This research was carried out in the Bamberg Doctoral Research Group on Behavioral Macroeconomics (BaGBeM) supported by the Hans-Böckler Foundation (PK 045)

PK 045
PROMOTIONSKOLLEG
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Hans Böckler Stiftung
Mitbestimmung-Forschung-Stipendien

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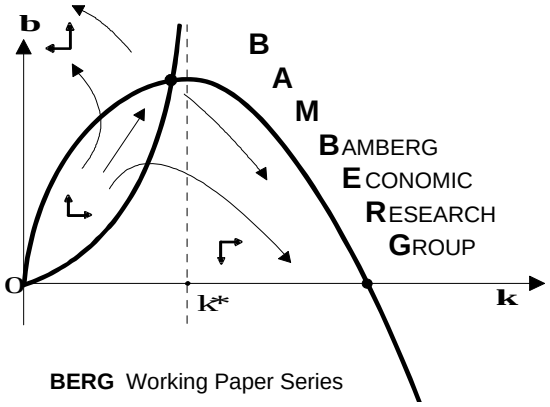
Working Paper No. 157

June 2020



BERG Working Paper Series

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ISBN 978-3-943153-78-1

Redaktion:
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Inequality, Macroeconomic Performance and Political Polarization: A Panel Analysis of 20 Advanced Democracies

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June 19, 2020

Abstract

This paper investigates the macroeconomic and social determinants of voting behavior, and especially of political polarization, in 20 advanced countries using annual data ranging from 1970 to 2016 and covering 291 parliamentary elections. Using a panel estimation approach and rolling regressions, our analysis indicates that a significant change in the link between income inequality and political polarization appears to have taken place over the last twenty years. Indeed, we find that both average inequality, measured by the post-tax Gini coefficient, as well as the bottom 10% income share are statistically linked to the recent success of far-right parties, while the top 10% or top 20% incomes shares are not. The link of income inequality and political polarization thus seems to be based on the deterioration of the relative economic position especially of the poorest fraction of the population. Furthermore, we find no empirical support for the notion that social and economic globalization has led to an increase in the popularity of far-right parties.

Keywords: Income Inequality, Political Polarization, Globalization, Economic Voting Behavior

JEL classifications: P16, D6, D72, 015

*Corresponding author. E-mail: juan.pena@uni-bamberg.de. We would like to thank Sven Schreiber, Thomas Theobald, Sebastian Watzka, Emanuel Gasteiger, Mishael Milaković, Anica Kramer, Hagen Krämer, Zeno Enders, Christian Conrad and seminar participants at the Macroeconomic Policy Institute (IMK) research seminar, the First Behavioral Macroeconomics Workshop at the University of Bamberg, the XX World Economy Meeting at the University of Almería, the VI International Congress on Economics at the Universidad San Francisco de Quito (USFQ), the 22nd Forum for Macroeconomics and Macroeconomic Policies 2018 in Berlin, the 12th CFE Conference in Pisa, and at the 2019 Eastern Economic Association in NYC, the University of Heidelberg and the University of Chemnitz for their helpful comments and suggestions, as well as Marie Louis Hohloch, Sandra Niemeier and Katharina Schwab for their excellent research assistance. Financial support by the Hans-Böckler Foundation is gratefully acknowledged. This is a significantly revised version of the 2019 BERG Working Paper 149 "Inequality, Macroeconomic Performance and Political Polarization: An Empirical Analysis".

1 Introduction

The increasing electoral success for radical and populist parties on the left and right of the political spectrum to levels not witnessed since the 1960s and 1970s (Duca and Saving, 2016; McCarty, 2019; Bergmann et al., 2020) is certainly one of the defining phenomena of the last decade. This development has been driven both by endogenous processes arising from party competition (Hetherington, 2001, Hetherington and Weiler, 2009, Lachat, 2008, Wagner, 2012, Abou-Chadi, 2016) as well as by socio-economic factors (Anderson and Beramendi, 2012, Arzheimer, 2013, Bornschier and Kriesi, 2013, Mian et al., 2014, Han, 2016, Vlaicu, 2018). Clearly, both dimensions are relevant as there is little doubt that voting behavior is partly driven by voters' "demand" and preferences generated by exogenous processes, and partly by attempts of party leaders and political entrepreneurs on the "supply" side of political competition to mobilize voters.

The present paper seeks to contribute to the scholarly debate on societal and political polarization focusing on the demand side, and in particular on the effects of income inequality at the societal level on aggregate electoral outcomes. We build methodologically and theoretically on the established notion in Political Science of a "macro polity" (Erikson et al., 2002) which relates electoral results and government popularity to macro-level economic variables in a longitudinal design that can be extended to include a cross-national comparative dimension. A special focus of our analysis is the study of the role of income inequality, measured in a number of ways at the level of the entire society, in variations of political polarization. This seems particularly important due the dramatic rise in income and wealth inequality around the world over the last decades (Atkinson et al., 2011, Stiglitz, 2012, Piketty, 2014). Against this background we employ panel models to investigate how average and tail income inequality have influenced the electoral success of far-left, far-right and centrist parties in legislative elections in OECD countries over the last fifty years.

Indeed, an important caveat of more standard survey-based voter studies and work focusing on party strategies is that traditionally both have neglected the variability of macro-level conditions such as the economic situation or income inequality in different societies and over time. Only recently multi-level studies on the determinants of electoral success have demonstrated that, and how, contextual variables such as income inequality at the macro level might affect individual voter support for radical left and right parties. Such recent studies have shown, for example, that radical right-wing parties draw considerable electoral support form voters suffering the most from societal inequality, namely those in lower socio-economic positions (Lubbers et al., 2002, Arzheimer and Carter, 2006, Rydgren, 2012, Werts et al., 2013). At the meso level of organizations, the literature on niche parties has found that the interests of people at the lower levels of the income distribution are often less well represented by mainstream parties (Gilens, 2012, Carnes, 2013, Carnes and Lupu, 2015, Elsässer et al., 2017, O'Grady, 2019), and new far-left or far-right populist parties can be said to exploit that gap. Further work in the niche-party paradigm also suggests that popular support for extreme parties may grow or

shrink depending on the strategies of more centrist parties (Meguid, 2005). More demand-side oriented studies have further found that voters penalize government parties retrospectively during and after an economic crisis (Dassonneville and Lewis-Beck, 2014; Fraile and Lewis-Beck, 2014), if responsibility can be attributed. In some cases, voters dissatisfied with their economic position abstain or switch their vote to a mainstream opposition party. In others, new parties, especially new populist parties of the left and right, benefit from a crisis (Kriesi, 2014).

The results of such multi-level models (comparing either nations or regions) are however still somewhat inconclusive depending on the data and research design. Han (2016), for example, explores whether income inequality has dissimilar effects on the support for radical right parties for different social groups across a number of countries, and finds that income inequality encourages poorer people to vote for radical right parties, while it discourages more affluent people from doing so, see also Han and Chang (2016). Further, Rooduijn and Burgoon (2018, p. 1746) find that "[r]adical left and right parties are increasingly successful, particularly among those who experience individual economic difficulties" but that this effect depends on national contexts, a macro-level variable. Counter-intuitively, they find that rising inequality in society actually dampens individual voting for a far-left or far-right party. They explain differences between left and right in this context largely with a "risk aversion mechanism" where far-right outsider parties are seen as a comparatively risky choice for middle-class voters fearing to lose out under conditions of economic uncertainty and inexperienced governments, whereas lower-income voters are less likely to see welfarist far-left parties as a risk for their future well-being. By contrast, Engler and Weisstanner (2020, p. 17) find that rising income inequality increases the probability of voting for far-right parties, *but* this effect is "strongest among individuals with middle incomes and high status" facing the risk of losing social status (rather than income), see also Burgoon et al. (2019). On a different note, Bloise et al. (2019) investigate voting trends in Italian elections in a regional comparison longitudinal study. They explore the role of income inequality, wealth levels and economic conditions on changes in voting patterns at the regional level from 1994 to 2018 and show that both the Lega and Five Star Movement have benefited from the political and economic upheaval of the last year at the expense of mainstream parties.

The focus of this paper on the aggregate level is not to discount valuable insights that can be, and have been, gained from the study of individual voters and their perceptions with so-called multi-level models, but hopes instead to make use of a larger number of countries and a larger window of observation to detect possible variations in the structural relationship between electoral outcomes and macro-level economic variables. We rely on a simplified but sufficient classification of parties according to their locations along a one-dimensional political spectrum, referring to far-left parties as political parties placed to the left of mainstream center-left parties (such as social democrats) expressing scepticism of capitalism and advocating decisive socio-economic redistribution. Parties located to the right of mainstream center-right parties (such as conservatives and Christian democrats), by contrast, are classified as far-right parties. Their ideology is frequently "nativist" in character considering

"non-native elements (persons and ideas)" as being "fundamentally threatening to the homogeneous nation-state" (Mudde, 2007, p. 19). In both cases, off-centre ideologies can be combined with a strong dose of populism highlighting the struggle of the "good" (native) people who are betrayed by a corrupted and "evil elite" (Hawkins, 2010). Our definition of political polarization is thus based on electoral support for such parties of the extreme left and right. Rather than including a possible second (e.g. cultural) dimension of political conflict (Inglehart and Norris, 2016), our ranking of far-left and far-right parties is based on a generalized socio-economic left-right dimension, not least because our main independent variables are socio-economic in nature and because this dimension has been shown to be the most salient dimension of political conflict and competition in the longer run (Benoit and Laver, 2006).

One of our main findings is that a significant change in the link between income inequality and political polarization appears to have taken place over the last twenty years. Indeed, we find that both average inequality, measured by the post-tax Gini coefficient, and the bottom 10% income share are statistically associated with the recent success of far-right parties, while the top 10% or top 20% incomes shares are not. The link of income inequality and political polarization seems thus to be based on the deterioration of the relative economic position especially of the poorest fraction of the population, although we do not claim that these actually constituted the main source of electoral support for such parties. Furthermore, we do not find any empirical support for the notion that cultural resentment associated with social and economic globalization has led to an increase in the popularity of far-right parties.

The remainder of this paper is organized as follows: We discuss the existing literature on economics, inequality, and political polarization concerning the connection between these phenomena in Section 2. The econometric methodology we use in our analysis is described in Section 3, as well as the estimation results. Finally, we draw some conclusions from our study in Section 4.

2 Literature Overview

The study of the link between macroeconomic indicators such as economic growth, unemployment, inflation, government debt, or income inequality on the one hand, and voting behavior on the other has a long tradition in Political Science and Political Sociology. This body of scholarship has offered a rich discussion of the mechanism that connect socio-economic conditions in a society with individual voting behavior and collective electoral outcomes. Traditionally studies have typically focused on a single level of analysis.

2.1 Micro-level Factors

At the micro level of individual voters, survey-based election studies have assessed the statistical association between respondents' voting intentions and behavior and their evaluations of their personal (egotropic) and the general (sociotropic) economic situation both retrospectively with regard to the recent past and prospectively relating to the future. Lewis-Beck and Stegmaier (2013, p. 370) summarize a large body of evidence accumulated since the 1970s as follows: "sociotropic evaluations overwhelm egotropic ones. The relatively strong impact of sociotropic retrospective evaluations seems equally clear, regardless of whether the democracy is new or old, low-income or high-income. What remains somewhat controversial is the impact of prospective economic voting". The evidence collected by Lewis-Beck and Stegmaier also suggests that voters have little knowledge about the economy (ibid., p. 373-4) and that the extent to which they vote on perceived economic performance is conditioned by political institutions (e.g. the clarity of government responsibility for the economy) and other macro-level factors (see below).

The economic voting literature demonstrates that government parties frequently get punished (rewarded) for bad (good) performance of the economy. The assumed mechanisms are straightforward: Economic downturns may affect the voters' economic well-being and lead them to take one of four actions: *(1)* they may stick with the government party or parties, because they do not blame them for the downturn or deem any alternatives as being too risky under the circumstances; *(2)* they may switch from a governing party to a "mainstream" opposition party, the assumed mechanism for electoral accountability in democratic theory; *(3)* they may abstain; or *(4)* they may develop a certain amount of resentment against *all* mainstream parties and the established political elite. Such general disaffection may be exacerbated in times of economic crisis and expressed in street demonstrations (Kriesi, 2014) or in the support for ideologically extreme parties (Kramer, 1971, Kriesi, 2014, Bartels, 2014). Mian et al. (2014), for example, demonstrate that, while the vote share of government coalitions decreases during and after a crisis, the vote share of the opposition parties, the fractionalization of the party system, and voter polarization increase. Similarly, Funke et al. (2016) investigate the political aftermath of financial crises using a longitudinal dataset covering 140 years. They find that far-right parties benefit after a financial crisis, increasing their vote share, on average, by 30%. However, they find no similar evidence for increasing support of far-left parties.[1]

In recent years, there has been growing scholarly interest in the role of income inequality as a predictor of voting behavior. For instance, Solt (2010) demonstrates how income inequality can alter the rates of electoral participation between more and less affluent voters. He finds that higher levels of income inequality reduce the electoral participation of poorer people. In a study of the United States, Gilens (2005) finds that the relatively higher rate of electoral participation among the rich

[1] Another important contribution related to the success of far-right parties is the work of de Bromhead et al. (2012) who shows how far-right parties benefit in hard economic periods during the 1920s and 1930s. They define "hard economic periods" as times characterized by contractions of GDP.

results in policy choices that are biased toward their preferences. These findings could largely be replicated for Germany by Elsässer et al. (2017). In addition, it seems that income inequality not only affects the rates of electoral participation, but also the ideological position of political parties. Pontusson and Rueda (2010) find that left-wing parties move more to the left of the political spectrum when income inequality increases. However, the *extent* to which left-wing parties move to the left depends on the political mobilization of low-income voters. These findings demonstrate how crises and increasing inequality may affect both the emergence of new radical challenger parties and the ideological repositioning of mainstream parties. This literature also provides some plausible potential mechanisms accounting for the macro-level association between income inequality and polarization.

2.2 Macro-level Factors

With the growing availability of representative surveys covering voting intentions and behavior, macro-level studies seemed to have become largely a method for historical phsephologists examining, for example, the role socio-economic factors (especially unemployment) in the rise of Nazism in Germany (Falter, 2013). With the growing sophistication of ecological regression models (King et al., 2004) and the interest in macro indicators such as Presidential approval ratings or government popularity (Duch and Stevenson, 2006) or "public-mood" measures (Ura and Ellis, 2012, Stimson, 2018), the interest in macro-level models has grown again. Macro-level studies of economic voting have largely confirmed the findings of those at the micro level, with unemployment, inflation, and GDP growth consistently being the most efficient predictors of government popularity and voting intentions. Although studies on the aggregate level are unsuitable for investigating individual sources of government support, they do allow the modelling of longer-term and cumulative effects of crises as well as of cross-national, institutional or diachronic differences. For example, research on the impact of macro-economic conditions on public support for the government shows the importance of cross-national variations in political institutions (Powell et al., 1993, Anderson, 1995, Hellwig and Samuels, 2008) and differentiated levels of exposure to global trade (Hellwig and Samuels, 2007). They also demonstrate that penalties for poor economic performance for incumbent parties generally come on top of a regular electoral cost of governing (Lewis-Beck and Stegmaier, 2013, p. 376-379). Since polarization (rather than voting for extreme parties) is a macro-level indicator, studies located at this level of analysis are particularly pertinent for the present analysis.

The significant increase in income and wealth inequality around the world in recent decades as documented by Atkinson et al. (2011), Stiglitz (2012) and Piketty (2014), among others, has brought this issue to the center of the political debate, particularly against the background of increasing political polarization. For instance, Voorheis et al. (2015) and Duca and Saving (2016) show how economic inequality has led to an increase in political polarization in the United States. The U.S. example demonstrates the complicated causal structure of such arguments as McCarty et al. (2016)

argue that the polarization in American society may be partially explained by fiscal policy and the deregulation of the economy since the Reagan administration – in other words, policy makers reshaped the social structure rather than responding to it.

2.3 Cultural Factors

In addition to the relevance of economic factors, scholars have also identified globalization and other social processes unleashed by economic modernization as further important determinants of political polarization. Since globalization can be conceptually understood as deeper political, cultural, and economic integration across national borders, it is possible that these processes may also generate considerable changes in societies, which in turn may trigger polarization between a cosmopolitan left benefiting from these processes economically and culturally and a nativist right resentful not only of being left behind economically but also about a loss of cultural identity and social recognition. Thus, some authors have emphasized the possible role of a "cultural backlash" (Inglehart and Norris, 2016) and produced an influential thesis focusing on the "losers of modernization" (Betz, 1994) to explain the growing popularity of far-left/right parties in recent decades.

According to the cultural backlash thesis, Western societies have shifted toward more post-materialist values since the 1970s (the so-called "silent revolution"). These cultural transformations are believed to have created defensive reactions among some social groups, especially those holding traditional values, being less educated and older relative to the average population. The "losers of modernization" thesis is similar. It emphasizes the idea that some groups in society will be unable to adapt to the post-industrial processes unleashed by globalization. People with lower levels of education, in particular, are thought to be adversely affected by these transformations. Consequently, political conflict is hypothesized to be triggered by the fact that these groups feel that they are not sufficiently represented through the mainstream parties. Far-right parties have benefited from this situation, commonly leading to an increase in nativist sentiments, accompanied by anti-immigration and (in the European Union) anti-EU attitudes.

Some empirical research has concluded that cultural backgrounds may play a key role in voting for populist parties (Inglehart and Norris, 2016). However, scholars disagree about the linkage between far-right parties and the cultural context. While Knigge (1998) and Swank and Betz (2003) find a positive relationship between far-right parties and the level of immigration, Dülmer and Klein (2005) and Rydgren (2008) are unable to find any statistical relationship between them.

In sum, there is a theoretically and empirically rich body of scholarship on the link between social inequality and the perception of absolute or relative deprivation on the one hand and voting for far-left or far-right parties on the other. At the aggregate level, the link between economic performance and social inequality on the one hand and success of ideologically extreme parties at one end – or (as in the German Weimar Republic, 1919-1933) both ends – of the political spectrum on the other still

requires further research. While recent multi-level studies have proposed some plausible mechanisms connecting variations in social inequality to polarization as an outcome, they have done so under a number of assumptions that we are proposing to put to a test. One crucial assumption is that the effect of social inequality on polarization is invariate across time. By using a relatively long time series across a number of countries, we will be able to account for any potential changes in this respect. The econometric methodology employed in this paper, as well as the data, and the results are described in the next section.

3 Empirical Analysis

3.1 Data Description

For our empirical analysis, we use panel data for 20 advanced countries on an annual basis ranging from 1970 to 2016. Our dependent variables are based on the outcomes of parliamentary elections. For this purpose, we use the *Parliaments and Governments Database* by Döring and Manow (2015), which provides extensive coverage of general elections in several democratic countries. We calculate the vote share of far-left parties, the vote share of far-right parties, and the vote share of the remaining (mainstream)parties in each parliamentary election for all countries in our sample.[2] In total, we collect 291 parliamentary elections throughout 1970-2016. A list of all parliamentary elections, as well as of all countries analyzed in this paper, can be found in Appendix A.

To identify parties according to their ideological position, we follow the party codification by Funke et al. (2016), who analyze the link between political outcomes and financial crises in 20 advanced economies from 1870 to 2014. Accordingly, the far-right vote share (FRVS) is composed of those political parties ranging from right-wing populism to the radical right along the political spectrum. These parties possess not only nationalistic and authoritarian attitudes, but also anti-immigrant sentiments. For example, the National Front in France and the Party for Freedom in the Netherlands belong in this category since they are considered anti-EU political movements and have criticized the EU elite for the uncontrolled flows of migrants and refugees from countries at war into Europe. Similarly, the far-left vote share (FLVS) is calculated by summing up all parliamentary seats of those parties ranging from left-wing populism to the radical left. These parties support greater egalitarianism based on Marxist-Leninist positions, and reject the current international economic order, such as Syriza in Greece and Podemos in Spain. A list of all parties that are categorized as far-left and far-right is given in Appendix B.[3] Further, in an attempt to capture the development

[2] All national elections analyzed in this paper were held in one particular year, with the exception of Greece, which held two national elections in 2012. In this case, we used the second election from that year.

[3] We are aware that this party classification may have some limitations, as many political parties have changed their ideologies and positions over time. Moreover, some political parties have disappeared or have joined other political parties. Unfortunately, to the best of our knowledge, there is no existing dataset which would account for these structural shifts in the analyzed countries.

of electoral support for the traditionally established parties over time, we calculate the middle vote share (MVS), which is equal to the sum of the vote shares from those political parties that are not categorized as far-left/right, i.e. those parties that do not possess populist and/or radical positions.

Our indicators for average income inequality, the pre-tax and the post-tax Gini coefficients (GiniMarket and GiniNet, respectively) stem from the *Standardized World Income Inequality Database (SWIID)* by Solt (2016). GiniMarket indicates income inequality before taxes and transfers, i.e. market income inequality; GiniNet indicates income inequality after taxes and transfers, i.e. net income inequality. We use the SWIID database for several reasons. First, the SWIID database covers a larger numbers of countries and years compared to other inequality datasets, for instance the *Luxembourg Income Study* Solt (2009). Second, the SWIID database maximizes comparability of income inequality across observations giving the opportunity to realize a more appropriate cross–national research. For instance Acemoglu et al. (2015) uses the SWIID to examine the impact of democracy on inequality on a large number of countries. Third, the SWIID provides the distinction between estimates of income inequality pre-tax and post-transfer. Given this differentiation, we are able to explore the effect of net distribution on political polarization. As indicators of tail income inequality, we use the income shares held by the top 10% and 20% and the bottom 10% and 20% from the World Bank (2019), as well as the 90/10 ratios. The use of these income shares is motivated by the fact that average income inequality provides only a very limited account of the factual distribution of income within an economy, as well as because the sharp increase in income inequality over the last decades has been primarily driven by an overproportional rise of income at the top of the distribution (Piketty, 2014).

We use various macroeconomic variables as controls. First, we include the unemployment rate, defined as the number of unemployed persons as a percentage of the labor force, as Visser et al. (2014) and March and Rommerskirchen (2015) find evidence for the electorate to turn toward far-left parties when the unemployment rate increases.[4] Regarding the link between the unemployment rate and far-right parties, while some studies have been able to find a positive relationship (Jackman and Volpert, 1996), most empirical studies have reported either no statistical evidence (Swank and Betz, 2003; Lubbers and Scheepers, 2002) or a negative relationship (Knigge, 1998; Lubbers and Scheepers, 2000). Second, we include the real GDP per capita expressed in 2011 US dollars from the *Maddison Project Database, Version 2018* (Bolt et al., 2018), which provides comparable data on income levels for a broad sample of countries, as macroeconomic performance is often found to be related with voting outcomes. According to the so-called *clientele hypothesis*, far-left parties may benefit in economically hard times (Rattinger, 1981; Nannestad and Paldam, 1994), not least because far-left governments are likely to pursue redistributive policies that benefit lower-income groups by taxing the rich (Kelley and Evans, 1993). Further, we also include the growth rate of the real house price index as provided by the OECD (2017), as a considerable increase in residential property prices could negatively affect

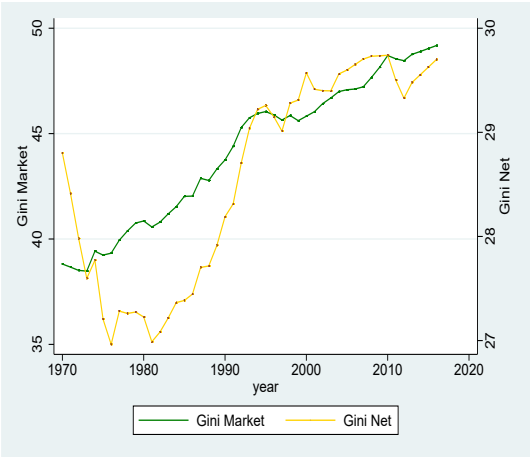
[4]Moreover, Bartolini (2000) shows that the success of communist parties has been historically more marked in countries with socioeconomic problems.

traditionally established parties and government coalition parties, and positively affect far-left/right parties. We include housing credit (in real terms), which describes the amount of money that is provided by banks to households as a further control variable, the data for this variable is obtained from the Bank for International Settlements (2017), as well as the inflation rate, measured as the annual growth rate of the GDP implicit deflator from the World Bank (2017) and the growth rate of the government expenditures to GDP ratio. Furthermore, we include two dummy variables. The first dummy variable is a recession dummy constructed by applying the Bry and Boschan (1971) algorithm to the quarterly real GDP per capita series from the Federal Reserve Bank of St. Louis (the list of all recessions in each country as identified by this algorithm can be found in Appendix C). The second dummy variable represents systemic financial crises, defined as situations where the banking sector experiences difficulties; more specifically, financial corporations are unable to fulfill their obligations and many of them default on payments, resulting in a situation followed by significant fiscal costs and output losses (Laeven and Valencia, 2008, 2012). This data is taken from the *Macrohistory Database* by Jordà et al. (2017). A list of systemic financial crises can be found in Appendix D.

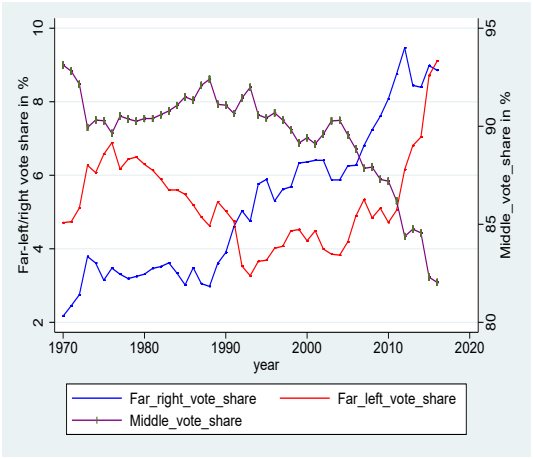
Finally, we use the data underlying Dreher (2006) *KOF Globalization Index* as a measure of globalization. This dataset provides information about changes in the degree of globalization of several countries over time. The Globalization Index is constructed as a weighted measure of economic, political, and social components. First, the economic component measures a country's degree of trade flows: goods, services, and capital. Higher levels of the economic component indicate fewer trade barriers. Second, the social component consists of migration rates and the flow of information related to access to TV and the internet, among others. Finally, the political component indicates the level of international integration in terms of numbers of membership of international treaties. Last but not least, we also include the voter turnout rate from International IDEA (2019) as a control variable, as voters' dissatisfaction may not necessarily lead to an abrupt change in their voting behavior but, instead, may first crystalize in a temporary voting absence. Summary statistics of all variables used throughout this paper are reported in Appendix E.

Figure 1 illustrates the two versions of the Gini coefficient (pre- and after tax) as reported by Solt (2016) (left graph) and the evolution of the annual cross-country average voting shares for far-left (FLVS), middle or mainstream (MVS) and far-right (FRVS) parties.

Figure 1a illustrates the fact that the sharp increase in income inequality over the last two decades (see e.g. Stiglitz, 2012), measured in terms of the pre-tax and after tax Gini coefficient (GiniMarket and GiniNet, respectively) has gone hand in hand with the surge in political extremism (both far-left and far-right) and the decline in electoral support for moderate parties on both the left and the right. This issue leads us to think that inequality may be related to political polarization in a positive and systematic manner.



(a) GiniMarket vs GiniNet



(b) Extreme left- and -right vs middle vote share

Figure 1: Income inequality measures and parliamentary vote shares (cross-country averages). Sources: Döring and Manow (2015) and Solt (2016).

Figure 1b indicates that there was little variation between the extreme (far-left or far-right) vote share and the middle vote share through the 1970s and 1980s. However in the 1990s, the extreme vote share started to increase, implying a decrease in the middle vote share. From 1990 to 2016, the extremist parties have more than doubled their presence in national parliaments on average. As can be observed, while far-right parties had a more or less constant vote share in the first two decades of our sample, the far-left parties experienced a steep decline in the parliamentary presence during the 1980s, which can be related to the decline of the political influence of the Soviet Union. Since the beginning of the 1990s, however, both far-left and far-right parties have experienced a surge in electoral support by the population, while moderate left and right parties have experienced a significant decline in their parliamentary representation.[5]

3.2 Methodology

We use panel OLS regressions with fixed effects to investigate how changes in income inequality as well as social changes can influence electoral choices. More specifically, we estimate different specifications

[5]It is also important to note that some countries in our sample data illustrate a relatively higher presence of radical and populist parties on both extremes of the political spectrum. The presence of far-left parties is relatively higher in Greece, Spain, Italy, and Ireland compared to the other countries of the sample. Similarly, the presence of far-right parties is more pronounced in Austria, Denmark, Finland, Norway, and Switzerland compared to the other countries of the sample.

with five different dependent variables: the far-left vote share (FLVS), the middle vote share (MVS), and the far-right vote share (FRVS). The general regression model can be described as follows:

$$\begin{aligned} FLVS_{it} &= \beta\, G_{it-1} + \delta\, EcoGlob_{it-1} + \gamma\, SocGlob_{it-1} + \zeta\, PolGlob_{it-1} + X_{it-1}\theta + \alpha_i + \kappa_t + \epsilon_{it}, \\ MVS_{it} &= \beta\, G_{it-1} + \delta\, EcoGlob_{it-1} + \gamma\, SocGlob_{it-1} + \zeta\, PolGlob_{it-1} + X_{it-1}\theta + \alpha_i + \kappa_t + \epsilon_{it}, \\ FRVS_{it} &= \beta\, G_{it-1} + \delta\, EcoGlob_{it-1} + \gamma\, SocGlob_{it-1} + \zeta\, PolGlob_{it-1} + X_{it-1}\theta + \alpha_i + \kappa_t + \epsilon_{it}, \end{aligned}$$

where subscripts $i = 1, ..., N$ denote the respective countries, and $t = 1, ..., T$ the time index. G_t is a $N \times 1$ vector containing alternative income inequality variables (to be specified below), and $EcoGlob_t$, $SocGlob_t$ and $PolGlob_t$ are $N \times 1$ vectors containing the economic, social and political globalization proxies, respectively, to be specified in detail below. X_t is an $N \times K$ matrix and θ is a $K \times 1$ vector, with K being the number of further explanatory variables to be described in the next subsection. α_i is an $N \times 1$ vector of country fixed effects, κ_t is a $T \times 1$ vector of time effects and finally ϵ_{it} is an $N \times 1$ vector of uncorrelated disturbances with zero mean and heteroscedastic country-specific variances $\sigma^2_{i,\epsilon}$.[6] Accordingly, the significance levels reported in all following tables are based on heteroscedasticity-robust standard errors.

At this point it is worth highlighting the potential endogeneity that our main explanatory variables may be subject to which could make a causal interpretation of our estimates problematic. This potential problem could be circumvented by the use of appropriate instruments for our measures of income inequality. This is, however, not a straightforward task. Recently, Krieger and Meierrieks (2019), when investigating the effect of income inequality on terrorism, use the share of mature-aged cohorts (i.e. persons between the ages of 40 and 59) in the country's working age population as an instrument for the Gini coefficient since, as they argue, when mature-aged cohorts are relatively large less income inequality may arise due to more labor market competition. They consider however a much large number of countries (114 in total), so that they have a much larger variation in their sample as we do. Further, this variable is not suitable as an instrument in our analysis as a mature population is likely to systematically vote for traditional parties. Another alternative, which may be considered as an valid instrument for income inequality, its the ten-year-lag. This instrument is also discussed by Krieger and Meierrieks (2019), but the implementation of this instrument will considerably reduced the sample data, especially in our case since we are analyzing *election* periods. Similarly, it is quite challenging to find any valid instrument for the tail income inequality, i.e. the top 10% and 20% income share, as well as the bottom 10% and 20% income share.

In order to circumvent this potential problem, all explanatory variables in our analysis enter the regression models with a lag, where the $t-1$ dating refers not to the previous year, but to the previous *election* period. Given the asynchronicity of the electoral cycles in our country sample we

[6] We opt for this option and do use a clustering scheme for the possible cross-country-correlation as most cross-country effects may be reflected in similar macroeconomic developments and not on unexplained disturbances.

believe that the potential endogeneity problem in our regressions, while existent, may not be too relevant to invalidate the following results.

3.3 Estimation Results

3.3.1 Average Income Inequality

We start by discussing our econometric results using the after-tax Gini coefficient as the economic inequality measure.[7] We compare two estimation samples: 1970-2016 and 2000-2016. The reason for the analysis of the second sample is twofold: first we hope to gain deeper insights into more recent developments, and second, we would like to investigate whether the introduction of the euro, which affected a large number of countries in our dataset, may represent an important structural shift in many dimensions. We estimate the regressions for the far-left (FLVS), the far-right (FRVS) and middle or mainstream voting shares (MVS) using the first lags $(t-1)$ of the explanatory variables to account for a possible endogeneity bias. Further, since the independent variables have different dimensions, we report the standardized regression coefficients to interpret our results in a more intuitive way.[8]

Table 1: Panel OLS regressions with Gini Net (all countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
GiniNet $(t-1)$	0.349*	0.214	-0.302**	-0.172	0.105	0.045
Unemployment rate $(t-1)$	0.375**	0.371**	-0.278**	-0.286**	0.044	0.060
RGDP growth $(t-1)$	-0.228***	-0.230***	0.263**	0.219**	-0.166	-0.099
Inflation $(t-1)$	0.031	0.076	0.016	-0.005	-0.054	-0.067
Credit HH/GDP growth $(t-1)$	-0.019	-0.272**	0.036	0.129	-0.035	0.076
Real house price growth $(t-1)$	0.093	0.045	-0.116**	-0.052	0.081	0.033
Gov. exp/GDP growth $(t-1)$	-0.187***	-0.212***	0.160**	0.137*	-0.054	0.005
Recession dummy $(t-1)$	0.048	0.079	-0.011	-0.001	-0.031	-0.076
Financial crisis dummy $(t-1)$	0.041	0.042	-0.036	-0.023	0.013	-0.007
Economic glob. $(t-1)$	-0.251	-0.108	0.283*	0.170	-0.174	-0.146
Social glob. $(t-1)$	-0.552*	-0.857**	0.097	0.333*	0.399***	0.349**
Political glob. $(t-1)$	0.148	0.243	-0.042	-0.148	-0.083	-0.019
Observations	174	174	174	174	174	174

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 1 shows the standardized coefficients of the panel OLS regressions for the FLVS, the FRVS and the MVS without and with time effects (NTE and TE, respectively) included in the regressions

[7] We also estimated the following regression models using the pre-tax variant of the Gini coefficient (GiniMarket). As this variable is only indirectly related to the actual income distribution perceivable by households in an economy, the results of those regressions were much weaker than the ones using the after-tax Gini coefficient (GiniNet), as expected. These and all other results no present in the Appendices are available upon request.

[8] See Bring (1994), who discusses two possibilities of calculating standardized regression coefficients. In this paper, we calculate the standardized regression coefficients by multiplying the estimated coefficient with the ratio between the standard deviation of the independent variable with respect to the standard deviation of the dependent variable: $B_i = \hat{\beta}_i \cdot (\frac{\sigma_i}{\sigma_y})$.

using the first lag $(t-1)$ of the explanatory variables and with the GiniNet variable for the estimation sample 1970-2016.

In general terms, the estimation results reported in Table 1 are in line with well established knowledge concerning the impact of macroeconomic variables on voting behavior. Independently of whether or not time effects are included in the panel regressions, poor economic performance (represented by an increase in the unemployment rate and by a decrease in the growth rate of the real GDP per capita) increases electoral support for far-left parties (FLVS), and decreases the support for middle or mainstream parties (which are likely to be or have been part of the government and therefore may also be partly responsible for the upswing in economic activity). These two variables are statistically significant at the 5% level. These results show that far-left parties benefit from economic downturns. The standardized coefficient of the unemployment rate on FLVS 0.37 can be interpreted as follows: an increase in the unemployment rate by one standard deviation increases the FLVS by 0.37 standard deviations on average. Similarly, a higher growth rate of the government-expenditures-to-GDP-ratio can be associated with stronger support for mainstream parties and a lower electoral support of far-left parties. These findings are consistent with those of Visser et al. (2014) and March and Rommerskirchen (2015), who argue that the electorate shifts toward far-left parties when the unemployment rate increases. Further, a higher social globalization seems to be associated with a higher support both of middle and far-right parties in detriment of far-left parties; This result supports to some extent the *cultural backlash* hypothesis by Inglehart and Norris (2016). In addition, neither the recession dummy nor the financial crisis dummy seems to be able to explain the electoral support for far-left or far-right parties in contrast to the findings of Funke et al. (2016), who however consider a much larger time span in their study than we do in this paper.

As for the income inequality variable (the GiniNet coefficient), the results are much less robust for the estimated period, as a statistically significant influence of the expected sign (positive for the FLVS and negative for the MVS) is only found in the corresponding panel regressions without time effects. On a first sight, our data and estimation methodology does not seem to support the notion that economic inequality influences significantly the voting behavior in the analyzed countries.[9]

Table 2 reports the estimation results for the 2000-2016 subsample. Three interesting differences are worth discussing: First and foremost, the income inequality variable did not seem to have a robust impact on any of the endogenous variables in the 1970-2016 sample, in the 2000-2016 subsample its coefficient is highly statistically significant and of a important magnitude in the MVS and the FRVS

[9]To test the robustness of our results, we also ran our regressions using the average of all independent variables in the periods between the parliamentary elections for each country. For example, parliamentary elections in Italy took place in (...), 1996, 2001, 2006, (...). Then, for the observation of the year 2001 in Italy, we calculate the average from 1996-2000. For the observations of the year 2006, we calculate the average from 2001 to 2005, and so on. This calculation was done for all independent variables in all countries. Since it was not possible to make a meaningful calculation of the year dummy variables in these regressions, we exclude them from these regression variants, i.e. we exclude the recession, financial crises, and previous far-left/right dummies. The results of the panel OLS regressions with fixed effects with the averages of the independent variables using the GiniNet variable are quite similar to the ones reported in Tables 1 and 2 and are available upon request.

Table 2: Panel OLS regressions with Gini Net (all countries). Subsample: 2000-2016

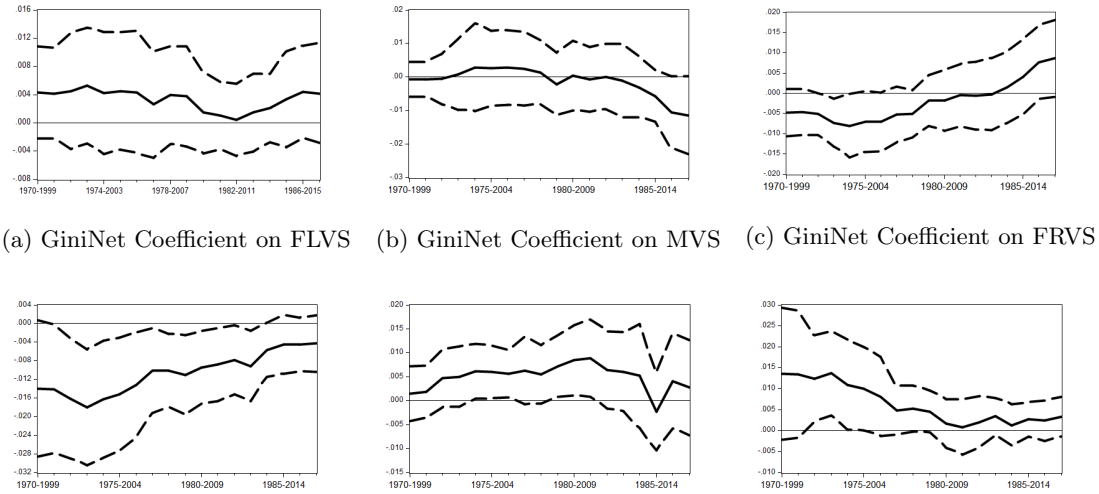
	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
GiniNet $(t-1)$	0.200	0.306	-0.563***	-0.673***	0.595**	0.654**
Unemployment rate $(t-1)$	0.757***	0.803***	-0.584***	-0.565***	0.137	0.070
RGDP growth $(t-1)$	-0.231***	-0.210***	0.188**	0.229***	-0.055	-0.129
Inflation $(t-1)$	0.085	0.178	-0.090	-0.104	0.048	-0.013
Credit HH/GDP growth $(t-1)$	-0.095	-0.264*	0.180*	0.297	-0.164	-0.176
Real house price growth $(t-1)$	0.167**	0.185***	-0.202***	-0.235***	0.131*	0.160
Gov. exp/GDP growth $(t-1)$	-0.188***	-0.146*	0.033	-0.065	0.119	0.217*
Recession dummy $(t-1)$	-0.006	0.048	0.037	0.018	-0.044	-0.067
Financial crisis dummy $(t-1)$	0.076*	0.092	-0.053	-0.054	0.006	-0.006
Economic glob. $(t-1)$	0.032	-0.051	-0.082	-0.174	0.084	0.283
Social glob. $(t-1)$	0.050	0.092	-0.142	-0.179	0.151	0.165
Political glob. $(t-1)$	0.009	-0.040	-0.217	-0.299	0.289*	0.444*
Observations	87	87	87	87	87	87

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

regressions. Accordingly, economic inequality can be associated with a higher support for far-right parties to the detriment of established mainstream parties. This finding corroborates the ideas of Jesuit et al. (2009), who suggested that higher levels of income inequality increase electoral support for far-right parties. As the sharp increase in economic inequality cannot be considered an exogenous process, but it has been instead promoted by active tax and labor market policies, the rise of far-right parties can be considered, to a certain extent, a product of political decisions. Further, while the standardized coefficients of the real GDP per capita estimated in this recent subsample are quite similar to those reported in Table 1, the standardized coefficients of the unemployment rate in the FLVS and the MVS regressions are about twice as large as in the previous estimation, suggesting that the state of the labor market may have gained relevance for particularly for the support of far-left parties. Last but not not least, the growth rate of house prices in real terms has also gained in relevance for the support of far-left parties, as the positive and statistically significant coefficients reported in Table 2 indicate. This is also related to a *clientele hypothesis* after which far-left parties may benefit from higher housing prices since their ideological position supports market regulation and government intervention. Finally, it is worth highlighting the fact that besides from the social component of the Globalization Index, electoral support for far-right parties seems to be decoupled from macroeconomic fundamentals when the complete estimation sample is considered.[10]

[10] Additionally, we estimated the regression models excluding those parliamentary elections where far-left/right parties were part of the government coalition. This could be an important determinant, as Dornbusch and Edwards (1989) pointed out the negative consequences of having populist governments. The results are robust in the sense that economic distress plays an important role for the FLVS, but not for the FRVS. Again, the GiniNet coefficient loses its statistical significance when the whole sample is analyzed, but remains statistically significant when recent years. These estimation results are also available upon request.

In order to investigate the apparent structural shift in the relationships among income inequality, globalization, and electoral support for far-left and far-right parties in more detail, we estimate rolling regressions using an estimation window of the length of the first subsample (1970-1999) up to the last estimation subsample (2000-2016). This procedure may serve as an important opportunity to advance the understanding of the political consequences of a major economic integration via the introduction of the Euro, as previously mentioned.[11]



(a) GiniNet Coefficient on FLVS (b) GiniNet Coefficient on MVS (c) GiniNet Coefficient on FRVS

(d) SocGlob Coefficient on FLVS (e) SocGlob Coefficient on MVS (f) SocGlob Coefficient on FRVS

Figure 2: Time-varying coefficients (not standardized) obtained from rolling panel regressions of FLVS, MVS and FRVS.

Figure 2 shows the point estimates and the corresponding standard errors of four key coefficients: the GiniNet on the FLVS (Figure 2a), the GiniNet on the FRVS (Figure 2c), the social component of the Globalization Index on the FLVS (Figure 2d), on the MVS (Figure 2d) and on the FRVS (Figure 2f) from the rolling panel regressions with different subsamples with a fixed estimation window length from 1970-1999 up to 2000-2016. While the point estimates in Figures 2a are relatively constant over time, the GiniNet seems to exert an increasingly negative positive) effect on the MVS (FRVS) in recent times, corroborating the estimation results summarized in Table 3. Income inequality thus seems to have become a major driving force behind the rise of far-right parties in detriment of mainstream parties in recent times. Interestingly, Figures 2d-2f, which would correspond to the *cultural backlash* hypothesis of Inglehart and Norris (2016) for the United States, do not seem to be corroborated by data stemming from other advanced economies.

[11]It should be noted, however, that this procedure comes at the cost of estimation accuracy because of the shorter estimation sample used in each of the rolling regressions.

Table 3: Panel OLS regressions with Gini Net (European countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
GiniNet $(t-1)$	0.451**	0.725***	-0.387**	-0.515*	0.095	0.001
Unemployment rate $(t-1)$	0.407**	0.401**	-0.330**	-0.324	0.058	0.057
RGDP growth $(t-1)$	-0.278***	-0.167**	0.358***	0.279***	-0.228*	-0.227*
Inflation $(t-1)$	0.096	0.416***	-0.016	-0.141	-0.074	-0.217
Credit HH/GDP growth $(t-1)$	-0.053	-0.350**	0.065	0.215	-0.039	0.047
Real house price growth $(t-1)$	0.111	0.023	-0.160***	-0.081	0.116	0.092
Gov. exp/GDP growth $(t-1)$	-0.170***	-0.286***	0.169**	0.188*	-0.068	0.022
Recession dummy $(t-1)$	-0.009	0.001	0.031	0.033	-0.036	-0.047
Financial crisis dummy $(t-1)$	0.056	0.017	-0.053	0.057	0.019	-0.098
Economic glob. $(t-1)$	-0.360*	-0.607*	0.312*	0.457**	-0.079	-0.038
Social glob. $(t-1)$	-0.404	-0.060	0.067	0.067	0.310*	-0.034
Political glob. $(t-1)$	0.211	0.515***	-0.096	-0.324***	-0.076	-0.058
Observations	131	131	131	131	131	131

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Tables 3 and 4 report the estimation results obtained using European countries only, i.e., not taking into account Australia, Canada, Japan and the United States. In general terms, the results reported in these two tables are quite in line with those obtained using the full set of countries with a single but key exception: When the full estimation sample 1970-2016 is considered the estimated inequality coefficient in the FLVS regression is highly statistically significant independently of whether time fixed effects are included in the regression or not. In this context, the statistically significant and positive coefficient for the FRVS in the 2000-2016 European sample is even more remarkable, as it indicates a radical shift in the way how income inequality may affect electoral outcomes, away from supporting far-left parties towards benefiting far-right parties.

3.3.2 Tail Income Inequality

A main shortcoming of the Gini coefficient (either pre- or after tax) is the well known fact that it underestimates changes at the tails of the income distribution (Atkinson, 1970).

Table 5 reports the results using the 90/10 income share ratio as an aggregate measure of tail income inequality. As in the previous cases, here we also find the robust results concerning the macroeconomic performance variables (unemployment rate and real GDP per capita growth), as well as a statistically significant and positive (negative) influence on the FLVS (MVS) for the 1970-2016, and no significant effect on the FRVS. When the 2000-2016 subsample is considered, the previously found positive effect on FRVS is however not further present, as reported on Table 23 in the Appendix.

It is however quite likely that changes at the different tails of the income distribution may also have different effects on electoral outcomes because they affect different parts of the population. In

Table 4: Panel OLS regressions with Gini Net (European countries). Subsample: 2000-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
GiniNet $(t-1)$	0.265	0.534**	-0.688***	-0.880***	0.642*	0.644*
Unemployment rate $(t-1)$	0.889**	1.012***	-0.743**	-0.901***	0.148	0.240
RGDP growth $(t-1)$	-0.268***	-0.154**	0.284***	0.264***	-0.121	-0.199
Inflation $(t-1)$	0.128	0.270	-0.118	-0.197	0.036	0.008
Credit HH/GDP growth $(t-1)$	-0.025	-0.030	0.185	0.120	-0.214*	-0.126
Real house price growth $(t-1)$	0.230***	0.226**	-0.288***	-0.349***	0.162*	0.242
Gov. exp/GDP growth $(t-1)$	-0.177**	-0.224*	0.034	-0.048	0.117	0.264
Recession dummy $(t-1)$	-0.051	-0.030	0.083	0.055	-0.060	-0.043
Financial crisis dummy $(t-1)$	0.071*	0.037	-0.073	0.068	0.029	-0.120
Economic glob. $(t-1)$	-0.048	0.069	-0.016	-0.260	0.064	0.270
Social glob. $(t-1)$	0.149**	0.267	-0.133	-0.274	0.036	0.110
Political glob. $(t-1)$	0.053	-0.055	-0.250	-0.154	0.272*	0.246
Observations	69	69	69	69	69	69

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 5: Panel OLS regressions with income share ratio 90_10 (all countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Ratio 90_10 $(t-1)$	0.255*	0.256**	-0.291**	-0.236*	0.192**	0.114
Unemployment rate $(t-1)$	0.425**	0.798***	-0.287*	-0.569***	0.040	0.119
RGDP growth $(t-1)$	-0.187***	-0.217***	0.210***	0.253***	-0.136	-0.172
Inflation $(t-1)$	-0.060	0.152*	0.052	-0.071	-0.021	-0.030
Credit HH/GDP growth $(t-1)$	-0.081	-0.035	0.056	0.096	-0.010	-0.107
Real house price growth $(t-1)$	0.068	0.175***	-0.074	-0.210*	0.046	0.147
Gov. exp/GDP growth $(t-1)$	-0.143	-0.248**	0.075	0.103	0.017	0.068
Recession dummy $(t-1)$	0.006	-0.012	0.068	0.101	-0.102	-0.132
Financial crisis dummy $(t-1)$	0.045	0.020	-0.051	0.049	0.033	-0.086
Economic glob. $(t-1)$	-0.248	-0.069	0.256	0.107	-0.149	-0.092
Social glob. $(t-1)$	-0.018	0.145	-0.107	-0.075	0.168*	-0.018
Political glob. $(t-1)$	0.010	-0.272	0.026	0.075	-0.045	0.128
Observations	108	108	108	108	108	108

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

order to investigate this issue, we ran separate regressions including the bottom and top 10% and 20% income shares.

Table 6: Panel OLS regressions with bottom 10% income share (all countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share lowest 10 $(t-1)$	-0.201	-0.308**	0.279	0.344**	-0.223*	-0.223
Unemployment rate $(t-1)$	0.428**	0.814***	-0.281	-0.582***	0.030	0.123
RGDP growth $(t-1)$	-0.187***	-0.212***	0.208**	0.246***	-0.133	-0.166
Inflation $(t-1)$	-0.039	0.187*	0.035	-0.114	-0.016	0.000
Credit HH/GDP growth $(t-1)$	-0.142	-0.093	0.121	0.134	-0.049	-0.110
Real house price growth $(t-1)$	0.090	0.193***	-0.098	-0.225**	0.061	0.152
Gov. exp/GDP growth $(t-1)$	-0.110	-0.209**	0.037	0.081	0.042	0.065
Recession dummy $(t-1)$	0.001	-0.004	0.071	0.091	-0.101	-0.126
Financial crisis dummy $(t-1)$	0.043	0.055	-0.048	0.005	0.031	-0.054
Economic glob. $(t-1)$	-0.217	-0.055	0.225	0.101	-0.131	-0.096
Social glob. $(t-1)$	-0.024	0.090	-0.103	-0.027	0.167	-0.039
Political glob. $(t-1)$	-0.032	-0.400*	0.094	0.241	-0.105	0.003
Observations	108	108	108	108	108	108

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 7: Panel OLS regressions bottom 10% income share (all countries). Subsample: 2000-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share lowest 10 $(t-1)$	-0.212	-0.260	0.349***	0.457**	-0.289**	-0.394*
Unemployment rate $(t-1)$	0.701**	0.824***	-0.538***	-0.630***	0.113	0.130
RGDP growth $(t-1)$	-0.213***	-0.190***	0.219***	0.248***	-0.110	-0.171*
Inflation $(t-1)$	-0.008	0.115	0.029	-0.058	-0.032	-0.023
Credit HH/GDP growth $(t-1)$	0.036	-0.059	0.011	0.100	-0.047	-0.084
Real house price growth $(t-1)$	0.115	0.175**	-0.122	-0.231**	0.064	0.161
Gov. exp/GDP growth $(t-1)$	-0.189**	-0.206**	0.117	0.097	0.008	0.049
Recession dummy $(t-1)$	-0.010	-0.005	0.070	0.086	-0.087	-0.113
Financial crisis dummy $(t-1)$	0.087**	0.031	-0.110***	0.027	0.074	-0.063
Economic glob. $(t-1)$	-0.140	0.037	0.090	-0.152	0.001	0.175
Social glob. $(t-1)$	0.073	0.070	0.002	0.012	-0.067	-0.078
Political glob. $(t-1)$	-0.055	-0.056	-0.018	-0.043	0.074	0.108
Observations	80	80	80	80	80	80

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Tables 6 and 7 report the estimation results for FLVS, MVS and FRVS using the lowest 10% income share for the estimation samples 1970-2016 and 2000-2016, respectively, without and with time effects.[12]

[12]In the Appendix G similar estimation results using the lowest 20% income share are reported.

For the 1970-2016 sample we find a significant and negative (positive) influence of the lowest 10% income share on the FLVS (MVS). Accordingly, an increase of the lowest 10% income share by one standard deviation can be associated with a 0.308 standard deviations higher far-left voting share (FLVS), and a 0.344 standard deviations higher middle voting share (MVS). An improvement of the economic conditions of the poorest share of the population seems to be linked with a decrease in electoral support to far-left parties, and a higher approval of mainstream parties when the whole 1970-2016 sample is considered.

As it was the case with the measure of post-tax average income inequality, the estimation results for the 2000-2016 for the lowest 10% indicate a dramatic shift in the link between income inequality and voting behavior: As it was the case with the GiniNet coeficient (see Table 2), in the 2000-2016 the lowest 10% income share appears to be linked in a statistically significant manner not with the FLVS as it was the case when the 1970-2016 sample was considered, but with the FRVS.

Table 8: Panel OLS regressions with bottom 10% income share (European countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share lowest 10 $(t-1)$	-0.121	-0.333	0.260	0.891*	-0.235	-0.873*
Unemployment rate $(t-1)$	0.678**	0.936***	-0.505*	-0.737**	0.068	0.147
RGDP growth $(t-1)$	-0.195***	-0.175***	0.261***	0.245**	-0.172	-0.168
Inflation $(t-1)$	0.098	0.136	-0.061	-0.126	-0.006	0.046
Credit HH/GDP growth $(t-1)$	-0.131	-0.010	0.139	0.062	-0.068	-0.072
Real house price growth $(t-1)$	0.163*	0.198**	-0.193**	-0.262**	0.110*	0.169
Gov. exp/GDP growth $(t-1)$	-0.040	-0.281*	-0.027	0.049	0.070	0.180
Recession dummy $(t-1)$	-0.040	-0.037	0.113	0.030	-0.112	-0.006
Financial crisis dummy $(t-1)$	0.055	0.009	-0.079	-0.000	0.055	-0.008
Economic glob. $(t-1)$	-0.547**	-0.044	0.454**	-0.454	-0.116	0.632
Social glob. $(t-1)$	0.218	0.117	-0.299**	-0.043	0.201**	-0.047
Political glob. $(t-1)$	0.051	-0.249	0.070	0.127	-0.136	0.051
Observations	79	79	79	79	79	79

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

When only European are considered, we find as in the previous case with the GiniNet coefficient that the 10% lowest income share exerts a stronger and statistically significant positive impact on the FRVS in recent times (2000-2016).

Last but not least, we ran similar panel regressions using the top 10% income shares for both estimation samples, and found no robust statistically significant linkages between this variable and the electoral support for far-left or far-right parties, irrespectively of whether we use all countries in our sample, or only the European ones.[13] The link between income inequality and far-right parties seems thus to be a story of a higher income inequality driven by the relative deterioration of the

[13]These estimation results can be found in Appendix G.

Table 9: Panel OLS regression swith bottom 10% income share (European countries). Subsample: 2000-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share lowest 10 $(t-1)$	-0.193	-0.244	0.411**	0.693**	-0.350*	-0.665*
Unemployment rate $(t-1)$	0.825**	0.900***	-0.655**	-0.755***	0.088	0.148
RGDP growth $(t-1)$	-0.257***	-0.170***	0.277***	0.254***	-0.121	-0.171
Inflation $(t-1)$	0.018	0.109	0.040	-0.108	-0.068	0.039
Credit HH/GDP growth $(t-1)$	0.074	-0.010	-0.011	0.064	-0.053	-0.073
Real house price growth $(t-1)$	0.181*	0.193**	-0.191*	-0.271**	0.080	0.171
Gov. exp/GDP growth $(t-1)$	-0.198**	-0.268*	0.132	0.050	0.011	0.179
Recession dummy $(t-1)$	-0.030	-0.035	0.074	0.030	-0.068	-0.006
Financial crisis dummy $(t-1)$	0.100**	0.009	-0.139***	-0.000	0.086	-0.008
Economic glob. $(t-1)$	-0.189	-0.030	0.155	-0.329	-0.027	0.448
Social glob. $(t-1)$	0.102	0.066	-0.006	-0.026	-0.085	-0.028
Political glob. $(t-1)$	-0.030	-0.058	-0.035	0.032	0.072	0.013
Observations	67	67	67	67	67	67

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

economic conditions of the poorer share of the population in the analyzed countries, rather than a story of the Top X percent.

4 Concluding Remarks

In recent decades, many mature liberal democracies in Europe and beyond have experienced growing social inequality on the one hand, and increasing social protest and political polarization on the other. Yet, despite a great deal of sophisticated quantitative and qualitative research, the link between social and economic change and its political repercussions still requires further work. While it is a well-established finding in scholarship on "economic voting" that governments are penalized for poor economic performance, less is known on the conditions for voters on aggregate to switch to politically radical parties – on the left or right – rather than abstaining or voting for a mainstream opposition party. Not least, scholarship seeking to explain the rise of populist parties on the radical right or left has not specified the conditions for voters to switch to either a radical right-wing or, alternatively, a radical left-wing party. Finally, crises often have a delayed impact, even though most empirical studies on the effect of economic crises have been relatively short-term. Also, the current literature in political science offers few insights into the question whether, and to what extent, the effect of social inequality and other variables has historically changed over time.

This paper seeks to address some of these questions. The answers are normatively important, as they help us to understand the conditions under which social and political grievances are translated into political responses at the systemic level. The responsiveness of liberal democracies is often seen

as a key condition for their "input-oriented legitimacy" (Scharpf, 1999). Given the close link between liberal democracies and liberal market economies as institutions, the way discontent with growing inequality is manifested in representative democracies is a crucial question for both sets of institutions. *When* grievances are manifested by strengthening radical parties of the left and/or right, they will lead to the polarization of political conflict in legislatures and other decision-making bodies, potentially reducing the effectiveness of the system in responding to crises. This constitutes a challenge to the "output-oriented legitimacy" (Scharpf, 1999) of political systems.

It is against this background that we investigate the determinants of political polarization from the demand-side of voters, using a panel analysis based on annual aggregate data for 20 advanced economies between 1970 and 2016. The study covers 291 parliamentary elections. Our empirical analyses deliver a variety of interesting insights to complement the existing literature on economic voting: On the one hand, our analyses support the accepted wisdom of the literature on economic voting, showing that government parties get penalized for poor economic performance. In addition, our results support accounts claiming that far-left parties have benefited from periods of weak economic performance, while mainstream parties (irrespective of their government status) have been penalized at the polls. Moving beyond standard accounts, we find that income inequality has become a main driver for the growing electoral support of far-right parties, while it is simultaneously associated with electoral losses for mainstream parties. Rather than focusing on a "second", cultural dimension of political conflict (a claim investigated in a large number of analyses), we demonstrate that hard bread-and-butter issues and social inequality matter in explaining the recent popularity of far-right parties in Western European democracies. As previously mentioned, the link between income inequality and far-right parties seems to be a story of a higher income inequality driven by the relative deterioration of the economic conditions of the poorer share of the population in the analyzed countries, than a story of the Top X percent.

Our findings on the effect of globalization and of social change suggest that potential cultural factors are an important part of the story, but that social inequality should not be ignored and is an important part of a more complete explanation. Our rolling panel design also reveals that the effects of many of the explanatory variables have changed over time. Not only do our findings suggest a time-varying and/or regime-dependent nature of voter support for far-left and far-right parties, but also an interesting interplay between macroeconomic and social electoral outcomes. In particular, both average and tail income inequality (the former measured by the post-tax Gini coefficient and the latter by the bottom 10% income share) seem to have played a favouring role in the increasing electoral success of far-right parties in recent times. While we do not explicitly model the effect of different government policies (e.g. redistributive taxation or welfare expenditure), policy studies demonstrate that the increase in income inequality is not a natural phenomenon, but the result of policy choices made by governments, including policies on taxation benefiting more affluent groups in Western societies to the detriment of groups at the lower end of the income ladder (OECD, 2010).

Thus, the rise of far-right parties can be considered a home-made problem to a certain extent that can be addressed through public policy.

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Appendix

A Parliamentary elections 1970-2016

Australia	1969, 1972, 1974, 1975, 1977, 1980, 1983, 1984, 1987, 1990, 1993, 1996, 1998, 2001, 2004, 2007, 2010, 2013, 2016
Austria	1970, 1971, 1975, 1979, 1983, 1986, 1990, 1994, 1995, 1999, 2002, 2006, 2008, 2013
Belgium	1968, 1971, 1974, 1977, 1978, 1981, 1985, 1987, 1991, 1995, 1999, 2003, 2007, 2010, 2014
Canada	1968, 1972, 1974, 1979, 1980, 1984, 1988, 1993, 1997, 2000, 2004, 2006, 2008, 2011, 2015
Switzerland	1967, 1971, 1975, 1979, 1983, 1987, 1991, 1995, 1999, 2003, 2007, 2011, 2015
Germany	1969, 1972, 1976, 1980, 1983, 1987, 1990, 1994, 1998, 2002, 2005, 2009, 2013
Denmark	1968, 1971, 1973, 1975, 1977, 1979, 1981, 1984, 1987, 1988, 1990, 1994, 1998, 2001, 2005, 2007, 2011, 2015
Spain	1977, 1979, 1982, 1986, 1989, 1993, 1996, 2000, 2004, 2008, 2011, 2015, 2016
Finland	1970, 1972, 1975, 1979, 1983, 1987, 1991, 1995, 1999, 2003, 2007, 2011, 2015
France	1968, 1973, 1978, 1981, 1986, 1988, 1993, 1997, 2002, 2007, 2012
United Kingdom	1970, 1974, 1979, 1983, 1987, 1992, 1997, 2001, 2005, 2010, 2015
Greece	1974, 1977, 1981, 1985, 1989, 1990, 1993, 1996, 2000, 2004, 2007, 2009, 2012, 2015
Ireland	1969, 1973, 1977, 1981, 1982, 1987, 1989, 1992, 1997, 2002, 2007, 2011, 2016
Italy	1968, 1972, 1976, 1979, 1983, 1987, 1992, 1994, 1996, 2001, 2006, 2008, 2013
Japan	1969, 1972, 1976, 1979, 1980, 1983, 1986, 1990, 1993, 1996, 2000, 2003, 2005, 2009, 2012, 2014
Netherlands	1967, 1971, 1972, 1977, 1981, 1982, 1986, 1989, 1994, 1998, 2002, 2003, 2006, 2010, 2012
Norway	1969, 1973, 1977, 1981, 1985, 1989, 1993, 1997, 2001, 2005, 2009, 2013
Portugal	1975, 1976, 1979, 1980, 1983, 1985, 1987, 1991, 1995, 1999, 2002, 2005, 2009, 2011, 2015
Sweden	1970, 1973, 1976, 1979, 1982, 1985, 1988, 1991, 1994, 1998, 2002, 2006, 2010, 2014
United States	1970, 1972, 1974, 1976, 1978, 1980, 1980, 1982, 1984, 1986, 1988, 1990, 1992, 1994, 1996, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016

There are 291 parliamentary elections in total. The data was compiled by Döring and Manow (2015). Dictatorial regimes, i.e. Spain 1970-1976, Greece 1970-1973 and Portugal 1970-1974, are not considered throughout this paper.

B Far-left and far-right parties from 1970 to 2016

Australia	Right	Australia First, Citizens Electoral Council, One Nation, Rise Up Australia
	Left	Communist Party of Australia, Democratic Socialist Electoral League, Democratic Socialist Perspective, Socialist Alliance
Austria	Right	Alliance for the Future of Austria, Freedom Party of Austria, Movement for Political Renewal
	Left	Socialist Left Party, Communist Party of Austria
Belgium	Right	Flemish Block, Flemish Interest, Libertarian-Direct-Democratic, National Front, People's Party, People's Union
	Left	Communist Party of Belgium, Left Socialist Party, Worker's Party of Belgium
Canada	Right	No parties identified
	Left	Communist Party of Canada, Communist Party of Canada - Marxist-Leninst
Switzerland	Right	Freedom Party of Switzerland, Geneva Citizens' Movement, Swiss Democrats, Swiss People's Party, Ticino League
	Left	Alternative Left, Autonomous Socialist Party, Progressive Organizations of Switzerland, Solidarity, Swiss Party of Labour
Germany	Right	Alternative for Germany, Civil Rights Movement Solidarity, German Party, German People's Union, Law and Order Offensive, National Democratic Party of Germany, Patriots for Germany, Popular Vote, Pro Germany, Pro German Middle, Statt Party, The Offensive
	Left	Action Democratic Progress, Alliance of Germans, Collection to Actions, German Communist Party, German Union for Peace, Marxist-Leninist Party of Germany, The Left
Denmark	Right	Danish People's Party, Progress Party
	Left	Communist Party of Denmark, Common Course, Left Socialists, Socialist People's Party, Unity List-Red Green Alliance
Spain	Right	Basque Left, Basque Nationalist Party
	Left	Communist Party of Spain, We Can, In Common We Can, Workers' Party of Marxist Unification, United Left
Finland	Right	Finns Party, Finnish Rural Party
	Left	Communist Worker's Party, Communist Party of Finland, Finnish People's Democratic League, Left Alliance
France	Right	Movement for France, National Front, National Republican Movement
	Left	French Communist Party, Unified Socialist Party, Left Front, Revolutionary Communist League, Worker's Struggle
United Kingdom	Right	British National Party, Democratic Unionist Party, English Democrats, National Democratic Party, National Front, United Kingdom Independence Party
	Left	Communist Party of Great Britain, Green Party of England and Wales, Plaid Cymru, Respect Party, Scottish Socialist Party, Sinn Féin, Socialist Alternative, Socialist Labor Party
Greece	Right	Golden Dawn, Independent Greeks, National Democratic Union, National Political Union, Popular Orthodox Rally
	Left	Coalition of the Radical Left, Communist Party of Greece, Communist Party of Greece (Interior), Democratic Left, Synaspismos, United Democratic Left
Ireland	Right	No parties identified
	Left	Communist Party of Ireland, Democratic Left, People Before Profit Alliance, Sinn Féin, Socialist Labour Party, Socialist Party, Workers Party
Italy	Right	Brothers of Italy, Casa Pound, Italian Social Movement, National Alliance, New Force, No Euro, Northern League, Social Alternative, The Freedomites, The Right, Tricolour Flame
	Left	Civil Revolution, Communist Refoundation Party, Communist Worker's Party, Critical Left, Democratic Party of the Left, Five Star Movement, Italian Communist Party, Party of Italian Communists
Japan	Right	Japan Restauration Party
	Left	Japanese Communist Party
Netherlands	Right	Centre Democrats, Centre Party, Democratic Political Turning Point, Liveable Netherland, One NL, Party for Freedom, Patriotic Democratic Appeal, Pim Fortuyn List, Proud of the Netherlands
	Left	Communist Party of the Netherlands, New Communist Party of the Netherlands, Pacifist Socialist Party, Socialist Party
Norway	Right	Democrats in Norway, Fatherland Party, Norwegian People's Party, Progress Party, The Democrats
	Left	Communist Party of Norway, Socialist Left Party, The Red Party
Portugal	Right	Democratic and Social Centre-People's Party, National Renovator Party
	Left	Unified Democratic Coalition, Bloc of the Left, Left Revolutionary Front, People's Democratic Union, People's Socialist Front, Portuguese Communist Party, Portuguese Labour Party, Portuguese Workers' Communist Party, Revolutionary Socialist Party, United People Alliance, Workers Party of Socialist Unity
Sweden	Right	New Democracy, Sweden Democrats
	Left	Communist Party of Sweden, The Left Party
United States	Right	No parties identified
	Left	No parties identified

C Recessions

Country	Year
Australia	1971, 1975, 1977, 1981, 1990
Austria	1974, 1980, 1982, 1983, 1992, 2000, 2008, 2012
Belgium	1974, 1976, 1980, 1992, 2000, 2008, 2012
Canada	1974, 1980, 1981, 1990, 2008, 2014
Switzerland	1974, 1977, 1981, 1990, 1992, 1994, 1996, 1998, 2002, 2008
Germany	1974, 1980, 1982, 1992, 1995, 2001, 2002, 2008, 2012
Denmark	1973, 1977, 1980, 1987, 1990, 1992, 1997, 2001, 2006, 2007, 2011, 2015
Spain	1974, 1978, 1980, 1992, 2008, 2010
Finland	1975, 1976, 1980, 1990, 2007, 2012, 2013
France	1974, 1980, 1992, 2008
UK	1973, 1974, 1979, 1990, 2008
Greece	1973, 1976, 19980, 1981, 1985, 1990, 1992, 1992, 2007, 2014
Ireland	1975, 1982, 1985, 2007, 2012, 2016
Italy	1974, 1977, 1981, 1992, 1997, 2001, 2002, 2008, 2011, 2013
Japan	1973, 1993, 1997, 2001, 2008 ,2010, 2012, 2014
Netherlands	1973, 1074, 1976, 1979, 1982, 2003, 2008, 2011
Norway	1980, 1981, 1987, 1992, 2002, 2007, 2010, 2015
Portugal	1974, 1980, 1983, 1992, 2002, 2008, 2010
Sweden	1970, 1976, 1980, 1990, 2007, 2011
USA	1973, 1980, 1981, 1990, 2007

We use quarterly real GDP per capita from the Federal Reserve Bank of St. Louis to identify the peaks and troughs of economic activity for each country by applying the algorithm of Bry and Boschan (1971).

D Systemic Financial Crises

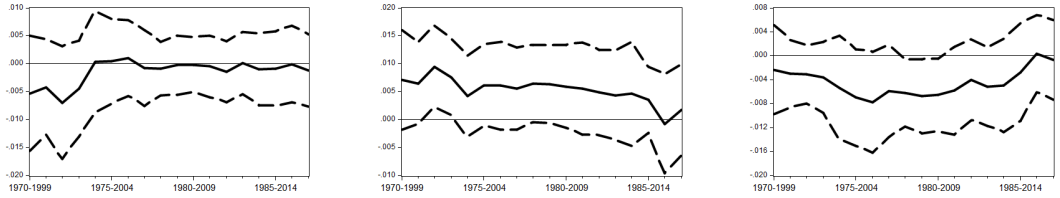
Country	Year
Australia	1989
Austria	2008
Belgium	2008, 2012
Switzerland	1991, 2008
Germany	2008
Denmark	1987, 2008
Spain	1977, 2008
Finland	1970
France	2008
UK	1974, 1991, 2007
Greece	2008
Ireland	2008
Italy	1990, 2008, 2011, 2013
Japan	1997
Netherlands	2008
Norway	1988
Portugal	2008
Sweden	1991, 2008
USA	1984, 2007

This refers to a systematic crisis characterized by government intervention. This dataset is drawn from Jordà et al. (2017).

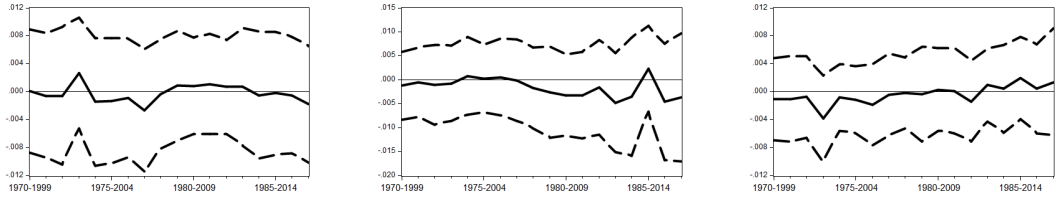
E Summary Statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Far-left vote share	0.053	0.071	0	0.533	291
Far-right vote share	0.052	0.075	0	0.359	291
Middle vote share	0.896	0.11	0.373	1	291
Government vote share	0.541	0.122	0.123	0.865	291
Opposition vote share	0.459	0.122	0.135	0.877	291
GiniMarket	44.442	5.344	26.301	56.572	915
GiniNet	28.537	4.401	16.605	38.736	915
Income share top 10%	24.73	2.23	20.1	30.8	241
Income share top 20%	39.67	2.62	34.7	46.9	241
Income share lowest 10%	3.02	.591	1.7	4	241
Income share lowest 20%	7.82	1.15	5	9.9	241
Unemployment rate	0.068	0.041	0.01	0.275	909
RGDP growth	0.018	0.023	-0.09	0.096	904
Inflation	0.05	0.05	-0.045	0.288	924
Real house price growth	0.02	0.069	-0.177	0.388	838
Gov. expenditure/GDP growth	0.001	0.007	-0.038	0.031	894
Recession dummy	0.319	0.466	0	1	924
Financial crisis dummy	0.03	0.172	0	1	924
Globalization index	75.487	12.425	36.661	92.848	924
Economic glob.	25.499	5.178	11.98	34.974	924
Social glob.	26.414	6.147	9.050	34.56	924
Political glob.	23.429	2.846	12.495	26.54	924
Voter turnout	0.764	0.127	.422	.9577	921

F Further Rolling Regressions Results



(a) EcoGlob. Coefficient on FLVS (b) EcoGlob Coefficient on MVS (c) EcoGlob. Coefficient on FRVS



(d) PolGlob Coefficient on FLVS (e) PolGlob Coefficient on MVS (f) PolGlob Coefficient on FRVS

Figure 3: Time-varying coefficients obtained from rolling panel regressions of FRVS and FLVS.

G Further Tail Income Inequality Results

Table 10: Panel OLS regressions with bottom 20% income share (all countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share lowest 20 $(t-1)$	-0.244	-0.260	0.383**	0.379**	-0.333***	-0.314*
Unemployment rate $(t-1)$	0.434**	0.806***	-0.285*	-0.568***	0.029	0.110
RGDP growth $(t-1)$	-0.186***	-0.217***	0.204**	0.249***	-0.129	-0.166
Inflation $(t-1)$	-0.038	0.172*	0.039	-0.111	-0.023	0.009
Credit HH/GDP growth $(t-1)$	-0.125	-0.098	0.090	0.113	-0.020	-0.075
Real house price growth $(t-1)$	0.083	0.192***	-0.086	-0.219**	0.051	0.145
Gov. exp/GDP growth $(t-1)$	-0.122	-0.200*	0.055	0.093	0.027	0.041
Recession dummy $(t-1)$	0.004	-0.007	0.065	0.091	-0.095	-0.123
Financial crisis dummy $(t-1)$	0.048	0.030	-0.056	0.020	0.038	-0.054
Economic glob. $(t-1)$	-0.237	-0.020	0.259	0.063	-0.163	-0.071
Social glob. $(t-1)$	-0.015	0.142	-0.117	-0.107	0.180*	0.029
Political glob. $(t-1)$	-0.010	-0.304	0.073	0.185	-0.095	-0.001
Observations	108	108	108	108	108	108

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 11: Panel OLS regressions with bottom 20% income share (all countries). Subsample: 2000-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share lowest 20 $(t-1)$	-0.206	-0.182	0.378***	0.396*	-0.334*	-0.380
Unemployment rate $(t-1)$	0.712**	0.843***	-0.542***	-0.650***	0.110	0.141
RGDP growth $(t-1)$	-0.218***	-0.195***	0.227***	0.253***	-0.116	-0.173*
Inflation $(t-1)$	0.015	0.131	-0.001	-0.091	-0.011	0.007
Credit HH/GDP growth $(t-1)$	0.019	-0.069	0.025	0.102	-0.051	-0.078
Real house price growth $(t-1)$	0.123	0.182***	-0.128	-0.237**	0.066	0.162
Gov. exp/GDP growth $(t-1)$	-0.184**	-0.192*	0.115	0.087	0.005	0.052
Recession dummy $(t-1)$	-0.013	-0.019	0.072	0.104	-0.088	-0.125
Financial crisis dummy $(t-1)$	0.086**	0.014	-0.111**	0.046	0.076	-0.076
Economic glob. $(t-1)$	-0.138	0.057	0.094	-0.178	-0.006	0.193
Social glob. $(t-1)$	0.104	0.111	-0.051	-0.072	-0.022	-0.000
Political glob. $(t-1)$	-0.059	-0.050	0.004	-0.026	0.047	0.080
Observations	80	80	80	80	80	80

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 12: Panel OLS regressions with bottom 20% income share (European countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share lowest 20 $(t-1)$	-0.121	-0.120	0.359*	0.607	-0.363**	-0.689
Unemployment rate $(t-1)$	0.676**	0.951***	-0.479*	-0.708**	0.037	0.095
RGDP growth $(t-1)$	-0.196***	-0.187***	0.259***	0.262**	-0.167	-0.178
Inflation $(t-1)$	0.100	0.138	-0.050	-0.159	-0.022	0.087
Credit HH/GDP growth $(t-1)$	-0.129	-0.013	0.119	0.079	-0.043	-0.092
Real house price growth $(t-1)$	0.156*	0.201**	-0.175*	-0.250**	0.092	0.152
Gov. exp/GDP growth $(t-1)$	-0.045	-0.289*	-0.006	0.073	0.048	0.156
Recession dummy $(t-1)$	-0.042	-0.074	0.104	0.105	-0.099	-0.073
Financial crisis dummy $(t-1)$	0.055	-0.012	-0.084	0.041	0.062	-0.044
Economic glob. $(t-1)$	-0.538**	-0.086	0.439*	-0.537	-0.104	0.777
Social glob. $(t-1)$	0.221	0.145	-0.297**	-0.185	0.195**	0.115
Political glob. $(t-1)$	0.062	-0.197	0.069	0.192	-0.144	-0.079
Observations	79	79	79	79	79	79

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 13: Panel OLS regressions with bottom 20% income share (European countries). Subsample: 2000-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share lowest 20 $(t-1)$	-0.152	-0.105	0.407**	0.568*	-0.382*	-0.630*
Unemployment rate $(t-1)$	0.848**	0.915***	-0.670***	-0.725**	0.086	0.096
RGDP growth $(t-1)$	-0.264***	-0.183***	0.289***	0.272***	-0.129	-0.181
Inflation $(t-1)$	0.048	0.111	-0.005	-0.136	-0.038	0.073
Credit HH/GDP growth $(t-1)$	0.052	-0.012	0.015	0.083	-0.067	-0.094
Real house price growth $(t-1)$	0.192*	0.196**	-0.198*	-0.259**	0.078	0.154
Gov. exp/GDP growth $(t-1)$	-0.187**	-0.275*	0.124	0.075	0.011	0.155
Recession dummy $(t-1)$	-0.040	-0.071	0.087	0.107	-0.075	-0.072
Financial crisis dummy $(t-1)$	0.096**	-0.012	-0.136**	0.045	0.086	-0.047
Economic glob. $(t-1)$	-0.176	-0.059	0.141	-0.389	-0.020	0.551
Social glob. $(t-1)$	0.129	0.082	-0.065	-0.111	-0.035	0.068
Political glob. $(t-1)$	-0.022	-0.046	-0.020	0.048	0.045	-0.019
Observations	67	67	67	67	67	67

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 14: Panel OLS regressions with top 10% income share (all countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share top 10 $(t-1)$	0.182	0.151	-0.218**	-0.157	0.152**	0.092
Unemployment rate $(t-1)$	0.475**	0.860***	-0.345*	-0.631***	0.078	0.153
RGDP growth $(t-1)$	-0.200***	-0.229***	0.224**	0.265***	-0.146	-0.178
Inflation $(t-1)$	-0.025	0.149	0.013	-0.071	0.003	-0.029
Credit HH/GDP growth $(t-1)$	-0.113	-0.110	0.090	0.158	-0.030	-0.130
Real house price growth $(t-1)$	0.079	0.202***	-0.085	-0.235**	0.053	0.158
Gov. exp/GDP growth $(t-1)$	-0.133	-0.183**	0.065	0.048	0.023	0.090
Recession dummy $(t-1)$	0.004	-0.002	0.070	0.090	-0.102	-0.125
Financial crisis dummy $(t-1)$	0.039	-0.017	-0.044	0.084	0.029	-0.105
Economic glob. $(t-1)$	-0.232	-0.044	0.240	0.087	-0.140	-0.085
Social glob. $(t-1)$	-0.061	0.084	-0.057	-0.019	0.133	-0.045
Political glob. $(t-1)$	0.035	-0.193	-0.002	0.006	-0.027	0.157
Observations	108	108	108	108	108	108

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 15: Panel OLS regressions with top 20% income share (all countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share top 20 $(t-1)$	0.218	0.152	-0.276**	-0.200	0.203**	0.152
Unemployment rate $(t-1)$	0.471**	0.845***	-0.340**	-0.622***	0.076	0.153
RGDP growth $(t-1)$	-0.198***	-0.229***	0.223**	0.266***	-0.145	-0.180
Inflation $(t-1)$	-0.039	0.144	0.031	-0.069	-0.011	-0.027
Credit HH/GDP growth $(t-1)$	-0.090	-0.099	0.057	0.126	-0.004	-0.092
Real house price growth $(t-1)$	0.066	0.194***	-0.069	-0.224*	0.040	0.150
Gov. exp/GDP growth $(t-1)$	-0.149*	-0.189**	0.086	0.068	0.006	0.066
Recession dummy $(t-1)$	0.002	-0.010	0.071	0.097	-0.102	-0.128
Financial crisis dummy $(t-1)$	0.042	-0.015	-0.047	0.084	0.031	-0.107
Economic glob. $(t-1)$	-0.238	-0.040	0.249	0.089	-0.148	-0.092
Social glob. $(t-1)$	-0.063	0.111	-0.052	-0.056	0.128	-0.016
Political glob. $(t-1)$	0.064	-0.173	-0.038	-0.008	-0.001	0.161
Observations	108	108	108	108	108	108

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 16: Panel OLS regressions with top 10% income share (all countries). Subsample: 2000-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share top 10 $(t-1)$	0.095	0.115	-0.155	-0.162	0.128	0.120
Unemployment rate $(t-1)$	0.759***	0.911***	-0.632***	-0.769***	0.191	0.244
RGDP growth $(t-1)$	-0.227***	-0.205***	0.242***	0.275***	-0.130	-0.194*
Inflation $(t-1)$	0.044	0.149	-0.057	-0.109	0.038	0.017
Credit HH/GDP growth $(t-1)$	-0.035	-0.083	0.127	0.148	-0.143	-0.129
Real house price growth $(t-1)$	0.146*	0.202***	-0.173*	-0.278**	0.107	0.200
Gov. exp/GDP growth $(t-1)$	-0.157**	-0.176*	0.063	0.042	0.052	0.099
Recession dummy $(t-1)$	-0.013	-0.017	0.076	0.113	-0.092	-0.139
Financial crisis dummy $(t-1)$	0.073	-0.016	-0.087*	0.105	0.054	-0.129
Economic glob. $(t-1)$	-0.124	0.088	0.064	-0.238	0.023	0.246
Social glob. $(t-1)$	0.067	0.085	0.012	-0.015	-0.076	-0.055
Political glob. $(t-1)$	-0.019	-0.024	-0.078	-0.111	0.123	0.173
Observations	80	80	80	80	80	80

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 17: Panel OLS regressions with top 20% income share (all countries). Subsample: 2000-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share top 10 (t-1)	0.116	0.119	-0.198	-0.213	0.167	0.185
Unemployment rate (t-1)	0.749***	0.903***	-0.614***	-0.770***	0.175	0.251
RGDP growth (t-1)	-0.228***	-0.205***	0.244***	0.275***	-0.132	-0.194*
Inflation (t-1)	0.039	0.153	-0.048	-0.127	0.031	0.037
Credit HH/GDP growth (t-1)	-0.024	-0.073	0.107	0.124	-0.125	-0.105
Real house price growth (t-1)	0.139	0.198***	-0.160*	-0.271**	0.095	0.195
Gov. exp/GDP growth (t-1)	-0.167**	-0.183*	0.081	0.058	0.038	0.083
Recession dummy (t-1)	-0.015	-0.024	0.079	0.118	-0.094	-0.140
Financial crisis dummy (t-1)	0.076*	-0.007	-0.092*	0.092	0.059	-0.119
Economic glob. (t-1)	-0.141	0.083	0.093	-0.233	-0.003	0.245
Social glob. (t-1)	0.072	0.101	0.005	-0.044	-0.070	-0.030
Political glob. (t-1)	-0.030	-0.033	-0.057	-0.083	0.104	0.142
Observations	80	80	80	80	80	80

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 18: Panel OLS regressions with top 10% income share (European countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share top 10 $(t-1)$	0.109	0.156	-0.195*	-0.264	0.160**	0.209
Unemployment rate $(t-1)$	0.684***	0.995***	-0.525**	-0.881***	0.089	0.284
RGDP growth $(t-1)$	-0.206***	-0.195***	0.285***	0.298***	-0.192	-0.220*
Inflation $(t-1)$	0.102	0.168	-0.076	-0.173	0.010	0.079
Credit HH/GDP growth $(t-1)$	-0.127	-0.050	0.139	0.126	-0.070	-0.122
Real house price growth $(t-1)$	0.147	0.208**	-0.164	-0.289**	0.086	0.196
Gov. exp/GDP growth $(t-1)$	-0.048	-0.249	-0.014	0.002	0.060	0.214
Recession dummy $(t-1)$	-0.046	-0.073	0.129	0.137	-0.128	-0.115
Financial crisis dummy $(t-1)$	0.046	-0.053	-0.060	0.131	0.039	-0.125
Economic glob. $(t-1)$	-0.516**	0.155	0.393	-0.669	-0.063	0.738
Social glob. $(t-1)$	0.191	0.121	-0.258	-0.049	0.170	-0.041
Political glob. $(t-1)$	0.076	-0.234	0.013	-0.034	-0.082	0.248
Observations	79	79	79	79	79	79

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 19: Panel OLS regressions with top 20% income share (European countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share top 20 $(t-1)$	0.136	0.128	-0.252*	-0.304	0.211**	0.285
Unemployment rate $(t-1)$	0.680***	0.991***	-0.516*	-0.883***	0.081	0.289
RGDP growth $(t-1)$	-0.206***	-0.194***	0.285***	0.297***	-0.193	-0.218*
Inflation $(t-1)$	0.096	0.173	-0.063	-0.210	-0.001	0.124
Credit HH/GDP growth $(t-1)$	-0.105	-0.026	0.097	0.097	-0.035	-0.105
Real house price growth $(t-1)$	0.137	0.207**	-0.144	-0.286**	0.069	0.193
Gov. exp/GDP growth $(t-1)$	-0.065	-0.273*	0.018	0.032	0.033	0.195
Recession dummy $(t-1)$	-0.048	-0.081	0.132	0.149	-0.131	-0.123
Financial crisis dummy $(t-1)$	0.048	-0.034	-0.064	0.108	0.042	-0.112
Economic glob. $(t-1)$	-0.520**	0.046	0.399	-0.629	-0.068	0.782
Social glob. $(t-1)$	0.186	0.155	-0.245*	-0.133	0.158	0.038
Political glob. $(t-1)$	0.096	-0.232	-0.024	0.045	-0.052	0.144
Observations	79	79	79	79	79	79

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 20: Panel OLS regressions with top 10% income share (European countries). Subsample: 2000-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share top 10 (t-1)	0.076	0.147	-0.167	-0.265	0.144	0.205
Unemployment rate (t-1)	0.882***	0.957***	-0.774***	-0.902***	0.189	0.285
RGDP growth (t-1)	-0.274***	-0.190***	0.313***	0.310***	-0.151	-0.224*
Inflation (t-1)	0.070	0.136	-0.069	-0.148	0.024	0.066
Credit HH/GDP growth (t-1)	0.015	-0.049	0.115	0.132	-0.161	-0.124
Real house price growth (t-1)	0.206**	0.202**	-0.242**	-0.299**	0.122	0.198
Gov. exp/GDP growth (t-1)	-0.167*	-0.237*	0.068	0.002	0.065	0.213
Recession dummy (t-1)	-0.047	-0.070	0.111	0.139	-0.099	-0.114
Financial crisis dummy (t-1)	0.086*	-0.055	-0.108*	0.144	0.060	-0.134
Economic glob. (t-1)	-0.168	0.106	0.111	-0.484	0.010	0.523
Social glob. (t-1)	0.106	0.069	-0.012	-0.030	-0.081	-0.024
Political glob. (t-1)	0.004	-0.055	-0.105	-0.008	0.131	0.061
Observations	67	67	67	67	67	67

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 21: Panel OLS regressions with top 20% income share (European countries). Subsample: 2000-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Inc. share top 20 $(t-1)$	0.097	0.124	-0.210	-0.313	0.179	0.288
Unemployment rate $(t-1)$	0.875***	0.954***	-0.761***	-0.904***	0.178	0.289
RGDP growth $(t-1)$	-0.276***	-0.189***	0.317***	0.308***	-0.154	-0.222*
Inflation $(t-1)$	0.067	0.139	-0.062	-0.180	0.019	0.104
Credit HH/GDP growth $(t-1)$	0.027	-0.025	0.089	0.101	-0.138	-0.107
Real house price growth $(t-1)$	0.200**	0.202**	-0.230**	-0.296**	0.113	0.196
Gov. exp/GDP growth $(t-1)$	-0.177*	-0.260*	0.089	0.033	0.047	0.194
Recession dummy $(t-1)$	-0.048	-0.078	0.113	0.151	-0.101	-0.123
Financial crisis dummy $(t-1)$	0.089*	-0.035	-0.115*	0.119	0.066	-0.121
Economic glob. $(t-1)$	-0.183	0.031	0.144	-0.456	-0.017	0.554
Social glob. $(t-1)$	0.110	0.088	-0.022	-0.080	-0.072	0.022
Political glob. $(t-1)$	-0.007	-0.054	-0.083	0.011	0.113	0.035
Observations	67	67	67	67	67	67

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 22: Panel OLS regressions with income share ratio 80_20 (all countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Ratio 80_20 $(t-1)$	0.282*	0.253	-0.360**	-0.306*	0.267***	0.216
Unemployment rate $(t-1)$	0.432**	0.809***	-0.291*	-0.576***	0.040	0.119
RGDP growth $(t-1)$	-0.191***	-0.224***	0.214***	0.260***	-0.138	-0.175
Inflation $(t-1)$	-0.054	0.167*	0.051	-0.095	-0.026	-0.010
Credit HH/GDP growth $(t-1)$	-0.084	-0.057	0.049	0.082	0.003	-0.067
Real house price growth $(t-1)$	0.066	0.183***	-0.068	-0.211*	0.039	0.142
Gov. exp/GDP growth $(t-1)$	-0.147	-0.227**	0.084	0.110	0.007	0.041
Recession dummy $(t-1)$	0.004	-0.011	0.069	0.098	-0.100	-0.130
Financial crisis dummy $(t-1)$	0.050	0.015	-0.058	0.047	0.039	-0.080
Economic glob. $(t-1)$	-0.264	-0.041	0.283*	0.087	-0.173	-0.089
Social glob. $(t-1)$	-0.018	0.178	-0.109	-0.134	0.171*	0.037
Political glob. $(t-1)$	0.029	-0.257	0.006	0.091	-0.034	0.093
Observations	108	108	108	108	108	108

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 23: Panel OLS regressions with ratio90_10 (all countries). Subsample: 2000-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
Ratio 90_10 $(t-1)$	0.182	0.230*	-0.246**	-0.295*	0.175	0.199
Unemployment rate $(t-1)$	0.690**	0.841***	-0.544***	-0.675***	0.131	0.176
RGDP growth $(t-1)$	-0.225***	-0.193***	0.238***	0.260***	-0.125	-0.183*
Inflation $(t-1)$	0.008	0.151	-0.011	-0.109	0.007	0.015
Credit HH/GDP growth $(t-1)$	0.019	-0.048	0.057	0.106	-0.095	-0.103
Real house price growth $(t-1)$	0.115	0.177***	-0.134	-0.245**	0.082	0.177
Gov. exp/GDP growth $(t-1)$	-0.189**	-0.216**	0.104	0.091	0.026	0.067
Recession dummy $(t-1)$	-0.013	-0.009	0.079	0.106	-0.096	-0.136
Financial crisis dummy $(t-1)$	0.086**	0.021	-0.105**	0.056	0.067	-0.095
Economic glob. $(t-1)$	-0.172	0.032	0.120	-0.165	-0.012	0.197
Social glob. $(t-1)$	0.088	0.112	-0.022	-0.049	-0.048	-0.032
Political glob. $(t-1)$	-0.073	-0.082	-0.017	-0.042	0.087	0.130
Observations	80	80	80	80	80	80

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

Table 24: Panel OLS regressions with ratio90_10 (all countries). Sample: 1970-2016

	FLVS		MVS		FRVS	
	NTE	TE	NTE	TE	NTE	TE
ratio80_20_1	0.209	0.218	-0.292**	-0.328*	0.214	0.255
Unemployment rate (t-1)	0.695**	0.860***	-0.547***	-0.695***	0.131	0.188
RGDP growth (t-1)	-0.228***	-0.197***	0.242***	0.263***	-0.129	-0.185*
Inflation (t-1)	0.016	0.163	-0.019	-0.133	0.012	0.037
Credit HH/GDP growth (t-1)	0.020	-0.049	0.053	0.096	-0.090	-0.088
Real house price growth (t-1)	0.115	0.181***	-0.133	-0.246**	0.079	0.175
Gov. exp/GDP growth (t-1)	-0.193**	-0.207**	0.110	0.090	0.020	0.061
Recession dummy (t-1)	-0.014	-0.017	0.080	0.111	-0.097	-0.137
Financial crisis dummy (t-1)	0.089**	0.022	-0.109**	0.049	0.071	-0.086
Economic glob. (t-1)	-0.183	0.039	0.140	-0.165	-0.028	0.191
Social glob. (t-1)	0.104	0.140	-0.045	-0.097	-0.031	0.009
Political glob. (t-1)	-0.086	-0.090	0.006	-0.009	0.068	0.092
Observations	80	80	80	80	80	80

Standardized beta coefficients, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ significance levels

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