point scale (1 for below 30 and 5 for 60 or above), and a binary indicator for gender (1 for female and 0 for male).

In a comparative analysis including multiple countries with the vote for the incumbent party as a dependent variable, it is not clear how these demographic features are related to voting for the incumbent party in each electoral context. Thus, it will be ideal to allow coefficients for

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each of these variables to vary across elections. However, fitting a multi-level model with a random slope for one of these demographic variables took indefinite time for this large dataset.[9] As a solution, I fit a logit model of voting for the incumbent on these five demographic variables for each election and found that income and education have relatively heterogeneous effects while the age group indicators and the female variable did not.[10] Thus, I create a three-labeled categorical variable indicating elections in which income had a positive, negative, or null effect, and do the same for education. Then, in the final model of the analysis, I interact each of the income and education variables with its corresponding indicator of the directions of effect. This allows the model to avoid blindly assuming all demographic variables to have the same effect on voting for the incumbent across different electoral contexts.

I also include five context-level variables. First, the vote share of the incumbent or of his or her party in the previous election is included as a control variable to account for variations in the dependent variable. The following four variables capture any election-level variations that may potentially moderate the strength and pattern of economic voting as suggested in previous

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[9] Both Stata and R failed to fit the model over a week. Even if it was successfully fit after a few more days, it is infeasible and inefficient to fit all the models presented in this paper with random slopes for each of the demographic variables.

[10] Among the statistically significant coefficients, income had positive coefficients in 39 elections and negative in 22. The split for education was 29 vs. 35. It was 18 vs. 0 for the age group below 30; 23 vs. 3 for those in 30s; 27 vs. 6 for those in 40s; 30 vs. 13 for those in 50s; 31 vs. 17 for those 60 or older. It was 40 vs. 7 for the female indicator. I present coefficient plots for income, education and female variables in the Appendix C.

literature: 1) a developing country indicator coded as 1 if a country is not classified as a high-income country by the World Bank based on its GNI per capita in the election year, and 0 for a high-income country; 2) the level of democratic stability coded as 1 for countries in which democracy has been maintained for over 30 years and 0 otherwise based on the DEMOC and DURABLE variables in Polity IV data set; 3) the system type coded as 1 for presidential or semi-presidential systems and 0 for parliamentary or semi-parliamentary systems based on the 'lpol_sys' variable in the Comparative Political Data Set III which followed the categorization by Lijphart (1999); 4) the government type coded as 2 for a single-party majority government, 1 for a single-party minority government or a multiparty majority government, and 0 for a multiparty minority government.[11] These variables are mainly used to test their moderating effects.

3. Model

Given the three-level hierarchical structure of the data, it is reasonable to take a multilevel approach by including random effects for countries and elections respectively.[12] However,

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[11] To identify single-party governments, the gov_type variable of the CPDS III is used. However, note that all presidential systems are coded as having a single-party government.

[12] Previous literature using the CSES data has also used a multilevel modeling approach by adding election random effects (DeVries & Giger (2014) and Singer (2011b). Note that they only used the Module 2 of the CSES data so that each country had only one election, which allowed their data structure to be two-level instead of three.

studies on multilevel models argue that for estimates of such models to be unbiased, the number

of groups within each level should be at least 30 for logit models (Bryan and Jenkins 2015, p.19).

[13] Using Monte Carlo simulation, scholars find that if the number of groups is small, the

coefficients of fixed effects are unbiased but group effects and standard errors of both group

effects and fixed effects are biased downwards (Bell et al. 2014; Bryan and Jenkins 2015; Mass

and Hox 2004, 2005; Stegmueller 2013). In my data, there are enough number of countries to

include country-level random effects, but the number of elections per country is too small

varying from one to four elections to identify election-level variance components within a

country. Therefore, it is undesirable to include random effects for both levels with the election-

level variance nested within the country-level.

However, clustered variance should be accounted for at both levels. Thus, I choose to

include random effects for one level and fixed effects for the other. According to Bryan and

Jenkins (2016) and Schmidt-Catran and Fairbrother (2016), one should include random effects

for all the levels at which other independent variables are measured. Since the key independent

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[13] Bryan and Jenkins (2015, 7) also state that most multilevel modeling textbooks recommend

"anywhere between 10 and 50 groups as a minimum" as a rule of thumb depending on research

design. The authors suggest that Bayesian multilevel modeling performs better for the data with

small number of groups. Austin (2010) after comparing various multilevel estimation software

and packages provides evidence for the claim but concludes that any statistical procedures tend

to poorly estimate variance components when there were only five observations per cluster.

variables beyond micro-level features are measured at the election-level, not at the country-level, I include election random effects and country fixed effects instead of the other way around.[14]

Below presents the basic multilevel logit model using any of the three macro-economic indicators without conditional effects taken into account:

$$logit\left\{P_{ij}\left(Vote\ for\ the\ incumbent\right) = 1|\ \cdot\right\}$$

$$= \beta_0 + \beta_E * Econ_j + \beta_G * GOOD_j + \beta_I * Econ_j * GOOD_j + \sum_{m=1}^{m} \beta_m * X_{ij}$$

$$+ \sum_{n=m+1}^{m+n} \beta_n * Z_j + \sum_{k=m+n+1}^{m+n+k-1} \beta_k * Country_k + \eta_j + \varepsilon_{ij}$$

$$with\ \ \eta_j \sim N\left(0, \sigma_\eta^2\right)\ and\ \ \varepsilon_{ij} \sim N(0, \sigma_\varepsilon^2)$$

Here, for individual i in election j of country k, X_{ij} is the vector of individual level control variables, Z_j is a vector of election-level variables, $Country_k$ is the country indicator, η_j is the election random effects, and ε_{ij} is the individual level error term. If asymmetric economic voting exists, the coefficient on the interaction term between macro-economic indicator (*Econ*) and the good economy indicator (*Good*), β_I, is expected to be negative and significant, and the marginal effect of *Econ* when the economy is good (*Good*=1) should be significantly smaller than that under a bad economy (*Good*=0). In this test of the difference in marginal effects of the

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[14] Stanig (2013), in his study of partisan bias in economic perceptions using a mixture of CSES Module 1 and European Social Survey data, employed election fixed effects and country random intercepts. However, because including election fixed effects will consume more degrees of freedom than including country fixed effects, I use the opposite combination.

two situations, the null hypothesis assumes no difference between the two suggesting a symmetry.

Below is the model using individual voter's perception of the economy instead of any of the macro-economic indicators. The perception variable is included as a factor variable with "about the same" response as a baseline category. For asymmetric economic voting to exist, the coefficient on "got worse" responses, β_W, should be negative and significant, and its absolute size should be significantly greater than that on "got better" responses, β_B, such that $\beta_W + \beta_B < 0$.

$$logit\left\{P_{ij}\left(Vote\ for\ the\ incumbent\right) = 1|\ \cdot\right\}$$

$$= \beta_0 + \beta_W * Worse_{ij} + \beta_B * Better_{ij} + \sum_{m=1}^{m} \beta_m * X_{ij} + \sum_{n=m+1}^{m+n} \beta_n * Z_j$$

$$+ \sum_{k=m+n+1}^{m+n+k-1} \beta_k * Country_k + \eta_j + \varepsilon_{ij}$$

4. Results

This section is composed of two parts. First, I present results using macroeconomic indicators in the following order: main results, robustness checks, and the analysis of conditional effects of context- and individual-level covariates on the asymmetric economic voting pattern. Second, I convey results using individual voters' economic perceptions.

4.1. Analysis Using Macroeconomic Indicators

4.1.1. Main Results

The first two models in Table 1 presents results using GDP growth rate as a main predictor, with voting for the incumbent as a dependent variable. Each model includes election random effects and country fixed effects.

Before testing the asymmetry hypothesis, it is necessary to check whether economic voting exists. Thus, the first model tests the classic economic voting hypothesis. The coefficients on GDP growth rate is positive and highly significant when controlling for individual-level variables and the vote share of the incumbent from the previous election, which confirms that economic voting exists.[15]

The individual-level control variables include education attainment and income interacted with their corresponding indicators for the direction of effects, respectively, and age groups and female indicators in single terms. Note that four age-group indicators are omitted from the table due to limited space. With voters in their 20s as the baseline group, only those in their 30s have a coefficient significant at .05 level, and its sign is positive. Interestingly, females are significantly more likely to vote for the incumbent than for the challenger. A possibly relevant explanation can be the risk attitudes, introduced by Bowler and Donovan (1998), such that females might be more risk-avoidant preferring what they are already familiar with than males.

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[15] Simpler versions of the Models 1 and 2 only with the economic variables and party affiliation are presented in the appendix.

Table 1. Models Using the GDP Growth Rate or Economic Perceptions

Variables	Model 1	Model 2	Model 3	Model 4
Growth	.069***	.028		
	(.021)	(.026)		
Good Econ		-.259		
		(.216)		
Good Econ*		.113**		
Growth		(.048)		
Economic Perception			.493***	
			(.019)	
Negative Perception				-.516***
				(.034)
Positive Perception				.472***
				(.031)
Party ID	3.720***	3.720***	3.747***	3.747***
	(.025)	(.025)	(.039)	(.039)
Income	.011	.011	.021	.021
	(.008)	(.008)	(.013)	(.013)
IncomePositive	-.478***	-.443***	-1.326***	-1.329***
	(.152)	(.152)	(.211)	(.211)
IncomeNegative	.880***	.872***	-1.419***	-1.418***
	(.170)	(.166)	(.265)	(.265)
Income*	.167***	.167***	.135***	.136***
IncomePositive	(.015)	(.015)	(.022)	(.022)
Income*	-.211***	-.210***	-.280***	-.280***
IncomeNegative	(.015)	(.015)	(.024)	(.024)
Educ	-.034***	-.034***	-.029***	-.028***
	(.007)	(.007)	(.011)	(.011)
EducPositive	-1.465***	-1.377***	-1.047***	-1.041***
	(.221)	(.219)	(.221)	(.221)
EducNegative	.612***	.608***	.603***	.605***
	(.137)	(.136)	(.142)	(.142)
Educ*	.226***	.225***	.155***	.155***
EducPositive	(.021)	(.021)	(.026)	(.026)
Educ*	-.132***	-.132***	-.139***	-.139***
EducNegative	(.010)	(.010)	(.016)	(.016)
Female	.101***	.101***	.149***	.148***
	(.016)	(.016)	(.025)	(.025)
Vote share	-.005	-.005	-.017*	-.017*
	(.008)	(.008)	(.010)	(.010)
Country Indicators	Yes	Yes	Yes	Yes
Constant	-2.564***	-2.714***	-2.751***	-1.758***
	(.569)	(.559)	(.518)	(.518)
Election-level variance	.431	.419	.193	.193
	(.029)	(.029)	(.024)	(.024)
Observations	115,507	115,507	48,101	48,101
N. of elections	120	120	50	50

The dependent variable is the individual vote choice for the incumbent candidate or party.
Four age group indicators are omitted due to limited space.
† The German election in 2002 is divided into two survey data and counted twice.
Standard errors are in parentheses. *** $p<0.01$, ** $p<0.05$, *$p<0.1$

The previous vote share of the incumbent may be related to an individual voter's probability to vote for the incumbent. However, two different theoretical explanations are possible. Since the incumbent party won the last election, it is reasonable to expect that the probability of a random voter in the country voting for the incumbent is relatively high so that a positive correlation is expected. On the other hand, when there is a wax, there follows a wane such that previous victory may be negatively related to the probability of winning the following election, which is similar to the concept of "regression to the mean" in statistics.[16] Reflecting these opposing expectations, the vote share from the previous election is not statistically significant.

In addition, I further tested if the effect of the GDP growth rate varies depending on the stage of economic development, the maturity of a democratic regime, the system type, and the government type by adding a two-way interaction term for each of these four contextual variables at a time to the third model. However, none of these interaction terms were statistically significant suggesting that despite the large variation across contexts in the dataset on these dimensions, I can assume that a one percentage change in the GDP growth rate has a similar electoral impact across the cases considered here. In addition, this result holds when using inflation rate or unemployment rate in place of the GDP growth rate.

The second model examines the asymmetry hypothesis by including an interaction between the GDP growth rate and a binary indicator for a good economy. In order to test the hypothesis, I first check if the interaction term is negative and statistically significant. Then, I see

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[16] Also see Fiorina and Shepsle (1989) studying this pattern using a formal model followed by empirical tests.

if the marginal effect of economic growth on the probability of voting for the incumbent is positive, significant, and larger in a bad economy than it is in a good economy while holding all other factors at their means. Then, I conduct a chi-squared test to examine if the difference in the marginal effect of a bad economy and that of a good economy is statistically different from zero while the former larger than the latter.[17]

The interaction term is statistically significant at the .05 level but, surprisingly, runs in the opposite direction. That is, its coefficient has a positive sign suggesting that the electoral impact of economic growth on the incumbent's vote gain is greater in a good economy than in a bad one. Further analysis on the marginal effect shows that the GDP growth rate in a bad economy is positive but small and insignificant while that in a good economy is substantively large and significant at the .001 level. The chi-squared test demonstrates that the difference between the marginal effects in bad and good economies is statistically significant implying that there is a reverse asymmetry. The marginal effects and the test result are summarized in Table 2.

Table 2. Marginal Effect of Economic Conditions on Pr(Voting for the Incumbent)

	GDP Growth	Inflation	Unemployment
Bad Economy	.004 (.003)	-.004** (.002)	-.009*** (.003)
Good Economy	.019*** (.005)	-.003 (.003)	-.004 (.004)
Difference	.015**	.002	.006

Standard errors are in parentheses. *** $p<0.01$, ** $p<0.05$, *$p<0.1$

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[17] In this article, the difference between any two marginal effects is estimated using 'mlincom' command in a Stata package called SPost13 by Long and Freese (2014).

Now, I consider the asymmetric effects of inflation and unemployment rates. As in Table 1, the same models were run for both indicators, respectively, each taking the place of the GDP growth rate. The regression results are in Appendix C. The economic voting theory predicts that their effects on voting for the incumbent will be negative, and the results correspond to the prediction. The coefficient on the inflation and unemployment rates under the specification as in Model 1 are -.032 (s.e.=.013), and -.064 (.023), respectively. When testing the asymmetry hypothesis as in Model 2, the interaction term between the good economy indicator and the inflation rate is not significant (.014 (.021)), and that for the unemployment rate is positive and only marginally significant at the .1 level (.049 (.028)).

Table 2 and the plot in the upper-left corner of Figure 1 present the marginal effect of each of the economic indicators given that the economy improved or deteriorated from the previous year. Interestingly, in contrast with GDP growth, both inflation and unemployment affect voters' choices only in a bad economy, providing an empirical support for the asymmetry hypothesis. However, the chi-squared tests suggest that, for both indicators, the difference between the marginal effects in good and bad economies are not statistically significant. Therefore, the asymmetry hypothesis receives little empirical support even when inflation or unemployment are considered.

[Figure 1. HERE]

4.1.2. Robustness Checks

In order to check robustness of the results, I manipulate the data in several ways. First, I drop outlier observations where their economic indicator values fall outside of the ±1.5*Interquartile range. Given the diversity of countries in the dataset which includes developing countries

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experiencing dynamic economic fluctuations, there are some significant outliers. For example, with regards to the inflation rate that has the median at 2.6% and the upper quartile at 4.1%, in Romania, it was 44.1% in 2004 and 25.6% in 1996; in Poland, it was 20% in 1997.

Second, some readers may challenge the idea of defining cases that experienced .1% increase in the GDP growth rate as good economies and those with .1% decrease as bad since such a small change can happen almost at random. To address this concern, I exclude the elections in which the economic indicators changed by .5% point or less from the preceding year for the GDP growth and inflation rates, and by .25% point or less for the unemployment rate.[18] This serves as a new threshold classifying bad and good economies.

Third, instead of conditioning on the election month as Hellwig and Samuels (2007b) suggest, I use the economic indicators in the year before the election. Then, a new baseline is determined by whether the economic indicator improved from the preceding year, $(t - 2)$, to the year before the election, $(t - 1)$, or not.

The last three graphs in Figure 1 present the marginal effects of the economy employing each of these three sets of manipulations for all three economic indicators. These models include the full set of control variables as in Model 2. The results are almost identical to the findings in

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[18] The reason for choosing a different threshold for the unemployment rate is because it was relatively more stable than the other two so that a .5% threshold drops almost a half of the observations in the dataset.

the previous section.[19] Therefore, the results are robust across various manipulations to the selection of cases and the use of different thresholds determining good and bad economies.

4.1.3. Tests on Contextual Variations

Although the preceding analyses find little support for the asymmetry hypothesis asymmetric effect of the economic conditions seems largely missing so far, it may be that the asymmetry asymmetric economic voting is more prominent in certain countries than others, and these effects might have been masked in the pooled analysis of the previous sections. Thus, now I further analyze conditional effects of contextual variables on the grievance asymmetry hypothesis. Four context-level variations moderators are considered: developing vs. developed countries; durability of a democratic regime for over thirty years vs. not; presidential systems vs. parliamentary systems; single majority government, multi-party majority or single minority government, and multi-party minority government.

For the test, the three-way interaction among the economic indicator, the binary variable for a good economy, and each moderating variable was added to the model along with the two-way interactions between each of the constituent parts and the constituent parts themselves. The analysis includes the full set of control variables as in Model 2. The marginal effect of the economic indicator in both good and bad economies under all possible values of the moderator variables used in the model are presented in the first nine plots of Figure 2. In addition, I test if the gap between the marginal effects is statistically significant between good and bad economic

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[19] Detailed presentation and discussion of the results are in the appendix.

conditions while holding the moderator variable constant. The complete test results are available in Appendix C.

[Figure 2. HERE]

Consistent with the findings from the previous section, the marginal effect of the GDP growth rate is positive and significant only in good economies, but not in bad economies, in most of the subgroups of countries except for developing countries, presidential systems, and multi-party minority governments. However, the difference in marginal effect between good and bad economies is not statistically significant in all cases except for parliamentary systems which show a reverse asymmetry (Diff. = .021 (p-value = .002)). Therefore, based on GDP growth, there is no evidence of asymmetric economic voting in any macro-level subgroups.

However, the asymmetry hypothesis gains partial support in certain contexts when inflation is considered. The marginal effect is negative and significant at .05 level only in bad economic conditions in developing countries (-.006 (s.e. = .003)) but not in developed countries (-.003 (.003)), in transitional democracies (-.007 (.003)) but not in established democracies (-.003 (.002)), in both presidential (-.058 (.014)) and parliamentary (-.004 (.002)) systems, and in single-majority governments (-.060 (.019)). However, the gap between marginal effects in bad and good economies is significantly different from zero only in presidential systems (Diff. = .052 (p-value = .000)) and in single-majority governments (Diff. = .053 (p-value = .008) providing support for the asymmetry hypothesis.

Similar to the inflation rate, voting patterns in some situations demonstrate asymmetric economic voting when considering the unemployment rate as the macroeconomic indicator of interest. The marginal effect of the unemployment rate is negative and significant only when it

increases from the previous year in both developing (-.014 (.006)) and developed countries

(-.009 (.004)), in transitional democracies (-.012 (.005)), in parliamentary systems (-.012 (.003)),

and in single-minority or multi-party majority governments (-.015 (.004)). However, the

difference in marginal effects between good and bad economic conditions is statistically

significant only in developed countries (Diff. = .011 (p-value = .042)), transitional democracies

(Diff. = 0.12 (p-value = .026)) and single-minority or multi-party majority governments (Diff.

= .013 (p-value = .004)). Therefore, the asymmetry hypothesis is supported in these three types

of systems.

4.1.4. Tests on Individual-level Variations

Asymmetric economic voting may be stronger among certain subpopulations that are defined not

just by context-level features, but also by individual characteristics such as partisanship. This

section tests the moderating effect of voters' partisan affiliation with respect to the incumbent

party.

The last two plots in Figure 2 present the results. First, the marginal effect of GDP

growth is positive and significant only in good economies for both in- and out- partisans. The

difference is slightly larger among out-partisans (Diff. = .018 (p-value = .015)) than in-partisans

(.010 (.033)), but both provide support for a reverse asymmetric effect where voters reward

incumbents more for positive economic conditions than they punish them for negative economic

conditions. Second, inflation has a negative and significant effect on voting for the incumbent

only in bad economies among both in- and out-partisans. However, unexpectedly, the difference

between bad and good economic conditions is statistically significant only among in-partisans

(.005 (.019)). Third, the negative and significant marginal effect of unemployment is found only

in a bad economy among out-partisans but not among in-partisans, and the difference between good and bad economies is statistically significant only among out-partisans (.010 (.023)), which is consistent with the expectation.

Analyzing both context- and individual-level conditional effects, we learned that asymmetric economic voting manifests in certain contexts and among certain populations when using unemployment or inflation, but not GDP growth, to measure macroeconomic conditions. This finding contributes to overall mixed results in the literature but enlightens us with a more detailed, thorough illustration of when and among whom the asymmetry hypothesis holds and does not hold for which economic indicators. Moreover, the results also help us better understand why previous literature found inconsistent results by studying one or a handful of countries using different economic indicators.

4.2. Analysis Using Voters' Economic Perceptions

In order to avoid the endogeneity problem that voters' self-assessments of the economy have, I mainly used objective economic indicators for the study in the preceding sections. However, I additionally conduct the same analysis using the former as another line of robustness checks these subjective self-assessments so as to provide an additional robustness check for my findings. This is to approach addresses an argument that using subjective measures of economic conditions the former is theoretically more appropriate since the economic voting theory assumes that voters vote based on the economy that they "can and do" observe even though the "observed economy" contains variations varies across individuals (Stevenson and Duch 2013). As I noted earlier, I acknowledge that the model using economic perceptions may suffer from endogeneity

even after controlling for the partisan affiliation with the incumbent without employing a causal inference model that statistically breaks the reciprocal causal relationship.

In Table 1, the third model indicates that voters are more likely to vote for the incumbent when they have more positive economic perceptions, as the coefficient on voters' economic perception is positive and highly significant.

The fourth model tests the asymmetry hypothesis by treating the perception variable as categorical with the "stayed the same" response as a baseline category. If the hypothesis is supported, the coefficient on the indicator for those who responded "gotten worse" should be statistically significant and greater in its absolute value than that on the indicator for those who said "gotten better." The result shows that both coefficients are statistically significant in the theoretically expected direction. Interestingly, the coefficient on the "gotten worse" responses is slightly larger in magnitude (-.516 (s.e.=.034)) than the one on the "gotten better" responses (.472 (.031)) suggesting that voters respond more strongly to a worsening economy than they do to an improving one. However, the chi-squared test fails to reject the null that their absolute values are not statistically different from each other (p-value: .404), implying that voters respond almost symmetrically to both improving and worsening economies.

Next, I further investigate the moderating effects of contextual variation as well as individual voters' partisan affiliations. The model specification is as follows. For example, to test whether asymmetric economic voting varies between developing and non-developing countries, I include a developing country indicator and two interaction terms: Developing*Negative

Perception and Developing*Positive Perception.[20] Then, I calculate the marginal effects of

positive and negative economic perceptions in developing and developed countries, respectively.

All four marginal effects are statistically significant with the theoretically expected signs. In

developed countries, positive economic perceptions have the marginal effect of .071 (.006) on

voting for the incumbent while negative perceptions have the effect of -.074 (.006), suggesting

that the effects are almost symmetric in size. In developing countries, the marginal effect of

negative perceptions is slightly larger in size (-.071 (.006)) than that of negative perceptions

(.065 (.009)). However, in both types of countries, the gap in their absolute values is not

statistically significant (p-values: .754 in developed countries and .187 in developing

countries).[21]

Similarly, the asymmetry hypothesis is not supported in any types of contexts compared:

established (p-value: .269) vs. transitional (.949) democracies, presidential (.983) vs.

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[20] This model and the one testing the moderating effect of the party affiliation are included in the

appendix to present the model specifications.

[21] Unlike the models using macro-economic indicators, I can fit a model using economic

perceptions for each of the individual election studies. The Figure A4 in the appendix provides

the size of the asymmetric economic voting effect, which is simply the summation of coefficients

on "gotten worse" responses "gotten better" responses, with 95% CIs for each election survey.

Five surveys have negative and significant estimates suggesting an asymmetric effect, and three

surveys show a reverse asymmetric effect. These cases are labeled with the country's initials and

the year of the election. Still, it is hard to find any systematic pattern when asymmetric effects

appear.

parliamentary (.555) systems, and single-party majority governments (.208) vs. multi-party majority governments or single-party minority governments (.734) vs. multi-party minority government (.421).[22]

To test if voters' electoral reactions to positively and negatively perceived economic conditions are asymmetric among in-partisans and out-partisans, respectively, the model also includes interactions between the economic perception variables and the in-partisan indicator. Among out-partisans, a reverse asymmetric effect is found: the marginal effect of positive economic perception (.086 (.006)) is larger in absolute size than that of the negative economic perception (-.070 (.005)), but the difference in size is not statistically significant (p-value: .059). Among in-partisans, the marginal effects of both positive and negative perceptions are relatively small (.023 (.006) and -.042 (.009)), implying that in-partisans' support for the incumbent depends less on the economic fluctuations compared to that of out-partisans. Although in-partisans seem to show the pattern of asymmetric economic voting, the difference in the size of these marginal effects is not significant (p-value: .145).

When in- and out-partisans are compared vis-à-vis, out-partisans punish the incumbent more severely for a bad economy than do in-partisans, and they also confer greater rewards on him. This may be due to the way out-partisans are coded in this analysis such that they include

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[22] When testing the conditional effect of the durability of democracy and the system types, Stata failed to estimate marginal effects of economic perceptions in the pooled model with the three-way interaction terms. Thus, for these two cases, the analyses were conducted on the subset of data for each system separately.

non-partisan independents who are more likely to display economic voting behavior (Kayser and Wlezien 2011).

5. Conclusion

This paper makes three important contributions to the literature on economic voting. First, it is a comprehensive study of the asymmetry hypothesis in terms of the scale of data it analyzes, the diversity of measurements of economic conditions, and the testing of moderating effects of contextual and individual level factors.

Second and most importantly, it finds little support for the asymmetry hypothesis. Given the mixed results from prior studies of one or several selected countries, this finding based on 122 election surveys in 42 countries suggests that asymmetric economic voting is not a general trend. Rather, the effects of positive and negative inflation rates, unemployment rates, and subjective economic perceptions are roughly symmetric in size. Moreover, GDP growth manifested a reverse asymmetric effect which is counter-intuitive and calls for further investigation in future studies. One possible explanation for the inconsistent findings across economic indicators may be that inflation and unemployment rates capture the economic conditions that are more directly and acutely felt by voters than GDP growth does, or that governments can find leeway to avoid blame for sluggish growth more easily than for high inflation or unemployment rates. Disentangling these inconsistent effects is beyond the scope of this paper and certainly casts an interesting question to be answered in the future.

Third, it is the first study to investigate the contextual- and individual-level heterogeneity of asymmetric economic voting behavior. Despite the overall null finding for the asymmetry

hypothesis, the analysis across subpopulations reveals some supportive evidence that was masked in the pooled analysis. The effect of inflation was asymmetric in presidential systems and single-majority governments. When unemployment is considered, asymmetric economic voting was found in developed countries, transitional democracies, and single-majority or multiparty majority governments. However, the three economic indicators disagreed on which of the out-partisans and in-partisans show a greater asymmetric effect.

This set of heterogeneous evidence among subpopulations is interesting but rather noisy. First, these findings imply that the asymmetry hypothesis may not be a complete myth, but rather that asymmetric economic voting behavior may exist in some situations. Second, however, the moderating effects of each of the context-level variables and voters' partisan affiliation vary greatly by economic indicators without any consistent patterns. Therefore, I conclude that the results provide interesting information on when and among whom the economic performance induces asymmetric economic voting behavior, but this evidence is not consistent enough to call for a change to the linearity assumption of economic voting models.

The null finding for asymmetric economic voting behavior suggests that although we know that economic stability is politically important (Quinn & Woolley 2001) and that there is cost of ruling (Paldam and Skott 1995), the asymmetry hypothesis may not provide an explanation for these phenomena, which contradicts the implications that Nannestad and Paldam (1997) draw. It further casts doubt on the generality of the negativity effect and calls for a more extensive test in other areas such as attitude formation, electoral campaigns and media effects.

Appendix A.

This section explains the rules of case selection: 1) Elections with electoral fraud or with a polity score below 7 in the year of election are dropped (Belarus, Mexico in 1997, Peru in 2000 and 2001, Russia, Thailand; Hong Kong does not have a polity score) because I assume that the accountability mechanism through elections is unlikely to function properly in these countries. 2) Elections where no incumbent or incumbent party is running are dropped (Czech Republic 2013, Lithuania 1997, Latvia 2010, Kenya 2013, Kyrgyzstan 2005, Romania 2012, and Ukraine 1998). 3) Switzerland is the only country with a hybrid system in the dataset. Since its chief executives are elected citizens, not politicians with party affiliations, the incumbent party cannot be defined. Thus, Switzerland is not included in the analysis.

Table A1. List of Cases Included in the Analysis (42 countries and 122 elections)

Country	Elections	Country	Elections
Albania	2005	Japan	1996, 2004, 2007
Australia	1996, 2004, 2007, 2013	Mexico	2000, 2006, 2012
Austria	2008, 2013	Montenegro	2012
Belgium	1999†, 2003	Netherlands	1998, 2002, 2006, 2010
Bulgaria	2001, 2014	New Zealand	1996, 2002, 2008, 2011, 2014
Brazil	2002, 2006, 2010, 2014	Norway	1997, 2001, 2005, 2009, 2013
Canada	1997, 2004, 2008, 2011	Philippines	2004, 2010, 2016
Croatia	2007	Poland	1997, 2001, 2005, 2007, 2011
Chile	1999, 2005, 2009	Portugal	2002, 2005, 2009, 2015
Czech Republic	1996, 2002, 2006, 2010	Romania	1996, 2004
Denmark	1998, 2001, 2007	Serbia	2012
Estonia	2011	South Africa	2009, 2014
Finland	2003, 2007, 2011, 2015	Slovakia	2010, 2016
France	2002, 2012	Slovenia	2004, 2008, 2011
Germany	1998, 2002*, 2005, 2009, 2013	Spain	1996, 2000, 2004, 2008
Greece	2009	Sweden	1998, 2002, 2006, 2014
Hungary	1998, 2002	Taiwan	1996, 2004, 2012
Iceland	1999, 2003, 2007, 2009, 2013	Turkey	2011, 2015
Ireland	2002, 2007, 2011	United Kingdom: Great Britain	1997, 2005, 2015
Israel	1996, 2003, 2006, 2013	United States	1996, 2004, 2008, 2012
Italy	2006	Uruguay	2009

† Originally divided into two groups but only the surveys in Flanders are used due to missing values of the Party ID in Walloon.

* This election has two separate surveys - one administered through telephone calls and the other via mail-back method – and thus counted as two election studies in the statistical models.

Appendix B. Codebook

Vote for the incumbent: Respondent's vote choice in electing a chief executive. (1) voted for the incumbent, a candidate from his or her party, or his or her party itself, (0) otherwise. (In most election studies, there are more than one variable of vote choices. Thus, in countries with run-off

systems for presidential elections, only the votes cast in the first round are used (e.g. France in 2002, Romania in 2004 and etc.). In parliamentary elections, the lower house elections instead of the upper house (e.g. Philippines in 2002) and votes for party lists instead of district candidates are used if both are available.)

Vote share: The incumbent's vote share in the previous election of the same type and coded in percentages.

Party ID: Partisan inclination of the respondent. (0) opposition parties, (1) incumbent party.

Income: Total household income. (0) lowest income quintile, (1) second income quintile, (2) third income quintile, (3) income quintile, (4) highest income quintile.

Education: The level of education attainment. (0) none, (1) incomplete primary, (2) primary completed, (3) incomplete secondary, (4) secondary completed, (5) post-secondary trade/vocational school, (6) incomplete undergraduate, (7) complete university.

Age: (1) Below 30, (2) 30-39, (3) 40-49, (4) 50-59, (5) 60 or above.

Female: Gender of the respondent. (1) female, (0) male.

Developing: (1) developing country, (0) developed country.

Durable: (1) democracy lasted for 30 years or more, (0) democracy lasted for less than 30 years.

Presidential: (1) (semi-) presidential systems, (0) (semi-) parliamentary systems.

Single-majority: (2) single-party majority government, (1) single-party minority or multi-party majority government, (0) multi-party minority government.

Appendix C. Additional Results

[Figure A1. HERE]

[Figure A2. HERE]

[Figure A3. HERE]

[Figure A4. HERE]

Table A2. Simpler Models Using the GDP Growth Rate

Variables	Model 1	Model 2
Growth	.081***	.032
	(.020)	(.026)
Good Econ		-.187
		(.199)
Good Econ*		.111**
Growth		(.047)
Party ID	3.703***	3.703***
	(.022)	(.022)
Country Indicators	Yes	Yes
Constant	-2.928***	-3.101***
	(.471)	(.459)
Election-level	.442	.426
variance	(.029)	(.028)
Observations	145,798	145,798
N. of elections	123†	123†

The dependent variable is the individual vote choice for the incumbent candidate or party.
† The German election in 2002 is divided into two survey data and counted twice.
Standard errors are in parentheses. *** p<0.01, ** p<0.05, *p<0.1

Table A3. Models Using the Inflation Rate

Variables	Model 1	Model 2	Model 3	Model 4
Inflation Rate	-.023	-.032**	-.025*	-.033**
	(.013)	(.013)	(.014)	(.013)
Good Econ			-.008	-.025
			(.141)	(.147)
Good Econ*			.014	.014
Inflation Rate			(.021)	(.021)
Party ID	3.708***	3.725***	3.703***	3.719***
	(.022)	(.025)	(.022)	(.025)
Income		.012		.012
		(.008)		(.008)
IncomePositive		-.314***		-.339**
		(.159)		(.163)
IncomeNegative		.938***		.943***
		(.173)		(.174)
Income*		.167***		.167***
IncomePositive		(.015)		(.015)
Income*		-.211***		-.210***
IncomeNegative		(.015)		(.015)
Educ		-.034***		-.035***
		(.007)		(.007)
EducPositive		-1.381***		-1.403***
		(.207)		(.215)
EducNegative		.649***		.634***
		(.140)		(.141)
Educ*		.208***		.208***
EducPositive		(.018)		(.018)
Educ*		-.132***		-.131***
EducNegative		(.010)		(.011)
Female		.105***		.105***
		(.016)		(.016)
Vote share		-.005		-.003
		(.008)		(.009)
Country Indicators	Yes	Yes	Yes	Yes
Constant	-2.408***	-2.103***	-2.401***	-2.137***
	(.477)	(.573)	(.477)	(.582)
Election-level	.463	.442	.462	.443
variance	(.030)	(.030)	(.031)	(.030)
Observations	147,217	116,692	145,812	115,545
N. of elections	124†	121	123†	120

The dependent variable is the individual vote choice for the incumbent candidate or party.
Four age group variables are omitted due to limited space.
† The German election in 2002 is divided into two survey data and counted twice.
Standard errors are in parentheses. *** p<0.01, ** p<0.05, *p<0.1

Table A4. Models Using the Unemployment Rate (%)

Variables	Model 1	Model 2	Model 3	Model 4
Unemployment %	-.074***	-.064***	-.091***	-.074***
	(.023)	(.023)	(.025)	(.025)
Good Econ			-.042	.080
			(.210)	(.210)
Good Econ*			.066**	.049*
Unemployment %			(.028)	(.028)
Party ID	3.689***	3.703***	3.758***	3.778***
	(.023)	(.026)	(.024)	(.027)
Income		.013		.009
		(.009)		(.009)
IncomePositive		-.477***		-.621***
		(.160)		(.148)
IncomeNegative		.773***		.643***
		(.185)		(.171)
Income*		.156***		.161***
IncomePositive		(.016)		(.016)
Income*		-.210***		-.207***
IncomeNegative		(.015)		(.016)
Educ		-.031***		-.035***
		(.007)		(.007)
EducPositive		-1.559***		-1.557***
		(.243)		(.227)
EducNegative		.744***		.649***
		(.146)		(.135)
Educ*		.201***		.205***
EducPositive		(.020)		(.021)
Educ*		-.134***		-.131***
EducNegative		(.011)		(.011)
Female		.094***		.091***
		(.017)		(.017)
Vote share		-.003		-.003
		(.009)		(.008)
Country Indicators	Yes	Yes	Yes	Yes
Constant	-1.529***	-1.314**	-1.823***	-1.728***
	(.304)	(.527)	(.307)	(.501)
Election-level	.461	.437	.401	.390
variance	(.032)	(.031)	(.028)	(.028)
Observations	133,091	105,366	131,241	103,754
N. of elections	112	109	111	108

The dependent variable is the individual vote choice for the incumbent candidate or party.
Four age group variables are omitted due to limited space.
Standard errors are in parentheses. *** p<0.01, ** p<0.05, *p<0.1

Table A5. Models Using Individual Economic Perceptions to Test Conditional Effects

Variables	Model 9	Model 10
Economic Perception		
Negative Perception	-.552***	-.538***
	(.041)	(.036)
Positive Perception	.460***	.509***
	(.035)	(.033)
Developing	-.699***	
	(.200)	
Negative*Developing	.102	
	(.072)	
Positive* Developing	.050	
	(.073)	
Negative* Party ID		.140
		(.092)
Positive* PartyID		-.232***
		(.083)
Party ID	3.748***	3.786***
	(.039)	(.057)
Income	.021	.021
	(.013)	(.013)
IncomePositive	-1.230***	-1.339***
	(.194)	(.211)
IncomeNegative	1.348***	-1.409***
	(.237)	(.265)
Income*	.134***	.134***
IncomePositive	(.022)	(.022)
Income*	-.281***	-.281***
IncomeNegative	(.024)	(.024)
Educ	-.030***	-.028**
	(.011)	(.011)
EducPositive	-1.149***	-1.036***
	(.208)	(.222)
EducNegative	.706***	.609***
	(.135)	(.142)
Educ*	.154***	.154***
EducPositive	(.026)	(.026)
Educ*	-.138***	-.140***
EducNegative	(.016)	(.016)
Female	.149***	.147***
	(.025)	(.025)
Vote share	-.033***	-.018*
	(.010)	(.010)
Country Indicators	Yes	Yes
Constant	-.943*	-1.738***
	(.519)	(.518)
Election-level variance	.166	.193
	(.023)	(.024)
Observations	48,101	48,101
N. of elections	50	50

The dependent variable is the individual vote choice for the incumbent candidate or party.
Four age group variables are omitted due to limited space.
Standard errors are in parentheses. *** p<0.01, ** p<0.05, *p<0.1

Table A6. Contextual Variations in the Marginal Effects of the GDP Growth Rate

	Established Democracies	Parliamentary Systems	Single-Majority Goverments	Developed Countries
Bad Economy	.002 (.005)	.002 (.004)	.005 (.007)	.004 (.004)
Good Economy	.019** (.009)	.023*** (.006)	.032** (.016)	.022** (.009)
Difference	.017*	.021***	.005	.018*
	Transitional Democracies	Presidential Systems	Single-Minority or Multi-party Majority Gov.	Developing Countries
Bad Economy	.006 (.005)	.013 (.009)	.009* (.005)	.011 (.009)
Good Economy	.024*** (.008)	.002 (.019)	.024*** (.007)	.016 (.010)
Difference	.018*	-.011	.015*	.005
			Multi-party Minority Gov.	
Bad Economy			.001 (.006)	
Good Economy			-.043 (.033)	
Difference			-.044	

Standard errors are in parentheses. *** p<0.01, ** p<0.05, *p<0.1

Table A7. Contextual Variations in the Marginal Effects of the Inflation Rate

	Established Democracies	Parliamentary Systems	Single-Majority Goverments	Developed Countries
Bad Economy	-.003 (.002)	-.004** (.002)	-.060*** (.019)	-.003 (.003)
Good Economy	-.005 (.006)	-.003 (.003)	-.007 (.007)	-.002 (.006)
Difference	-.002	.001	.053***	.001
	Transitional Democracies	Presidential Systems	Single-Minority or Multi-party Majority Gov.	Developing Countries
Bad Economy	-.007** (.003)	-.058*** (.014)	.002 (.005)	-.006** (.003)
Good Economy	.001 (.004)	-.006 (.008)	.000 (.003)	-.003 (.005)
Difference	.007*	.052***	.002	.003
			Multi-party Minority Gov.	
Bad Economy			-.002 (.002)	
Good Economy			-.005 (.008)	
Difference			-.003	

Standard errors are in parentheses. *** p<0.01, ** p<0.05, *p<0.1

Table A8. Contextual Variations in the Marginal Effects of the Unemployment Rate

	Established Democracies	Parliamentary Systems	Single-Majority Goverments	Developed Countries
Bad Economy	-.014*** (.005)	-.012*** (.003)	-.010 (.007)	-.009** (.004)
Good Economy	-.014** (.007)	-.006* (.003)	.002 (.012)	.001 (.004)
Difference	-.001	.007*	.012	.011**
	Transitional Democracies	Presidential Systems	Single-Minority or Multi-party Majority Gov.	Developing Countries
Bad Economy	-.012** (.005)	.015 (.016)	-.015*** (.004)	-.014** (.006)
Good Economy	-.000 (.004)	.058*** (.018)	-.002 (.004)	-.013* (.007)
Difference	.012**	.043***	.013***	.001
			Multi-party Minority Gov.	
Bad Economy			-.004 (.009)	
Good Economy			-.000 (.012)	
Difference			.004	

Standard errors are in parentheses. *** p<0.01, ** p<0.05, *p<0.1

Table A9. Robustness Checks on the Marginal Effects of Economic Conditions

	w/o outliers	w/o middle cases	Ignoring election month
	GDP growth rate		
Bad Economy	.004 (.005)	.003 (.004)	.004 (.005)
Good Economy	.019*** (.006)	.022*** (.006)	.013** (.006)
Difference	.015**	.019***	.008
	Inflation rate		
Bad Economy	-.010** (.005)	-.006*** (.002)	-.003 (.002)
Good Economy	.000 (.004)	-.006 (.003)	-.003 (.002)
Difference	.010*	.001	.001
	Unemployment rate		
Bad Economy	-.010*** (.003)	-.010*** (.003)	-.001 (.003)
Good Economy	-.007 (.004)	-.010** (.004)	-.014*** (.004)
Difference	.003	.000	-.012***

Standard errors are in parentheses. *** p<0.01, ** p<0.05, *p<0.1

For the GDP growth rate, voters vote on it only in a good economic condition, and the difference in marginal effects between good and bad economies is statistically significant at .01 level when outliers or the cases in the middle range of economic improvements are dropped.

However, the difference is insignificant when the growth rate in the year before the election is used regardless of the election month.

For the inflation and unemployment rates, in some models their marginal effects are negative and statistically significant either in a bad economy or good, or in both. However, in all models, the difference between the marginal effects in good and bad economies is not statistically significant except for one case where the unemployment rate is examined ignoring the election month, and a reverse asymmetry is found rather than a grievance asymmetry.

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