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## **Political Support in Hard Times: Do People Care about National Welfare?**

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Abstract

## **Political Support in Hard Times: Do People Care about National Welfare?**

by Jana Friedrichsen and Philipp Zahn\*

During the Great Recession mass demonstrations indicated weakened political support in Europe. We show that growing dissatisfaction often reflects poor economic conditions and unemployment is particularly important. Using individual level data for 16 Western European countries for 1976–2010, we find that national economic performance matters even beyond personal economic outcomes. Finally, while the effects of growth and unemployment rates are the same across demographic subsets, the effect of inflation is heterogeneous. Well-educated or working individuals put a relatively higher weight on price stability than the less skilled or not working. Our findings reinforce the political importance of employment and growth policies.

*Keywords: political support, satisfaction with democracy, growth, unemployment, collectivism*

*JEL classification: H11, O43, P16*

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# 1. Introduction

During the Great Recession of 2007 several European countries experienced a phase of economic hardship unprecedented in recent decades. The economic downturn came with political repercussions: Mass demonstrations took place in many cities as people expressed their dissatisfaction with the economic situation and how it was being dealt with.<sup>1</sup> By late 2011 the five EU member countries which had been hit the hardest economically, Greece, Ireland, Italy, Portugal, and Spain, had overturned their governments. Political actors as well as observers noted that democratic institutions themselves could suffer under adverse economic conditions. In summer 2010, the president of the European Commission, José Manuel Barroso, even expressed his fear that “democracy might disappear” in the most heavily affected Southern European countries; he feared that macroeconomic conditions could worsen to an extent that would be impossible for governments to deal with and would therefore make them susceptible to popular uprisings (Groves, 2010). In Italy, the political crisis deepened with the national elections held in early 2013 when the Five Star Movement gained 25% of the vote but refused to support the government (Moody, 2013). Survey data from the Eurobarometer shows indeed that since the phase of economic downturn peoples’ attitudes toward their political system have worsened substantially. In Spain, for instance, satisfaction with democracy (SWD) decreased by about 20 percentage points between 2006 and 2010.

In this paper we show that the economic harshness during the last years can, to a large extent, explain the observed deterioration of political support as measured by the SWD. Combining individual-level survey data on SWD with country-level data on growth, inflation, and unemployment from 1976 to 2010 for 16 Western European countries, we find that the macroeconomy affects individuals’ attitudes toward democracy and the effects are non-negligible in size. Using estimates from pre-crisis data, we predict decreases in SWD in the order of 15 to 23 percentage points as a consequence of poor economic conditions during the Great Recession. These estimates compare well with the decreases of around 20 percentage points measured for Ireland, Greece, and Spain. We also correctly predict Portugal to be an outlier; while the observed decrease was 4 percentage points, we estimate a decrease of close to 5 percentage points in satisfaction scores.

Even though we find both growth and unemployment rates to be significant, the latter are quantitatively much more important. When the growth rate decreases by one standard deviation, the SWD is on average 2.5 percentage points lower; a

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<sup>1</sup>The protests have received large media coverage, e.g., in Donadio & Sayare (2011) and Tremlett & Hooper (2011).

standard deviation increase in unemployment, however, comes about with a decrease of 7 percentage points in SWD. Politicians might therefore want to focus on employment policies to ensure citizens’ support because “jobless growth” appears to be an undesirable policy outcome. Inflation, while significant in analyses using a country panel, does not have a robust effect when we use individual level data. This result, however, hides heterogeneity across subgroups of the population. Higher educated and working individuals seem to care much more about inflation than do the unskilled or unemployed. In contrast, growth and unemployment rates exhibit homogeneous effects on SWD throughout the population, even though the real implications differ across its subgroups. We argue that a pure self-interest explanation of political support will not easily explain this observation. Resorting to individual level data uncovers important drivers of SWD which remain undetected in national-level analyses. In particular, individual unemployment, education, age, and perceived life satisfaction are significant correlates.

In section 2, we relate our research to the existing literature. In section 3 we summarize our hypotheses (3.1), describe the dataset (3.2), and introduce our empirical model (3.3). We present our results in section 4 and discuss implications with respect to a self-interest explanation of political support and a policy trade-off between inflation and unemployment (Phillips curve) in section 5. We present robustness checks in section 6 and conclude in section 7. Appendix C contains additional tables and is available online.

## 2. Related literature

According to Easton (1957, p. 391) “support is fed into the political system in relation to three objects: the community, the regime, and the government”<sup>2</sup> and can derive from satisfaction with its outputs (Easton, 1957). Research on political support often focuses on government popularity and thus refers to the most specific dimension of political support (see Norris, 1999a, for an introduction). However, during severe economic crises more than the competence of current governments is questioned. We therefore use the variable ‘satisfaction with democracy’ (SWD) as an indicator of a more diffuse dimension of political support.

SWD derives from the survey question “On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the way democracy works in <country>?” and provides an instrumental evaluation of the performance

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<sup>2</sup>Similarly, Norris (1999b, p. 10, 16–20) distinguishes five layers of political support, the political community, regime principles, regime performance, regime institutions, and political actors.

of democracy (Dalton, 1999, p. 58). However, the different dimensions of political support are interdependent and, indeed, SWD is shown to correlate with all three dimensions of Easton's support classification (Clarke et al., 1993). Linde & Ekman (2003) argue, that "satisfaction with the way democracy works' is ... an item that taps the level of support for the way the democratic regime works in practice." Complementary research using Latin-American data indicates that satisfaction with democracy does indeed measure support for government rather than satisfaction with the idea of democracy (see Graham & Suktahnkar, 2004, p. 372 and Sarsfield & Echegaray, 2006). This seems natural as how the system is working depends on incumbent politicians. In contrast to trust in politicians or government, SWD has the advantage of being less influenced by personal sympathy for politicians or an ideological attachment to a specific party.

Previous work on satisfaction with democracy typically relies on national level data or covers relatively short time periods (Clarke et al., 1993; Wagner et al., 2009).<sup>3</sup> Results thereby rely to a large extent on cross-country variation and individual characteristics are ignored.<sup>4</sup> Furthermore, there is hardly any systematic evidence on the role of macroeconomic factors. We are aware of only three studies of SWD employing individual-level data: Halla et al. (2013) investigate the role of environmental policy, Wells & Kriekhaus (2006) the effect of corruption on SWD, and Lühiste (forthcoming) the role of social protection. The latter two studies use only a few points in time and cannot properly take into account changes in national economic conditions over time.<sup>5</sup> Halla et al. (2013) employ individual level data with a long time dimension but their data ends in 2001. Neither of these studies discusses the economic relevance and relation between different measures of macroeconomic performance systematically.

Revolutionary action or political extremism are likely to indicate the absence of political support and constitute another facet of the related literature. Brückner & Grüner (2010) find a negative relationship between growth and right-wing extremist voting at the aggregate level for 16 Western European countries. Using German data, Falk et al. (2011) find that the regional unemployment rate has a positive and statistically significant effect on right-wing extremist crimes. Moving to the micro-level, Lubbers et al. (2002) show how support of extreme right-wing parties increases with unemployment for the same set of countries. MacCulloch & Pezzini (2007)

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<sup>3</sup>The study by Wagner et al. (2009) uses the average of the ordinal SWD score as dependent variable. Due to the ordinality of SWD it is problematic to interpret their results quantitatively.

<sup>4</sup>While aggregate-level analyses can, in principle, incorporate individual characteristics as averages, the individual dimension is usually left out completely.

<sup>5</sup>All of these studies use data from the Eurobarometer for Western European countries. Wells & Kriekhaus (2006) also consider Central and Eastern European countries.

employ survey data from 64 countries and provide evidence that the preference for revolution increases when the economy performs poorly.<sup>6</sup>

More generally, this research relates to the literature on economic voting. There is evidence that voters evaluate macroeconomic outcomes retrospectively and vote accordingly in subsequent elections but also prospective voting has been proposed as an explanation and has received empirical support. Since this literature is very broad, we refer the interested reader to the survey on vote and popularity functions by Nannestad & Paldam (1994) and to “Voting and the Macroeconomy” by Hibbs (2006).

### 3. Hypotheses, data, and model specification

#### 3.1. Hypotheses

Earlier research posited a link from macroeconomic performance to political support based on the presumption that “voters hold the government responsible for economic events” (Lewis-Beck & Paldam, 2000). This can be based on self-interest: Economic conditions determine future well-being. Growth increases expected income, inflation reduces the real value of wealth and income, and higher unemployment implies higher risk of job or income loss. Therefore, individuals value, e.g., high growth as an indicator of increasing national welfare, and high inflation and high unemployment as signs of decreasing welfare. Going beyond the theory of pure self-interest, individuals may also care about the well-being of others. Macroeconomic performance may increase an individual’s satisfaction with democracy because it illustrates the democratic system’s capacity to provide collective well-being in the future.<sup>7</sup>

Based on the preceding argument we expect that, *ceteris paribus*, an individual’s SWD is

- increasing in national growth,
- decreasing in inflation and unemployment.

Furthermore, we expect that individual income and employment status have similar effects, i.e., an individual’s SWD is

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<sup>6</sup>Both, Lubbers et al. (2002) and Brückner & Grüner (2010), use data from the Eurobarometer. While the latter only rely on a few data points in time, the former use the Mannheim trend file covering 1970 to 2002. MacCulloch & Pezzini (2007) base their analysis on three waves of the World Value Survey.

<sup>7</sup>We are not positing a link between democratic and economic development. Rather, we argue that generally, a better performing system will enjoy greater support. As a matter of fact, in our sample we only look at democratic systems.

- increasing in individual income,
- lower in case of personal unemployment.

Regarding other individual characteristics, we expect that an individual's SWD is higher if he or she is better educated, younger, or male as documented in Bäck & Kestilä (2009).

Empirically, we find a strong positive correlation between general life satisfaction and SWD.<sup>8</sup> Part of the reason for this correlation could be individual differences in interpreting satisfaction questions which we would ideally control for with individual-level fixed effects. This is infeasible because the data is a repeated cross-section. However, by controlling for individual life satisfaction we can control for part of these individual differences. Moreover, since existing studies show that life satisfaction reacts to macroeconomic variables (e.g., Di Tella et al., 2003), not including it as an explanatory variable induces an omitted variable bias into the estimation.

## 3.2. Data

Our data set combines survey data with national macroeconomic data for 16 countries and up to 33 years. Specifically, it covers France, Belgium, The Netherlands, Germany (1976–2010, since 1991 including East Germany), Italy, Luxembourg, Denmark, Ireland, the United Kingdom, Greece (1981–2010), Spain and Portugal (1985–2010), Norway (1990–1995), Finland (1993–2010), Sweden and Austria (1995–2010).

We obtain individual level data from the Mannheim Eurobarometer Trend File 1970–2002 (European Commission, Brussels, 2008) and nine additional Eurobarometer waves that extend the dataset until 2010 (European Commission, Brussels, 2002, 2003, 2004a,b, 2006, 2007, 2009, 2010). The Eurobarometer survey covers about 1,000 respondents per country per wave in a repeated cross-section. The indicator SWD is based on the survey question: “On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the way democracy works in <country>?”<sup>9</sup> which was asked every year from 1976 to 2010 except for 1996 and 2008. Figure 1 illustrates that SWD varies over time.

GDP per capita, GDP growth rates, inflation rates, and unemployment rates stem from the OECD Economic Outlook, growth projections from the database OECD.StatExtracts. For robustness checks we used information on national budget

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<sup>8</sup>Because of the empirically strong correlation, SWD could have similar determinants as has life satisfaction (see for instance Frey & Stutzer, 2002a). Bäck & Kestilä (2009) find that indeed the effects for age and education go in the same direction. However, a gender effect appears with the opposite sign: females have a lower SWD (Bäck & Kestilä, 2009).

<sup>9</sup><country> is replaced by the name of the country in which the respondent was interviewed.



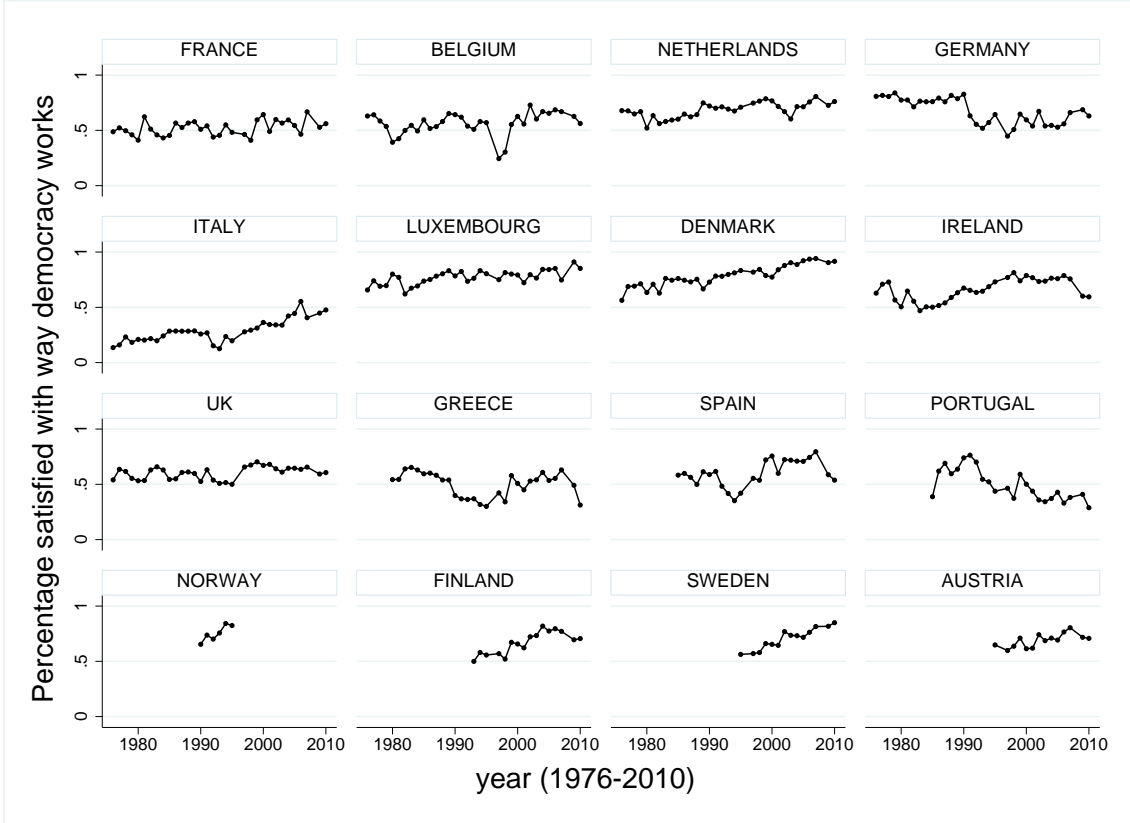


Figure 1: Percentage of individuals satisfied with democracy over time (weighted using Eurobarometer sample weights)

deficits, national government debt, and the share of social transfers from Armingeon et al. (2013). Exact variable definitions can be found in table C.1, descriptive statistics for all included national and individual variables in tables C.2 and C.3.

### 3.3. Model setup and specification

We estimate a linear probability model using the following equation:

$$\text{SWD}_{itc} = \beta_0 + \text{macro}_{tc}\beta_1 + \text{individual}_{itc}\beta_2 + \text{fe}_t + \text{fe}_c + u_{itc} \quad (1)$$

where observations are indexed by  $i$  for individuals, by  $c$  for the country in which the individual participated in the survey, and by  $t$  for the year of the survey. SWD is a dummy derived from the question how satisfied an individual is with the way democracy works in his or her country. It collapses answers ‘very satisfied’ and ‘fairly satisfied’ into ‘satisfied’ (SWD=1) and answers ‘not very satisfied’ and ‘not at all satisfied’ into ‘not satisfied’ (SWD=0).

The dependent variable SWD as well as individual controls vary at the individual level nested in years and countries, indexed by *itc*. Macro controls only vary at the year-country level, indexed by *tc*. All estimations include country fixed effects  $fe_c$  and survey year fixed effects  $fe_t$ , and we correct standard errors for clustering at the country level.

## 4. Results

We first address the impact of macroeconomic variables (Subsection 4.1) and then the effects of individual level variables (Subsection 4.2). Individual unemployment, education, income, and age are likely to be relevant for SWD and are not captured in aggregates. Neglecting individual variables therefore means neglecting potentially important driving factors of SWD and their interaction with aggregate factors. We find that individual characteristics matter indeed and should therefore be taken into account in studies that assess the implications of macroeconomic factors on satisfaction with democracy.

### 4.1. Macroeconomic variables

Our main interest lies in growth, inflation, and unemployment, which vary substantially over time, which are responsive to economic policy in the short to medium run, and are likely to be targeted by policy makers. Moreover, these variables have been proven to be influential in previous studies on SWD (Wagner et al., 2009) and right-wing extremism (Knigge, 1998; Brückner & Grüner, 2010). Since a large literature on the relationship between democracy and economy focuses on GDP (e.g., Przeworski, 2000; Acemoglu et al., 2008), we control for the GDP per head.<sup>10</sup> The following results are summarized in table 1.

National unemployment is highly statistically significant in all specifications. Economic growth is significant most of the time but turns insignificant in the subsample for which income is available (1976 to 2003). The sign of the coefficients is, as expected, positive for growth and negative for the unemployment rate. Inflation gains marginal significance only if income is included. Per capita income does not gain significance.<sup>11</sup>

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<sup>10</sup>For details on the determinants of democracy see Acemoglu & Robinson (2006); Acemoglu et al. (2008); Gassebner et al. (2013) and references therein.

<sup>11</sup>Our study analyzes well-established democracies and differs conceptually from studies on democratic development. Still, these results are consistent with recent insights on the determinants of democratization. Using extreme bounds analysis, Gassebner et al. (2013) find that neither inflation nor GDP per capita have a robust relationship with the emergence or survival of

Table 1: Impact of macroeconomic and individual level variables on SWD (individual data)

dependent: SWD	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>macroeconomic variables</i>							
GDP/head	0.0045 (0.003)	0.0044 (0.003)	0.0009 (0.003)	0.0009 (0.003)	0.0011 (0.003)	0.0035 (0.002)	0.0034 (0.003)
growth	0.0128*** (0.004)	0.0138*** (0.003)	0.0100*** (0.003)	0.0101** (0.004)	0.0110*** (0.003)	0.0055 (0.003)	0.0050 (0.004)
inflation		-0.0099 (0.012)	-0.0141 (0.010)	-0.0151 (0.010)	-0.0150 (0.011)	-0.0175 (0.010)	-0.0063* (0.003)
inflation <sup>2</sup>		0.0005 (0.000)	0.0005 (0.000)	0.0005 (0.000)	0.0005 (0.000)	0.0005 (0.000)	0.0005 (0.000)
UE rate			-0.0176*** (0.003)	-0.0199*** (0.003)	-0.0194*** (0.003)	-0.0181*** (0.003)	-0.0183*** (0.004)
<i>individual variables</i>							
unemployed	-0.0509*** (0.006)	-0.0511*** (0.006)	-0.0479*** (0.006)	-0.1097*** (0.009)	-0.1134*** (0.009)	-0.0404*** (0.008)	-0.0353*** (0.007)
outoff	-0.0020 (0.004)	-0.0022 (0.004)	-0.0015 (0.004)	-0.0043 (0.005)	-0.0052 (0.005)	-0.0014 (0.005)	0.0021 (0.004)
married	0.0001 (0.004)	0.0003 (0.004)	0.0012 (0.004)	0.0262*** (0.004)	0.0271*** (0.004)	-0.0003 (0.004)	-0.0042 (0.006)
male	0.0068* (0.004)	0.0067* (0.004)	0.0070* (0.003)	0.0036 (0.004)	0.0034 (0.004)	0.0061 (0.004)	0.0061 (0.004)
age	-0.0023*** (0.001)	-0.0024*** (0.001)	-0.0025*** (0.001)	-0.0050*** (0.001)	-0.0052*** (0.001)	-0.0025*** (0.001)	-0.0026*** (0.001)
age <sup>2</sup>	2.56e-05*** (6.23e-06)	2.62e-05*** (6.14e-06)	2.75e-05 *** (6.15e-06)	5.25e-05*** (5.93e-06)	5.5e-05*** (5.85e-06)	2.7e-05*** (7.44e-06)	2.91e-05*** (6.80e-06)
poor							-0.0095 (0.006)
rich							0.0141** (0.005)
<i>education</i>							
intermediate	0.0094 (0.007)	0.0092 (0.007)	0.0085 (0.007)	0.0213** (0.008)	0.0216*** (0.007)	0.0072 (0.009)	0.0043 (0.008)
higher	0.0282* (0.014)	0.0274* (0.014)	0.0269* (0.013)	0.0514*** (0.013)	0.0516*** (0.014)	0.0160 (0.016)	0.0108 (0.014)
still studying	0.0297* (0.014)	0.0289* (0.014)	0.0280* (0.014)	0.0595*** (0.016)	0.0600*** (0.016)	0.0154 (0.017)	0.0102 (0.015)
<i>life satisfaction</i>							
not at all ...	-0.3405*** (0.024)	-0.3410*** (0.024)	-0.3378*** (0.023)			-0.3533*** (0.029)	-0.3503*** (0.029)
not very ...	-0.2478*** (0.017)	-0.2477*** (0.017)	-0.2456*** (0.016)			-0.2643*** (0.020)	-0.2625*** (0.020)
very ...	0.0751*** (0.005)	0.0748*** (0.005)	0.0745*** (0.004)			0.0802*** (0.006)	0.0791*** (0.005)
...satisfied							
survey FE	yes	yes	yes	yes	yes	yes	yes
nation FE	yes	yes	yes	yes	yes	yes	yes
N	607486	607486	607486	665495	607486	353132	353132
adj. R <sup>2</sup>	0.139	0.139	0.143	0.097	0.096	0.150	0.150

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01, standard errors are corrected for clustering at nation level.

Column 3 is our main specification and is used as a benchmark for our robustness checks. In (4) we exclude life satisfaction from the estimation. In (5) we restrict attention to the subsample where life satisfaction is available. (6) is estimated on the reduced sample where income is available, (7) controls for income groups.

Quantitatively, unemployment is much more important than growth. An increase by one percentage point in the unemployment rate comes on average with a decrease of 1.8 percentage points in satisfaction with democracy, a one percentage point decrease in growth only with a decrease by 1 percentage point. If the growth rate increased by one standard deviation, this would imply an increase in SWD of about 2.5 percentage points.<sup>12</sup> If instead the unemployment rate increased by one standard deviation, SWD would be on average 7 percentage points lower. Thus, the effect of unemployment is almost three times as large as that of growth.<sup>13</sup>

Since unemployment and inflation are both negatively correlated with growth in our dataset, the coefficient on growth is upward biased if we omit those. Without other macroeconomic controls except for per capita GDP a one percentage point higher growth comes on average with a 1.3 percentage points higher probability of satisfaction (column 1). When all three macroeconomic variables are included, growth obtains a smaller coefficient than before but remains significant at the 5% level (column 3).

## 4.2. Individual characteristics

It is evident that the respondents' views on the democratic system were not only affected by the national labor market but in addition by the individual situation. Individual unemployment, education, and age are significant and the coefficients have the expected signs. An unemployed respondent was 4.8 percentage points less likely to be satisfied with democracy than an employed one (table 1, column 3). Education was included in dummy categories. The results indicate that those with higher education (finished school at the age of 20 or later) and those still studying evaluated democracy more favorably than those with only basic or no full-time education at all. The influence of age is U-shaped. Relatively young age individuals become, on average, less satisfied as they get older, but as they get old enough the

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democracy whereas growth has but that growth improves the chances of both democracy and autocracy surviving. Thus, growth seems to improve "political support" in both democracies and non-democracies. The study does not include unemployment rates. Using data from 14 transition countries for the period 1991–2004, Golinelli & Rovelli (2013) find that citizens are more likely to support reforms if growth is higher and unemployment lower. The insignificance of GDP per capita for democratic development had previously been shown also by Acemoglu et al. (2008).

<sup>12</sup>The standard deviation of growth is 2.54 in our sample and that of the unemployment rate is 3.99.

<sup>13</sup>We thank an anonymous referee for pointing out that the result might hide a threshold effect. More generally, if the true effect of growth is nonlinear, the linear model would not be a correct representation of the marginal effect of growth.

relationship reverses. The estimates from Column 3, Table 1 imply that around the age of 45 individuals start to become more satisfied with democracy.

As in Bäck & Kestilä (2009), the male dummy obtained a significant, positive coefficient whereas it is often negative in happiness studies (see e.g., Frey & Stutzer, 2002a). Economically, however, gender is negligible; being male is associated with not even a one percentage point higher probability of being satisfied with democracy. Those who were out of the labor force did not evaluate democracy significantly differently than those who were employed. Marital status did not reach significance either.

Life satisfaction is strongly positively correlated with SWD. This indicates a close link between the perceived personal situation and the view on the democratic system. Those who were not at all satisfied with their lives were much less likely to state that they were satisfied with the way democracy worked (-34 percentage points) than those who were fairly satisfied with their lives (omitted category). Those who stated being not very satisfied with their life in general were much less likely to be satisfied with democracy (-25 percentage points) and those who were very satisfied with their life were in contrast more likely to be also satisfied with democracy (+7 percentage points).

Life satisfaction as well as SWD are subjective measures and we are aware of concerns regarding the use of subjective variables as dependent and explanatory at the same time (Bertrand & Mullainathan, 2001). However, many studies indicate that macroeconomic variables also affect individual life satisfaction and happiness (see e.g., Di Tella et al., 2001, 2003; Deaton, 2008; Dreher & Öhler, 2011). Ignoring this will likely introduce a bias into the results, in particular, since life satisfaction is also known to be correlated with other individual characteristics (see for instance Frey & Stutzer, 2002b). In our case, quantitative findings from the specification with life satisfaction are more conservative than they are without it. Comparing column 3 (with life satisfaction) with columns 4 and 5 (without) in table 1, we conclude that the effects of unemployment, age, marital status, and education are probably overestimated when life satisfaction is not included. The coefficients of macroeconomic variables change very little; growth and unemployment slightly increase when life satisfaction is not included.<sup>14</sup>

We do not control for income in our main analysis because we are in particular interested in including the recent recessionary years but details of income were requested only up to 2004. If we still include income, we find a small effect. Rich

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<sup>14</sup>Note that changes in coefficients are not due to a selection effect. In column 5 we show results from the model without life satisfaction in the sample where the variable is available. There is hardly any difference between column 4 (full sample) and column 5 (restricted sample).

people have a slightly higher probability of being satisfied with democracy compared to middle income earners. There is no significant effect of low income. The results regarding other individual characteristics remain unaffected beyond a selection effect that is driven by the availability of the income measure as can be seen from columns 6 (subsample for which income is available, not controlling for income) and 7 (controlling for income) in table 1.

With respect to individual characteristics our results are very similar to Halla et al. (2013), qualitatively. The signs of all coefficients are the same with one exception: In contrast to Halla et al. (2013) we do not find a significantly positive effect of being married on SWD. This difference is most likely due to the omission of life satisfaction in their study (see table 1). As discussed above, life satisfaction should be included in analyses of SWD because an omitted variable bias is likely to occur otherwise (see also section 3.1).

## 5. Discussion

### 5.1. Economic relevance: satisfaction scores during the Great Recession

Our results suggest that, on average, satisfaction with democracy should have decreased by non-negligible numbers during the Great Recession. We estimated our model on pre-crisis data and computed predicted changes in satisfaction with democracy due to worsening economic conditions. Using data until 2006, we estimate the coefficients to be significant at 0.0089 for growth (standard error: 0.003) and at -0.0170 for unemployment (standard error: 0.004). Inflation and per capita GDP remain insignificant. Based on these coefficients we predict that the observed developments of growth and unemployment rates between 2006 and 2010 would have led to decreases in SWD by about 21 (Ireland), 24 (Spain) and 15 (Greece) percentage points. In 2010, the average SWD in these countries had actually decreased by about 20 percentage points as compared to the situation prior to the Great Recession. In Ireland, satisfaction with democracy fell from 0.78 in 2006 to 0.58 in 2010 according to Eurobarometer data; in Spain in the same period from 0.74 to 0.53, in Greece from 0.54 to 0.30. For Portugal, where SWD decreased by only 4 percentage points from 0.31 to 0.27, we compute an expected decrease in SWD of just below 5 percentage points.<sup>15</sup>

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<sup>15</sup>Changes in growth rates between 2006 and 2010 were -6.4 percentage points for Ireland, -4.4 for Spain, -10.5 for Greece, and +0.5 for Portugal. Unemployment rates increased by 9.1 percentage

Even though the above calculations match surprisingly well with the actual development, they are rough estimates with important caveats. First, our predictions consider only macroeconomic variables. Thus, we ignore the effects running through changes in individual variables (which are likely to aggravate results). Second, the coefficients are based on annual data. If macroeconomic conditions are poor over longer time periods, our simple calculation may be inappropriate. It is possible that people adapt to worsening economic conditions such that their satisfaction is on average affected less than if there is only a short downturn. It is, however, also imaginable that individuals become increasingly dissatisfied if the macroeconomy fails to recover for several years. Our approach cannot speak for these hypotheses.

## 5.2. Channels of influence: Micro or macro? Selfish citizens or collectivist concerns?

Unemployment manifests itself not only at the national but also directly at the individual level because a change in the national unemployment rate leads to a change in employment status for some citizens. At the individual level, being unemployed is associated with a 4.79 percentage point decrease in satisfaction with democracy. To have the same effect, the national unemployment rate would have to increase by substantial 2.7 percentage points. Suppose unemployment increases by 1 percentage point. When we aggregate the individual effects of being unemployed on the SWD for those who become unemployed at the national level, this indirect effect amounts to a change of  $-0.05$  percentage points in SWD whereas the direct effect of the increase in national unemployment is  $-1.76$  percentage points and the total effect is the sum of the two.<sup>16</sup> An additional indirect effect coming from changes in life satisfaction will further aggravate the effect of rising unemployment since the unemployed are on average less satisfied with their lives.

This comparison of individual versus national level determinants takes into account only one period. Taking a longer-term perspective, the effect of individual unemployment is likely larger. Since unemployed individuals are less satisfied with democracy (and their lives) than their employed peers, a change in national unemployment implies a persistent level effect in SWD. Even when unemployment rates do not worsen in subsequent periods, as long as unemployment is not cut back again,

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points in Ireland, by 11.6 in Spain, by 3.1 in Greece, and by 3.1 in Portugal between 2006 and 2010 (OECD, 2011).

<sup>16</sup>Coefficients are taken from table 1, column 3. In line with this calculation, the effect of unemployment in the aggregate level regression without individual controls is greater than in the individual level estimation (table 4, column 3).

those who have become unemployed remain less satisfied and imply on average a lower SWD in every period after the change.

The above comparison confirms that national level variables are relevant for an individual's satisfaction with democracy but does not tell us why. The influence of national unemployment rates can be consistent with pure self-interest. For instance, unemployment rates are indicative of the risk of becoming unemployed, of wage developments, or upcoming job opportunities. Similarly, growth rates being significant does not imply that individuals care about the performance of their country as a greater good. Possibly, they value growth as an indicator of higher transfers, better public services, lower taxes, or other outcomes that materialize at the individual level and represent the self-interest dimension of national performance.

By analyzing subpopulations, we show that the effects we find are unlikely to be explained by simple self-interest alone. We focus on subsamples which differ with respect to education and labor market status so that the labor market chances of the resulting groups are objectively different (tables 2 and 3). Surprisingly, the effects of growth and unemployment rates are significant for all groups and not significantly different in size across groups (see table 2). Unemployed versus employed, low-skilled versus high-skilled, and those in or out of the labor force are differently exposed to labor market conditions such that we would have expected heterogeneous effects according to the self-interest model. Not finding such differences suggests other factors are at work.

One explanation is collectivist welfare concerns. Individuals may believe democracy to be the system that is best able to provide collective welfare. Growth and low unemployment are success indicators of this system's performance and make individuals be satisfied with democracy even when it does not directly maximize their expected personal income since their 'true preference' implies a concern for collective welfare (see Sen, 1977, for a similar argument). Another explanation is that individuals take general equilibrium effects and their consequences at the individual level into account. For instance, they anticipate cuts in transfers or increases in taxes when the economic situation is worsening.<sup>17</sup>

### **5.3. Heterogeneous effects and the trade-off between unemployment and inflation**

An enduring economic policy debate concerns a possible trade-off between inflation and unemployment which societies may face. We use our estimation results to

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<sup>17</sup>For the effects to be similar across groups these general effects must outweigh any differential effect stemming from, e.g., individual labor market prospects.



Table 2: Analysis of subgroups - Subsamples

dependent: SWD subsample	(1) lowedu=1	(2) unemployed	(3) out of LF
<i>macroeconomic variables</i>			
GDP/head	0.0053 (0.003)	0.0008 (0.003)	0.0021 (0.003)
growth	0.0102** (0.004)	0.0089*** (0.003)	0.0096*** (0.003)
inflation	-0.0110 (0.013)	-0.0107 (0.009)	-0.0124 (0.009)
inflation <sup>2</sup>	0.0003 (0.000)	0.0004 (0.000)	0.0004 (0.000)
UE rate	-0.0195*** (0.003)	-0.0181*** (0.002)	-0.0179*** (0.003)
<i>individual characteristics</i>			
unemployed	-0.0396*** (0.009)		
out of LF	0.0003 (0.005)		
ind. controls	yes	yes	yes
survey FE	yes	yes	yes
nation FE	yes	yes	yes
<i>N</i>	203908	35594	267832
adj. <i>R</i> <sup>2</sup>	0.152	0.146	0.135
<i>Chow test: subsample versus full sample (Prob &gt; <math>\chi^2</math>)</i>			
growth	0.8983	0.5064	0.4604
UE rate	0.1981	0.7987	0.7503
<i>Chow test: subsample versus complementary sample (Prob &gt; <math>\chi^2</math>)</i>			
growth	0.8762	0.3852	0.4398
UE rate	0.1787	0.7635	0.8163

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01, standard errors are corrected for clustering at nation level.

The test against full sample compares coefficients from an estimation on the subsample to those from the benchmark estimation in table 1, column 3. Complementary subsamples are low education versus high education, unemployed versus employed, and out of labor force versus in the labor force.

analyze the relative costs of inflation and unemployment in terms of changes in SWD. In our benchmark estimation on the full sample, inflation rates did not gain significance, preventing this type of analysis. In the analysis of subgroups, however, inflation turned significant for parts of the population (table 3).<sup>18</sup> According to the results for subgroups of the population, the trade-off between inflation and unemployment in terms of satisfaction scores varies within the population.

Inflation rates exhibit a significantly negative effect on the higher skilled individuals (table 3, column 1). In the analysis using the full sample, this was blurred by inflation not affecting low-skilled individuals (see tables 1 and 2). For individuals with higher education, an increase by 1.39 percentage points in inflation is associated with the same satisfaction cost as a 1% point increase in unemployment (table 3, column 1).<sup>19</sup> For those with low education, inflation is insignificant, as discussed before. If the effect was significant at the reported size, an increase by 3.79 percentage points in inflation would be associated with the same satisfaction cost as a 1 percentage point increase in unemployment.<sup>20</sup>

The effect of inflation is also heterogeneous with respect to labor force status, as shown by the positively significant interaction terms between inflation and *unemployed*, and *out of LF*, respectively. However, the effect is not significant within either of those subgroups (table 2). When we restrict attention to individuals in the labor force (table 3, column 2), we find that the unemployed attach a much higher weight to unemployment rates relative to inflation as do the employed. The same applies to those out of the labor force as compared to those who are part of the labor force (table 3, column 3). Column 4 of table 3 combines these two splits and shows that the unemployed as well as those out of the labor force attach a relatively higher weight to unemployment rates than those who are part of the labor force and have a job.<sup>21</sup> The estimates from column 4 imply that the employed would be willing to

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<sup>18</sup>If we look at the subsample where information on income is available, inflation is significant. Using estimates from table 1, column 7, the loss in satisfaction with democracy from a 1 percentage point increase in unemployment equals the effect from an increase in inflation by 2.96 percentage points, calculated as the sum of the direct and indirect marginal effects of unemployment divided by the marginal effect of inflation:  $\frac{-0.0183-0.01*0.0353}{-0.0063} = 2.96$ .

<sup>19</sup>Due to the quadratic function the marginal effect of inflation depends on the level of inflation. For the computations we use the full-sample average of inflation at 4.60. From table 3, column 1 we obtain  $\frac{d\text{inf.}}{d\text{UE rate}} = -\frac{-0.0186+0.01(-0.0487)}{-0.0183+2*0.0005\text{inflation}} = -1.39$ . Details for the following trade-offs are in appendix A.

<sup>20</sup>Under the assumption that the estimated effect holds for any value of inflation, the insignificance of inflation would imply that those with low education prefer an arbitrarily large increase in inflation to prevent unemployment from rising. This is implausible.

<sup>21</sup>The measure of out of labor force in our dataset includes retirees as well and thus might pick up the effect of old age. Column 5 shows that the interaction of out of labor force with inflation is not only driven by the elderly; the interaction effect remains significant when we restrict the sample to individuals of age 60 or younger.

Table 3: Analysis of subgroups - Interaction effects

dependent: SWD groups w.r.t.	(1) education	(2)	(3) labor market status	(4)	(5)
<i>macroeconomic variables</i>					
GDP/head	0.0009 (0.003)	-0.0000 (0.003)	0.0009 (0.003)	0.0010 (0.003)	0.0006 (0.003)
growth	0.0090** (0.003)	0.0103*** (0.003)	0.0096*** (0.003)	0.0096** (0.003)	0.0093** (0.004)
inflation	-0.0183** (0.008)	-0.0162 (0.010)	-0.0164* (0.009)	-0.0173* (0.009)	-0.0165* (0.009)
inflation <sup>2</sup>	0.0005** (0.000)	0.0006* (0.000)	0.0006* (0.000)	0.0006* (0.000)	0.0006* (0.000)
UE rate	-0.0186*** (0.003)	-0.0176*** (0.003)	-0.0180*** (0.003)	-0.0181*** (0.003)	-0.0175*** (0.003)
lowedu*growth	0.0017 (0.002)				
lowedu*UE rate	0.0021 (0.003)				
lowedu*inflation	0.0105* (0.006)				
lowedu*inflation <sup>2</sup>	-0.0002 (0.000)				
unemployed*growth		-0.0004 (0.001)		0.0001 (0.001)	-0.0001 (0.001)
unemployed*UE rate		0.0008 (0.002)		0.0007 (0.002)	0.0012 (0.002)
unemployed*inflation		0.0084** (0.004)		0.0081** (0.004)	0.0077* (0.004)
unemployed*inflation <sup>2</sup>		-0.0003* (0.000)		-0.0003* (0.000)	-0.0003 (0.000)
out of LF*growth			0.0008 (0.001)	0.0009 (0.001)	0.0011 (0.001)
out of LF*UE rate			0.0009 (0.001)	0.0010 (0.001)	0.0000 (0.001)
out of LF*inflation			0.0052*** (0.002)	0.0061*** (0.002)	0.0031** (0.001)
out of LF*inflation <sup>2</sup>			-0.0002* (0.000)	-0.0002* (0.000)	-0.0001 (0.000)
<i>individual variables</i>					
unemployed	-0.0487*** (0.005)	-0.0742*** (0.025)	-0.0481*** (0.006)	-0.0782*** (0.025)	-0.0808*** (0.025)
out of LF	0.0012 (0.004)		-0.0295** (0.013)	-0.0330** (0.015)	-0.0080 (0.012)
lowedu	-0.0812** (0.031)				
education dummies	no	yes	yes	yes	yes
ind. controls	yes	yes	yes	yes	yes
survey FE	yes	yes	yes	yes	yes
country FE	yes	yes	yes	yes	yes
Sample	education available	labor force	full sample	full sample	age ≤ 60
N	607486	339654	607486	607486	474658
adj. R <sup>2</sup>	0.144	0.151	0.143	0.143	0.149

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01, standard errors are corrected for clustering at nation level.

The dummy *low education* takes a value of 1 for basic education and 0 for higher education or still studying.

tolerate an increase in inflation of 1.60 percentage points for a 1 percentage point lower unemployment rate, those out of the labor force would accept an increase by 2.51 percentage points in inflation, and the unemployed would even tolerate an increase by 2.93 for a decrease in the unemployment rate by 1 percentage point.

These numbers can be interpreted as marginal rates of substitution between inflation and unemployment. Looking at subgroups of the population is instructive: the trade-offs we estimated for population splits along the lines of education and labor market status are in line with expected differences in the labor market perspectives of the respective groups. If the labor market prospects are poorer as for the low-skilled or unemployed, the relative weight put on unemployment rates is higher. According to our analysis, the higher educated and those in the labor market and employed are willing to accept relatively higher unemployment rates and desire lower inflation, as compared to the less educated and those unemployed or out of the labor force, respectively. The estimated trade-offs enclose the results from Di Tella et al. (2001) who use Eurobarometer data from 1975–1991 to estimate a marginal rate of substitution between inflation and unemployment of 1.66 in terms of life satisfaction. When we aggregate our results to the full population, however, we obtain a higher marginal rate of substitution indicating that for satisfaction with democracy in our sample inflation is less important than for life satisfaction in Di Tella et al. (2001) (see appendix A).

#### **5.4. Aggregate level regressions**

Even though satisfaction with democracy is determined at the individual level, previous studies on SWD have concentrated on country averages. They collapse either the ordered data to an average or a binary recode to a percentage measure of support; changes in these national averages can come by various channels hidden in the aggregates. When we use the year-wise country average of SWD as the dependent variable and estimate a linear probability model, the results are broadly consistent with studies by other authors: growth is significantly positive, unemployment and inflation are significantly negative (compare for instance Clarke et al., 1993; Wagner et al., 2009).

Comparing the results in table 4 with those from individual level data (table 1), however, we observe qualitative differences as GDP/head and inflation become significant. The coefficients of growth and unemployment using country-level data have the same sign and are also of similar size as those in the individual-level data. When we include the average score of life satisfaction (column 5), its effect is positive

and highly significant as in the individual-level analysis. Moreover, all coefficients become smaller (in absolute terms) if life satisfaction is controlled for.

Table 4: Impact of macroeconomic variables on SWD (country panel)

dependent: SWD	<i>percentage SWD</i>		<i>average SWD score</i>	
	(2)	(3)	(5)	(6)
GDP/head	0.0024**	0.0017*	0.0030	0.0018
	(0.001)	(0.001)	(0.002)	(0.002)
growth	0.0083***	0.0075***	0.0151***	0.0132***
	(0.002)	(0.002)	(0.004)	(0.004)
inflation	-0.0141***	-0.0114***	-0.0297***	-0.0245***
	(0.004)	(0.004)	(0.006)	(0.006)
inflation <sup>2</sup>	0.0004**	0.0004**	0.0008***	0.0008***
	(0.000)	(0.000)	(0.000)	(0.000)
UE rate	-0.0211***	-0.0142***	-0.0355***	-0.0239***
	(0.002)	(0.002)	(0.003)	(0.003)
Avg. life satisfct. score		0.4650***		0.8030***
		(0.045)		(0.080)
ind. controls	yes	yes	yes	yes
survey FE	yes	yes	yes	yes
country FE	yes	yes	yes	yes
<i>N</i>	432	410	432	410
adj. <i>R</i> <sup>2</sup>	0.783	0.833	0.796	0.839

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01, standard errors are corrected for clustering at nation levels.

Dependent variable is the average of the SWD dummy in a given country.

## 6. Robustness

Previous studies are inconclusive regarding an effect of inflation on SWD. Halla et al. (2013) find inflation in levels to be significant while the logarithm of inflation is insignificant in Wagner et al. (2009). A series of robustness checks regarding the functional form of inflation indicate that our results do not depend on choosing a specific function of inflation. Time trends do not seem to be crucial for our findings either. A general time trend does not affect our results at all. In a model including country-specific time trends, our results regarding growth and unemployment rates are confirmed but, in addition, inflation becomes significant. For details see table C.4 and C.11.

We further show that our findings are robust with respect to including growth lags, leads or forecasts and with respect to using non-linear models. Moreover, we illustrate that our results are not driven by omitting indicators of institutional quality or economic policy.

## 6.1. Lagged growth, growth expectations, and endogeneity

Growth rates from previous periods may be influential in addition to contemporaneous growth rates because real effects need time to materialize. Thus, we tested whether lagged growth has an impact on SWD. Column 2 in table C.9 shows that lagged growth does not have a significant influence on SWD and including it in the regression hardly affects the coefficients of the other macroeconomic variables as compared to the main model in column 1.

One might object to the results from section 4 and table 1 that it is not growth that has an influence on SWD but rather higher satisfaction levels which lead to better economic performance. Robustness checks indicate that our results are not an artifact of endogenous growth rates. First, we included future growth rates (column 3 of table C.5). Future growth obtains a coefficient even larger in size than the coefficient of contemporaneous growth. This might be due to reverse causality, i.e., satisfaction with democracy driving growth rates, but could also be caused by the serial correlation of growth rates. In both cases, however, this is not the entire story since contemporaneous growth and unemployment are still significant. The effect which remains when we include future growth can be considered a lower bound on the effect of growth on SWD. Second, we also included the average lagged satisfaction with democracy at the country level (column 4). By doing so, we control for the link potentially running from SWD to growth in the next period. Furthermore, we control for correlation between SWD today and growth tomorrow by including future growth rates. Thus, the coefficient of growth in column 4 reflects only the contemporaneous correlation between SWD and growth. This is more likely to be an effect from growth on SWD than an effect from contemporaneous SWD on contemporaneous growth. The effect of growth is still about 75% as large as in the main analysis and significant. Since satisfaction with democracy on average does not change very fast, this absorbs a large part of the variation and might make inference less reliable.

A third explanation for why future growth is significant is that it proxies for growth expectations. Growth expectations in turn are likely to have a positive effect on satisfaction scores. We find that indeed growth forecasts, which are conceptually closer to growth expectations than are growth leads, are highly statistically significant (column 4). Moreover, inflation becomes significant. But, even though expectations seem to be important, so too is the current situation, as the contemporaneous growth rate remains significant.

## 6.2. Logit and ordered logit

In the preceding analysis, we have estimated a linear probability model with a binary recode of SWD as the dependent variable. The advantages in terms of interpretation and simplicity of the linear model seem to outweigh potential gains from a nonlinear model (for a discussion see also Angrist & Pischke, 2009). Results from a logit model that explicitly takes the domain restriction of the dependent variable into account are qualitatively the same and quantitatively close to those from the linear probability model. All marginal effects lie above the coefficients from the linear model so that our results are rather conservative. For details see tables C.6 and C.7.

We also analyzed determinants of SWD using the original, ordered outcome which may contain more information but is supposedly more noisy (Veenhoven, 1996). All variables which obtained significance in the main analysis are significant in the ordered logit with the same sign. In addition and in line with results from an ordered logit model in Halla et al. (2013), inflation becomes marginally significant.<sup>22</sup> The marginal effects are consistent with the view that the results in the binary recode are driven by individuals switching from being not satisfied to being satisfied with the way democracy works and vice versa. For details see table C.8.

## 6.3. Institutional quality

Our analysis assumes that democratic institutions in Western Europe did not change over the relevant time horizon. This is not restrictive for several reasons. First, the binary Democracy-Dictatorship measure (Cheibub et al., 2009) is constant for all country-year pairs in our sample and indicates stable democracies. Consequently, our results would remain the same if we controlled for institutional quality in this sense. Second, controlling for either the Polity IV index (Marshall et al., 2011) or the Freedom House index (Freedom House, 2011) does not affect our findings and the indicators remain insignificant (table C.9).<sup>23</sup> Alternative indicators have not gained significance in studies using similar covariates either (e.g., elective fractionalization in Halla et al., 2013, or the BERI index and others in Wagner et al., 2009) so we refrain from additional tests. Third, Grosjean & Senik (2011) find no significant effect of market liberalization on support for democracy in Central and Eastern Europe. We therefore do not expect any effect in Western European countries even

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<sup>22</sup>While Halla et al. (2013) control for GDP and population and find both significant with opposite signs, we find that GDP per head never gains significance. This is consistent with each other and therefore not discussed further.

<sup>23</sup>Both indicators have often been used but are also criticized, e.g., by Cheibub et al. (2009).

if there have been major changes, for example, in the organization of the European common market.

## 6.4. Policy measures

Obviously, it could be that not the macroeconomic outcomes influence citizens' satisfaction but instead policies implemented by their governments (see e.g., Lühiste (forthcoming) on the role of social protection for SWD). We therefore test for the effects of debt and deficit levels and also include two measures which proxy for social spending, (1) the population aged 65 and above as a percentage of total population and (2) social security transfers as a percentage of GDP. To be able to assess the relevance of policy measures, we first estimate the main model on the subsample for which all policy variables are available and then include the policy measures. The inclusion of policy measures hardly affects the results. In contrast to Halla et al. (2013), none of the policy variables gains significance. Detailed results are provided in table C.10.

## 7. Conclusion

The European debt crisis has had a severe impact on European democracies. In the five most heavily affected EU member countries, Greece, Ireland, Italy, Portugal, and Spain, governments have been voted out of office. But the demands by the various protestors went beyond the deselection of governments and people's perception of the democratic system have changed in the course of the crisis, not only in Greece and Italy but also in many other European countries.<sup>24</sup>

This paper shows that the changing attitudes toward democracy were to be expected as a consequence of extremely poor national economic performance. Lower growth rates and higher unemployment rates were both associated with fewer respondents stating they were satisfied with the way democracy works in a representative survey of European citizens. For drops in growth rates and rise in unemployment rates as experienced, for example, by Spain or Ireland, our simple annual estimate of a drop in satisfaction with democracy by 15 to 23 percentage points is close to actual changes in satisfaction with democracy, which were around -20 percentage points.

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<sup>24</sup>The most recent example is Giuseppe Grillo's Five Star Movement in Italy, which gained 25% in the Italian elections in February 2013, refused to cooperate with other parties, and openly expressed discontent with the current state of Italian democracy (Moody, 2013).



Our analysis uncovered important new aspects. First, growth and unemployment rates are simultaneously significant correlates of SWD and, in contrast to previous research, inflation is insignificant. The insignificance of inflation hides important heterogeneity, though. While not significant overall, inflation has a significantly negative effect on the SWD of individuals who are higher skilled or have a job. Second, our results show that individual variables, in particular individual unemployment, education and age, are important drivers of satisfaction with democracy. Moreover, perceived life satisfaction has a strong effect and its inclusion increased explanatory power substantially (with respect to  $R^2$ ). Finally, while individual controls are important, macroeconomic variables remain very relevant. National unemployment and growth rates have a significant effect. It is beyond the scope of this paper to provide a clear-cut answer as to why national indicators are significant. However, if people's evaluation of democracy was driven by pure self-interest, we would expect a differential effect of growth and unemployment across subgroups of the population (for instance, skilled versus unskilled). Not finding such differences may suggest that collectivist concerns for national economic performance play a role.

Some tentative implications for economic policies can be drawn from our results. Economic policies that result in good economic performance can increase peoples' political support directly via national economic performance and indirectly when the effects materialize at the individual level. Moreover, our analysis shows that the unemployment rate is substantially more important than the inflation rate in shaping attitudes toward the democratic system and also more important than the growth rate. From that perspective any policy intended to improve people's satisfaction with the democratic system should prioritize job creation. Our results, however, also reveal a limitation to these policies. Crucial for political support is personal life satisfaction which cannot be easily addressed by economic policy and might not be an appropriate political target either.

## Appendix

### A. The unemployment-inflation trade-off

We compute the marginal rates of substitution (MRS) between inflation and unemployment as

$$d\text{SWD} = \frac{\partial\text{SWD}}{\partial\text{inflation}}d\text{inflation} + \frac{\partial\text{SWD}}{\partial\text{UE rate}}d\text{UE rate} = 0$$

$$\Rightarrow \frac{d\text{inflation}}{d\text{UE rate}} = -\frac{\frac{\partial\text{SWD}}{\partial\text{UE rate}}}{\frac{\partial\text{SWD}}{\partial\text{inflation}}}$$

## A.1. High versus low education

We use estimation results from table 3, column 1, and evaluate the marginal effect of inflation at the average level of inflation of 4.6. Then, the MRS for those with higher education is

$$\frac{d\text{inflation}}{d\text{UE rate}} = \frac{-0.0186 + 0.01(-0.0487)}{-0.0183 + 2*0.0005\text{inflation}} = 1.39$$

For those with a low education, inflation is insignificant as can be seen in table 2. If the effect was significant at the size reported in table 3, column 1, we compute

$$\frac{d\text{inflation}}{d\text{UE rate}} = \frac{-0.0186 + 0.01(-0.0487)}{-0.0183 + 0.0105 + 2(0.0005 - 0.0002)\text{inflation}} = 3.79$$

With an average share of people with low education of 30% the aggregate effect would be  $0.3*3.79 + 0.7*1.39 = 2.11$ . The average share of people with low education in the sample countries ranges from 15% (Sweden) to 62% (Portugal). Consequently, our analysis would suggest that the aggregate trade-offs range from increases of inflation by 1.75 (Sweden) to 2.88 (Portugal) percentage points for a one percentage point increase in unemployment.

## A.2. Labor market status

We use estimation results from table 3, column 4, and evaluate the marginal effect of inflation at the average level of inflation of 4.6. The MRS for the employed is

$$\frac{d\text{inflation}}{d\text{UE rate}} = \frac{-0.0181 + 0.01(-0.0782)}{-0.0173 + 2*0.0006\text{inf.}} = \frac{-0.0181 + 0.01(-0.0782)}{-0.0173 + 0.0012*4.6} = 1.60$$

The effect of inflation is insignificant for the unemployed and for those out of the labor force as demonstrated in table 2. Ignoring this, the MRS for the unemployed would be

$$\frac{d\text{inflation}}{d\text{UE rate}} = \frac{-0.0181 + 0.01(-0.0782)}{-0.0173 + 0.0081 + 2(0.0006 - 0.0003*4.6)} = 2.93$$

and the MRS for those out of the labor force would be

$$\frac{d\text{inflation}}{d\text{UE rate}} = \frac{-0.0181 + 0.01(-0.0782)}{-0.0173 + 0.0061 + 2(0.0006 - 0.0002)*4.6} = 2.51$$

Depending on the national unemployment rates and labor market participation, the trade-off becomes more or less extreme. While it would be  $0.02*2.93 + 0.71*1.6 + 0.27*2.51 = 1.87$  for an unemployment rate of close to 2% and a labor market participation of around 73% as in Luxembourg, it would be  $0.17*2.93 + 0.33*1.6 + 0.5*2.51 = 2.28$  for the almost 17% unemployment rate observed on average in Spain and a labor market participation rate of around 50%. Higher unemployment rates and lower labor market participation tilt the trade-off toward favoring relatively higher inflation rates.

## B. A closer look at inflation

In contrast to Halla et al. (2013) who report a significant effect of inflation on SWD, we do not find a robust effect of inflation on SWD.<sup>25</sup> This difference does not seem to stem from our using of a binary recode of SWD instead of the original four-point scale of SWD. If we estimate an ordered logit model, inflation is significant only in a model with unemployment rates. If we omit unemployment rates to be closer to Halla et al. (2013), inflation returns to being insignificant.

Our data extends until 2010 and thereby covers the crisis years with extremely low inflation or even deflation that are not included in previous studies. If we exclude the crisis-years since 2007, inflation still does not reach significance (see section 5.1). Moreover, if we allow for non-linear effects of inflation or a differential effect of deflation, we only confirm our results that inflation does not play a major role for the population on average. Table C.11 provides the details.

## C. Supplementary material

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<sup>25</sup>We concentrate on their findings without environmental policy.

Table C.5: Definitions of variables used

variable name	series name / explanation	source
<i>macroeconomic variables</i>		
GDP per head	Gross domestic product: GDP per head, US\$, constant prices, constant PPPs, OECD base year; rescaled by factor 1/1000	OECD (2011)
UE rate	Rate of unemployment as % of civilian labor force	OECD (2011)
growth	GDP, growth rate	OECD (2011)
growth forecast	Growth forecasts were calculated using projections of GDP contained in the Economic Outlook Series of the OECD for the years 1987-2010. For 1992-2010: projections for GDP per head ( US\$, constant prices, constant PPPs, OECD base year). For 1987-1991: For Economic Outlook 49 and earlier GDP projections are only available in local currency. Also note that the base year changed over time. For the years 1970-1986, we used projected growth rates as stated in the OECD Economic Outlook directly.	OECD (1976-2009), OECD (2011)
inflation	Percentage change in Consumer price index CPI from previous period	OECD (2011)
polity4	Index of institutional quality which is originally coded on a scale from 0 to 10 (highest quality). Since in our sample the index only varies from 8 to 10 we recode as follows: polity4==2 if polity takes the highest value of 10, polity4==1 if polity takes the value 9, polity4==0 if polity takes the lowest value of 8 in our sample.	Marshall et al. (2011)
polrights	Measures political rights on a one-to-seven scale, with one representing the highest degree of Freedom and seven the lowest.	Freedom House (2011)
civillib	Measures civil liberties on a one-to-seven scale, with one representing the highest degree of Freedom and seven the lowest.	Freedom House (2011)
debt	Gross government debt (financial liabilities) as a percentage of GDP	Armingeon et al. (2013)
deficit	Annual deficit (government primary balance) as a percentage of GDP	Armingeon et al. (2013)
elderly	Population 65 and over as a percentage of population	Armingeon et al. (2013)
ssstran	Social security transfers as a percentage of GDP	Armingeon et al. (2013)
<i>individual variables</i>		
SWD	Answer to the question "On the whole, are you very satisfied, fairly satisfied, not very satisfied, or not at all satisfied with the way democracy works in <country>? Would you say you are ...?", 1=not at all satisfied, 2=not very satisfied, 3=fairly satisfied, 4=very satisfied	Eurobarometer
SWD dummy	SWD dummy=1 if (SWD=3 or SWD=4); SWD dummy=0 if (SWD=2 or SWD=1)	own calculation
unempl	dummy for those being unemployed at the time of the survey	Eurobarometer
out of LF	dummy for those not in the labor force, subsuming housewives, students, military, and retired	Eurobarometer
married	dummy for being 'married' or 'living as married'	Eurobarometer
male	dummy for males	Eurobarometer
age	age of the respondent in years	Eurobarometer
education	age when full-time education was finished. We use this variable to construct 5 dummies as described below.	Eurobarometer
basic education	age when full-time education was finished: 'up to 15 years' or 'no full-time education'	Eurobarometer
intermediate educ.	age when full-time education was finished: 16 to 19 years	Eurobarometer
higher education	age when full-time education was finished: 20 years or older	Eurobarometer
still studying	age when full-time education was finished: still studying	Eurobarometer
income	Income is coded in categories which vary over time and from country to country. We use this variable to defer the relative positions of individuals in the income distribution.	Eurobarometer
poor	dummy for individuals whose income is in the lowest three income deciles	Eurobarometer
middle income	dummy for individuals whose income is in the four middle income deciles	Eurobarometer
rich	dummy for individuals whose income is in the three highest income deciles	Eurobarometer
life satisfaction	Answer to the question "On the whole, are you very satisfied, fairly satisfied, not very satisfied, or not at all satisfied with the life you lead? Would you say you are ...?" 1=not at all satisfied, 2=not very satisfied, 3=fairly satisfied, 4=very satisfied. We use this variable to construct 4 dummies corresponding to the 4 answer categories.	Eurobarometer

Table C.6: Summary statistics for the macro variables

MACRO	F	B	NL	D	I	L	DK	IRL	UK	GR	E	P	N	FIN	S	A
GDP/head (\$)	24.63 (3.8)	25.93 (4.79)	28.05 (5.67)	26.26 (4.6)	23.60 (4.02)	46.39 (16.07)	26.87 (4.78)	22.88 (10.58)	24.47 (5.84)	19.30 (3.44)	22.77 (3.99)	18.47 (3.21)	34.83 (2.04)	27.43 (3.99)	30.28 (3.21)	32.31 (2.51)
growth (%)	2.14 (1.5)	2.13 (1.69)	2.33 (1.82)	2.06 (2.06)	2.01 (2.09)	4.21 (3.12)	1.97 (2.21)	4.63 (3.81)	2.42 (2.04)	1.73 (2.74)	2.93 (2.14)	2.68 (2.6)	3.43 (1.09)	2.81 (3.47)	3.04 (2.65)	2.14 (1.98)
inflation	4.41 (4.07)	3.40 (2.47)	2.87 (2.07)	2.50 (1.64)	7.00 (5.92)	3.48 (2.62)	4.48 (3.51)	5.87 (5.9)	5.26 (4.8)	11.37 (8.05)	4.19 (2.2)	6.04 (4.92)	2.67 (0.96)	1.37 (0.85)	1.13 (0.99)	1.68 (0.68)
growth forecast	2.30 (0.89)	2.14 (0.74)	2.14 (1.07)	2.32 (0.81)	2.04 (0.96)	2.89 (1.72)	2.12 (0.97)	3.97 (2.16)	2.00 (1.05)	2.38 (1.24)	2.96 (0.97)	2.72 (0.93)	3.05 (0.69)	3.24 (1.00)	2.65 (0.82)	2.32 (0.75)
UE rate (%)	8.29 (1.74)	9.69 (2.3)	6.41 (2.88)	7.12 (2.15)	9.57 (1.87)	1.83 (0.94)	7.04 (2.05)	10.49 (4.61)	7.46 (2.41)	8.63 (2.09)	16.61 (4.93)	6.40 (1.89)	5.56 (0.42)	10.53 (3.12)	7.24 (1.55)	4.30 (0.5)
debt (%)	52.23 (19.86)	106.51 (23.21)	72.41 (14.37)	49.31 (16.48)	105.89 (16.48)	11.53 (5.40)	66.63 (14.57)	71.40 (26.60)	48.19 (9.91)	86.52 (35.95)	57.32 (10.10)	67.19 (11.87)	32.20 (5.29)	54.01 (6.76)	63.76 (11.67)	70.32 (3.59)
deficit (%)	-1.02 (1.51)	1.15 (4.07)	0.05 (2.22)	-0.30 (1.80)	-0.62 (3.47)	0.77 (2.14)	1.48 (3.79)	-0.43 (6.57)	-0.73 (3.09)	-1.98 (3.41)	-1.22 (3.65)	-1.44 (2.21)	-2.10 (2.32)	0.88 (4.68)	1.72 (2.64)	0.06 (1.63)
elderly (%)	14.80 (1.35)	15.47 (1.32)	12.92 (1.17)	16.56 (1.95)	15.77 (2.64)	13.71 (0.36)	15.04 (0.60)	11.07 (0.26)	15.45 (0.48)	15.43 (2.13)	15.29 (1.74)	15.20 (1.95)	16.16 (0.15)	15.33 (1.02)	17.49 (0.32)	16.00 (0.86)
ssstran (%)	17.26 (1.01)	16.62 (1.08)	15.45 (3.38)	17.20 (1.04)	15.87 (1.40)	17.10 (4.10)	16.60 (1.48)	12.43 (2.89)	13.21 (1.34)	14.55 (1.68)	14.13 (2.29)	12.45 (2.03)	16.34 (0.63)	18.18 (2.72)	15.88 (0.86)	19.06 (0.52)
#N	33	33	33	33	33	33	33	33	33	29	24	24	6	16	14	14

Standard deviations in brackets below estimates.

Calculations use only the years used for the regressions, i.e. 1976-2010; 1996 and 2008 are missing.

Countries are abbreviated according to international vehicle registration codes. Since 1991 East-Germany is included. Before data refers only to West-Germany. GDP per head in US\$1000, constant prices, constant PPPs, reference year 2000.

For Italy, Luxembourg, Denmark, and Ireland some policy variables are not available for all years.

Sources: OECD, for details see table C.5.

Table C.7: Summary statistics for the individual variables

	F	B	NL	D	I	L	DK	IRL	UK	GR	E	P	N	FIN	S	A
SWD	0.519 (0.500)	0.573 (0.495)	0.685 (0.4644)	0.600 (0.490)	0.276 (0.447)	0.772 (0.420)	0.773 (0.419)	0.651 (0.477)	0.569 (0.495)	0.500 (0.500)	0.592 (0.491)	0.536 (0.499)	0.765 (0.424)	0.689 (0.463)	0.702 (0.457)	0.688 (0.463)
unempl	0.059 (0.235)	0.074 (0.261)	0.043 (0.203)	0.077 (0.266)	0.051 (0.220)	0.015 (0.122)	0.056 (0.229)	0.072 (0.258)	0.067 (0.250)	0.042 (0.200)	0.072 (0.258)	0.049 (0.216)	0.052 (0.221)	0.071 (0.257)	0.049 (0.216)	0.036 (0.187)
out of LF	0.418 (0.493)	0.436 (0.496)	0.491 (0.500)	0.403 (0.491)	0.480 (0.500)	0.479 (0.500)	0.374 (0.484)	0.454 (0.498)	0.427 (0.495)	0.492 (0.500)	0.504 (0.500)	0.440 (0.496)	0.381 (0.486)	0.446 (0.497)	0.388 (0.487)	0.393 (0.488)
married	0.648 (0.478)	0.644 (0.479)	0.676 (0.468)	0.608 (0.488)	0.590 (0.492)	0.650 (0.477)	0.659 (0.474)	0.581 (0.493)	0.628 (0.483)	0.659 (0.474)	0.584 (0.493)	0.626 (0.484)	0.609 (0.488)	0.595 (0.491)	0.627 (0.484)	0.611 (0.488)
male	0.489 (0.500)	0.497 (0.500)	0.482 (0.500)	0.487 (0.500)	0.482 (0.500)	0.507 (0.500)	0.502 (0.500)	0.495 (0.500)	0.485 (0.500)	0.491 (0.500)	0.478 (0.500)	0.475 (0.499)	0.531 (0.499)	0.456 (0.498)	0.507 (0.500)	0.465 (0.499)
age	42.973 (17.817)	44.166 (17.907)	43.182 (17.031)	45.4 (17.606)	42.939 (17.472)	43.767 (17.296)	44.895 (18.012)	41.953 (17.765)	44.615 (18.535)	43.775 (17.861)	43.29 (18.799)	44.322 (18.787)	41.619 (17.454)	47.207 (18.461)	48.111 (18.051)	44.765 (17.027)
<i>education</i>																
basic	0.258 (0.437)	0.246 (0.431)	0.227 (0.419)	0.322 (0.467)	0.472 (0.499)	0.253 (0.435)	0.257 (0.437)	0.286 (0.452)	0.389 (0.488)	0.441 (0.497)	0.472 (0.499)	0.628 (0.483)	0.140 (0.347)	0.173 (0.379)	0.158 (0.365)	0.278 (0.448)
interm.	0.411 (0.492)	0.414 (0.493)	0.387 (0.487)	0.435 (0.496)	0.256 (0.436)	0.395 (0.489)	0.233 (0.423)	0.518 (0.500)	0.436 (0.496)	0.278 (0.448)	0.239 (0.426)	0.176 (0.381)	0.291 (0.454)	0.278 (0.448)	0.294 (0.456)	0.486 (0.500)
higher	0.241 (0.428)	0.256 (0.437)	0.286 (0.452)	0.175 (0.380)	0.156 (0.363)	0.255 (0.436)	0.411 (0.492)	0.106 (0.308)	0.118 (0.323)	0.182 (0.386)	0.164 (0.370)	0.098 (0.298)	0.428 (0.495)	0.423 (0.494)	0.431 (0.495)	0.158 (0.365)
still stud.	0.090 (0.286)	0.084 (0.277)	0.100 (0.299)	0.068 (0.251)	0.116 (0.320)	0.095 (0.293)	0.095 (0.293)	0.089 (0.285)	0.056 (0.231)	0.098 (0.298)	0.119 (0.323)	0.094 (0.291)	0.140 (0.347)	0.125 (0.331)	0.117 (0.321)	0.076 (0.266)
no full-time	0.000 (0.015)	0.000 (0.009)	0.000 (0.013)	0.000 (0.008)	0.000 (0.021)	0.001 (0.037)	0.003 (0.057)	0.000 (0.010)	0.000 (0.007)	0.000 (0.019)	0.006 (0.079)	0.004 (0.062)	0.000 (0.00)	0.000 (0.00)	0.000 (0.015)	0.001 (0.037)
<i>life satisf.</i>																
...satisfied	0.060 (0.238)	0.032 (0.177)	0.011 (0.103)	0.032 (0.176)	0.065 (0.247)	0.013 (0.113)	0.006 (0.079)	0.039 (0.193)	0.031 (0.174)	0.118 (0.323)	0.036 (0.185)	0.083 (0.276)	0.013 (0.113)	0.012 (0.109)	0.007 (0.085)	0.017 (0.128)
not at all	0.171 (0.376)	0.109 (0.311)	0.051 (0.220)	0.160 (0.367)	0.208 (0.406)	0.054 (0.227)	0.031 (0.172)	0.092 (0.289)	0.092 (0.289)	0.266 (0.442)	0.175 (0.380)	0.256 (0.437)	0.052 (0.222)	0.069 (0.254)	0.041 (0.198)	0.114 (0.318)
not very	0.625 (0.484)	0.583 (0.493)	0.491 (0.500)	0.633 (0.482)	0.601 (0.490)	0.520 (0.500)	0.358 (0.479)	0.518 (0.500)	0.550 (0.498)	0.478 (0.500)	0.577 (0.494)	0.607 (0.489)	0.485 (0.500)	0.623 (0.485)	0.533 (0.499)	0.602 (0.490)
fairly	0.144 (0.351)	0.276 (0.447)	0.448 (0.497)	0.175 (0.380)	0.125 (0.330)	0.412 (0.492)	0.605 (0.489)	0.351 (0.477)	0.327 (0.469)	0.138 (0.345)	0.213 (0.409)	0.054 (0.227)	0.450 (0.498)	0.296 (0.456)	0.419 (0.493)	0.267 (0.443)
very	0.237 (0.425)	0.268 (0.443)	0.255 (0.436)	0.264 (0.441)	0.251 (0.434)	0.239 (0.426)	0.241 (0.428)	0.230 (0.421)	0.252 (0.434)	0.255 (0.436)	0.213 (0.410)	0.270 (0.444)	0.264 (0.441)	0.268 (0.443)	0.233 (0.423)	0.228 (0.420)
<i>income</i>																
rich	0.423 (0.494)	0.378 (0.485)	0.403 (0.491)	0.397 (0.489)	0.358 (0.480)	0.416 (0.493)	0.423 (0.494)	0.419 (0.493)	0.385 (0.487)	0.385 (0.487)	0.447 (0.497)	0.403 (0.491)	0.401 (0.490)	0.393 (0.488)	0.346 (0.476)	0.401 (0.490)
middle	0.340 (0.474)	0.354 (0.478)	0.342 (0.474)	0.338 (0.473)	0.391 (0.488)	0.345 (0.475)	0.336 (0.472)	0.350 (0.477)	0.330 (0.470)	0.360 (0.480)	0.339 (0.474)	0.327 (0.469)	0.335 (0.472)	0.339 (0.473)	0.421 (0.494)	0.371 (0.483)
poor																
#obs	47412	46998	48621	69794	50307	19368	48355	46047	61610	42448	34969	33672	7401	16589	16741	17161

Statistics are unweighted.  $N$  are only included when all variables are not missing (as in the regressions). As income is only available from 1973 to 1994 and from 1997 to 2003 the reported statistics of 'rich', 'middle', and 'poor' refer to  $N$  where income is also available.

Standard deviations in brackets below estimates.

Countries are abbreviated according to international vehicle registration codes. Since 1991 East-Germany is included. Before data refers only to West-Germany. Source: Eurobarometer.

Table C.8: Results including time trends

dependent: SWD	(1)	(2)	(3)
GDP/head	0.0009 (0.003)	-0.0049 (0.005)	0.0009 (0.003)
growth	0.0100*** (0.003)	0.0084*** (0.003)	0.0100*** (0.003)
inflation	-0.0141 (0.010)	-0.0179** (0.007)	-0.0141 (0.010)
inflation <sup>2</sup>	0.0005 (0.000)	0.0004 (0.000)	0.0005 (0.000)
UE rate	-0.0176*** (0.003)	-0.0182*** (0.002)	-0.0176*** (0.003)
<i>time - time trend - survey year FE</i>			0.0018 (0.003)
country specific time trend	no	yes	no
ind. controls	yes	yes	yes
survey FE	yes	yes	yes
nation FE	yes	yes	yes
<i>N</i>	607486	607486	607486
adj. <i>R</i> <sup>2</sup>	0.143	0.149	0.143

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01, standard errors are corrected for clustering at nation level.

Column 1 is the benchmark estimation from table 1, column 3.

Table C.9: Lagged growth, endogeneity, and growth projections

dependent: SWD	(1)	(2)	(3)	(4)	(5)	(6)
<i>macroeconomic variables</i>						
GDP/head	0.0009 (0.003)	0.0008 (0.003)	0.0015 (0.003)	-0.0003 (0.001)	-0.0016 (0.003)	-0.0020 (0.003)
growth <sub><i>t</i></sub>	0.0100*** (0.003)	0.0090*** (0.002)	0.0056* (0.003)	0.0075*** (0.002)	0.0062** (0.003)	
inflation	-0.0141 (0.010)	-0.0146 (0.009)	-0.0146 (0.009)	-0.0066 (0.008)	-0.0154* (0.009)	-0.0155* (0.009)
inflation <sup>2</sup>	0.0005 (0.000)	0.0005 (0.000)	0.0005 (0.000)	0.0004 (0.000)	0.0006** (0.000)	0.0006** (0.000)
UE rate	-0.0176*** (0.003)	-0.0170*** (0.003)	-0.0177*** (0.003)	-0.0044* (0.002)	-0.0170*** (0.003)	-0.0176*** (0.002)
growth <sub><i>t-1</i></sub>		0.0030 (0.003)				
growth <sub><i>t+1</i></sub>			0.0099*** (0.002)	0.0066*** (0.002)		
$\overline{SWD}_{c,t-1}$				0.5376*** (0.088)		
growth forecast					0.0226** (0.008)	0.0279*** (0.008)
ind. controls	yes	yes	yes	yes	yes	yes
survey FE	yes	yes	yes	yes	yes	yes
country FE	yes	yes	yes	yes	yes	yes
<i>N</i>	607486	607486	592075	450331	605781	605781
adj. <i>R</i> <sup>2</sup>	0.143	0.143	0.144	0.159	0.144	0.144

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01, standard errors are corrected for clustering at nation level.

Column 1 is the benchmark estimation from table 1, column 3.

Table C.10: Impact of macroeconomic and individual level variables on SWD (individual data) - marginal effects from a logit model

dependent: SWD	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>macroeconomic variables</i>							
GDP/head	0.0063 (0.004)	0.0061* (0.004)	0.0012 (0.004)	0.0014 (0.004)	0.0012 (0.003)	0.0044 (0.003)	0.0044 (0.003)
growth	0.0143*** (0.004)	0.0154*** (0.004)	0.0113*** (0.004)	0.0119*** (0.004)	0.0109*** (0.004)	0.0062 (0.004)	0.0062 (0.004)
inflation		-0.0109 (0.013)	-0.0158 (0.011)	-0.0157 (0.011)	-0.0158 (0.010)	-0.0200* (0.012)	-0.0202* (0.012)
inflation <sup>2</sup>		0.0006 (0.000)	0.0005 (0.000)	0.0005 (0.000)	0.0005 (0.000)	0.0006 (0.000)	0.0006 (0.000)
UE rate			-0.0206*** (0.003)	-0.0216*** (0.003)	-0.0222*** (0.003)	-0.0211*** (0.004)	-0.0212*** (0.004)
<i>individual characteristics</i>							
unemployed	-0.0588*** (0.006)	-0.0592*** (0.007)	-0.0559*** (0.007)	-0.1229*** (0.010)	-0.1189*** (0.010)	-0.0482*** (0.009)	-0.0426*** (0.008)
out of LF	-0.0023 (0.004)	-0.0026 (0.004)	-0.0018 (0.005)	-0.0057 (0.006)	-0.0047 (0.006)	-0.0019 (0.006)	0.0019 (0.005)
married	0.0003 (0.005)	0.0005 (0.005)	0.0015 (0.005)	0.0300*** (0.005)	0.0291*** (0.005)	-0.0004 (0.006)	-0.0048 (0.007)
male	0.0080* (0.004)	0.0080* (0.004)	0.0082** (0.004)	0.0039 (0.004)	0.0041 (0.004)	0.0075 (0.005)	0.0075 (0.005)
age	-0.0027*** (0.001)	-0.0027*** (0.001)	-0.0029*** (0.001)	-0.0057*** (0.001)	-0.0054*** (0.001)	-0.0029*** (0.001)	-0.0030*** (0.001)
age <sup>2</sup>	2.93e-05*** (1.0e-05)	3.0e-05*** (1.04e-05)	3.14e-05*** (1.0e-05)	6.0e-05*** (1.0e-05)	5.74e-05*** (1.0e-05)	3.11e-05*** (1.0e-05)	3.37e-05*** (1.0e-05)
poor							-0.0116* (0.007)
rich							0.0168*** (0.006)
<i>education</i>							
intermediate	0.0106 (0.008)	0.0104 (0.008)	0.0096 (0.008)	0.0229*** (0.008)	0.0227*** (0.008)	0.0083 (0.010)	0.0045 (0.009)
higher	0.0321* (0.016)	0.0314* (0.016)	0.0309* (0.016)	0.0561*** (0.015)	0.0561*** (0.015)	0.0182 (0.019)	0.0107 (0.017)
still studying	0.0340** (0.016)	0.0333** (0.016)	0.0325** (0.016)	0.0650*** (0.016)	0.0647*** (0.017)	0.0186 (0.019)	0.0110 (0.018)
<i>life satisfaction</i>							
not at all ...	-0.3672*** (0.013)	-0.3678*** (0.012)	-0.3660*** (0.012)			-0.3823*** (0.013)	-0.3803*** (0.014)
not very ...	-0.2648*** (0.012)	-0.2647*** (0.012)	-0.2635*** (0.012)			-0.2870*** (0.014)	-0.2851*** (0.014)
very ...	0.0854*** (0.006)	0.0852*** (0.006)	0.0852*** (0.006)			0.0908*** (0.007)	0.0893*** (0.007)
... satisfied							
survey FE	yes	yes	yes	yes	yes	yes	yes
nation FE	yes	yes	yes	yes	yes	yes	yes
N	607486	607486	607486	607486	665495	353132	353132
pseudo R <sup>2</sup>	0.107	0.107	0.110	0.073	0.074	0.116	0.116

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01, standard errors are corrected for clustering at nation level.

(3) is the reference for robustness checks. In (4) we restrict attention to the subsample where life satisfaction is available but do not include it. In (5) we exclude life satisfaction from the estimation. (6) is estimated on the reduced sample where income is available, (7) controls for income groups.



Table C.11: Lagged growth, endogeneity, and growth projections - marginal effects from a logit model

dependent: SWD	(1)	(2)	(3)	(4)	(5)	(6)
<i>macroeconomic variables</i>						
GDP/head	0.0012 (0.004)	0.0010 (0.004)	0.0019 (0.004)	-0.0000 (0.002)	-0.0020 (0.004)	-0.0023 (0.005)
growth	0.0113*** (0.004)	0.0103*** (0.003)	0.0062* (0.004)	0.0086*** (0.002)	0.0067** (0.003)	
inflation	-0.0158 (0.011)	-0.0162 (0.011)	-0.0165 (0.011)	-0.0069 (0.009)	-0.0173* (0.010)	-0.0174* (0.010)
infsqr	0.0005 (0.000)	0.0006 (0.000)	0.0006 (0.000)	0.0004 (0.000)	0.0007** (0.000)	0.0007** (0.000)
UE rate	-0.0206*** (0.003)	-0.0200*** (0.003)	-0.0207*** (0.003)	-0.0045* (0.003)	-0.0199*** (0.003)	-0.0206*** (0.003)
growthlag		0.0031 (0.003)				
growthfut1			0.0114*** (0.002)	0.0072*** (0.003)		
$\overline{SWD}_{c,t-1}$				0.6180*** (0.098)		
growth forecast					0.0272*** (0.010)	0.0330*** (0.010)
ind. controls	yes	yes	yes	yes	yes	yes
survey FE	yes	yes	yes	yes	yes	yes
country FE	yes	yes	yes	yes	yes	yes
$N$	607486	607486	592075	450331	605781	461544
pseudo $R^2$	0.110	0.110	0.111	0.123	0.111	0.111

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01, standard errors are corrected for clustering at nation level.  
Column 1 is the benchmark estimation from table C.10, column 1.

Table C.12: Results - marginal effects from an ordered logit model

dependent: SWD Scores	(1)			(2)			(3)					
	SWD1	SWD2	SWD3	SWD4	SWD1	SWD2	SWD3	SWD4	SWD1	SWD2	SWD3	SWD4
<i>macroeconomic variables</i>												
GDP/head	-0.0005 (0.001)	-0.0008 (0.002)	0.0009 (0.002)	0.0004 (0.001)	-0.0006 (0.001)	-0.0009 (0.002)	0.0010 (0.002)	0.0005 (0.001)	-0.0004 (0.001)	-0.0009 (0.002)	0.0009 (0.002)	0.0004 (0.001)
growth	-0.0040*** (0.002)	-0.0063*** (0.002)	0.0069*** (0.003)	0.0033*** (0.001)	-0.0043*** (0.001)	-0.0070*** (0.002)	0.0076*** (0.002)	0.0037*** (0.001)	-0.0036*** (0.001)	-0.0069*** (0.002)	0.0073*** (0.002)	0.0032*** (0.001)
inflation	0.0066* (0.003)	0.0106** (0.005)	-0.0116** (0.006)	-0.0056* (0.003)	0.0063* (0.004)	0.0103* (0.006)	-0.0111* (0.006)	-0.0055 (0.003)	0.0056* (0.003)	0.0107* (0.006)	-0.0113* (0.006)	-0.0050* (0.003)
inflation <sup>2</sup>	-0.0002 (0.000)	-0.0003* (0.000)	0.0004* (0.000)	0.0002 (0.000)	-0.0002 (0.000)	-0.0003 (0.000)	0.0004 (0.000)	0.0002 (0.000)	-0.0002 (0.000)	-0.0004* (0.000)	0.0004* (0.000)	0.0002 (0.000)
UE rate	0.0079*** (0.001)	0.0126*** (0.002)	-0.0138*** (0.002)	-0.0066*** (0.001)	0.0075*** (0.001)	0.0123*** (0.002)	-0.0133*** (0.002)	-0.0065*** (0.001)	0.0064*** (0.001)	0.0123*** (0.002)	-0.0130*** (0.002)	-0.0057*** (0.001)
<i>individual characteristics</i>												
unemployed	0.0513*** (0.005)	0.0645*** (0.006)	-0.0848*** (0.009)	-0.0310*** (0.003)	0.0524*** (0.006)	0.0673*** (0.006)	-0.0874*** (0.009)	-0.0323*** (0.003)	0.0169*** (0.003)	0.0297*** (0.004)	-0.0335*** (0.005)	-0.0131*** (0.002)
out of LF	0.0014 (0.002)	0.0022 (0.003)	-0.0024 (0.004)	-0.0012 (0.002)	0.0015 (0.002)	0.0025 (0.003)	-0.0027 (0.004)	-0.0013 (0.002)	0.0002 (0.001)	0.0003 (0.003)	-0.0003 (0.003)	-0.0001 (0.001)
married	-0.0107*** (0.002)	-0.0168*** (0.003)	0.0187*** (0.003)	0.0088*** (0.001)	-0.0109*** (0.002)	-0.0175*** (0.003)	0.0192*** (0.003)	0.0092*** (0.001)	0.0011 (0.001)	0.0021 (0.002)	-0.0022 (0.002)	-0.0010 (0.001)
male	-0.0032* (0.002)	-0.0051 (0.003)	0.0056 (0.003)	0.0027 (0.002)	-0.0033* (0.002)	-0.0055* (0.003)	0.0059* (0.004)	0.0029* (0.002)	-0.0049** (0.002)	-0.0094*** (0.004)	0.0100** (0.004)	0.0044** (0.002)
age	0.0019*** (0.000)	0.0031*** (0.000)	-0.0033*** (0.000)	-0.0016*** (0.000)	0.0020*** (0.000)	0.0032*** (0.000)	-0.0035*** (0.000)	-0.0017*** (0.000)	0.0007*** (0.000)	0.0013*** (0.000)	-0.0014*** (0.000)	-0.0006*** (0.000)
age <sup>2</sup>	-2.09e-05*** (0.000)	-3.34e-05*** (0.000)	3.66e-05*** (0.000)	1.76e-05*** (0.000)	-2.14e-05*** (0.000)	-3.5e-05*** (0.000)	3.78e-05*** (0.000)	1.86e-05*** (0.000)	-8.17e-06*** (0.000)	-1.56e-05*** (0.000)	0.0000*** (0.000)	0.0000*** (0.000)
<i>education</i>												
intermediate	-0.0079*** (0.003)	-0.0128*** (0.005)	0.0139*** (0.005)	0.0068*** (0.003)	-0.0078*** (0.003)	-0.0130*** (0.005)	0.0139*** (0.005)	0.0069*** (0.003)	-0.0021 (0.003)	-0.0039 (0.005)	0.0041 (0.005)	0.0018 (0.002)
higher	-0.0202*** (0.005)	-0.0342*** (0.009)	0.0354*** (0.009)	0.0189*** (0.005)	-0.0199*** (0.005)	-0.0345*** (0.009)	0.0352*** (0.009)	0.0192*** (0.005)	-0.0090* (0.005)	-0.0176* (0.010)	0.0182* (0.011)	0.0084* (0.005)
still studying	-0.0225*** (0.005)	-0.0395*** (0.010)	0.0394*** (0.010)	0.0226*** (0.006)	-0.0222*** (0.005)	-0.0400*** (0.010)	0.0392*** (0.009)	0.0230*** (0.006)	-0.0091* (0.005)	-0.0181* (0.010)	0.0184* (0.010)	0.0087* (0.005)
<i>life satisfaction</i>												
not at all ...												
not very ...												
very ...												
...satisfied												
survey FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
nation FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
N	665495	665495	665495	665495	607486	607486	607486	607486	607486	607486	607486	607486
pseudo R <sup>2</sup>	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.079	0.079	0.079	0.079

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01, standard errors are corrected for clustering at nation level.

In (2) we restrict attention to the subsample where life satisfaction is available. In (3) we exclude life satisfaction from the estimation.

Table C.13: Influence of institutional quality: Polity IV index and Freedomhouse data

dependent: SWD	(1)	(2)	(3)	(4)	(5)
GDP/head	0.0009 (0.003)	0.0003 (0.003)	0.0008 (0.003)	0.0015 (0.002)	0.0015 (0.002)
growth	0.0100*** (0.003)	0.0108*** (0.003)	0.0100*** (0.003)	0.0090** (0.004)	0.0091** (0.004)
inflation	-0.0141 (0.010)	-0.0082 (0.010)	-0.0134 (0.009)	-0.0167 (0.011)	-0.0170 (0.011)
inflation <sup>2</sup>	0.0005 (0.000)	0.0002 (0.000)	0.0004 (0.000)	0.0006 (0.000)	0.0006 (0.000)
UE rate	-0.0176*** (0.003)	-0.0174*** (0.003)	-0.0172*** (0.003)	-0.0172*** (0.003)	-0.0172*** (0.002)
<i>institutional quality</i>					
polity4			-0.0193 (0.031)		
polrights				0.0200 (0.056)	
civillib					0.0010 (0.016)
ind. controls	yes	yes	yes	yes	yes
survey FE	yes	yes	yes	yes	yes
nation FE	yes	yes	yes	yes	yes
<i>N</i>	607486	549741	607486	576656	576656
adj. <i>R</i> <sup>2</sup>	0.143	0.149	0.143	0.144	0.144

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01, standard errors are corrected for clustering at nation level.

Column 1 is the benchmark estimation from table 1, column 3. (2) is estimated on the reduced sample for which the polity IV index is equal to its highest value 10. (3) controls for the polity4 score. (4) and (5) control for the indicators 'political rights', and 'civil liberties' respectively. 'Political rights' and 'civil liberties' are measured on a one-to-seven scale, with one representing the highest degree of Freedom and seven the lowest.

Table C.14: Impact of policy variables

dependent: SWD	(1)	(2)	(3)	(4)	(5)	(6)
<i>macroeconomic variables</i>						
GDP/head	0.0009 (0.003)	-0.0022 (0.003)	-0.0041 (0.004)	-0.0016 (0.003)	-0.0032 (0.004)	-0.0025 (0.003)
growth	0.0100*** (0.003)	0.0112*** (0.003)	0.0116*** (0.003)	0.0108*** (0.003)	0.0111*** (0.003)	0.0107*** (0.003)
inflation	-0.0141 (0.010)	-0.0145 (0.010)	-0.0146 (0.010)	-0.0152 (0.009)	-0.0149 (0.009)	-0.0152 (0.010)
inflation <sup>2</sup>	0.0005 (0.000)	0.0005 (0.000)	0.0005 (0.000)	0.0006 (0.000)	0.0005 (0.000)	0.0005 (0.000)
UE rate	-0.0176*** (0.003)	-0.0193*** (0.003)	-0.0169*** (0.003)	-0.0183*** (0.003)	-0.0192*** (0.003)	-0.0182*** (0.004)
<i>policy variables</i>						
debt			-0.0007 (0.001)			
deficit				0.0026 (0.002)		
elderly					-0.0051 (0.013)	
sstran						-0.0025 (0.005)
ind. controls	yes	yes	yes	yes	yes	yes
survey FE	yes	yes	yes	yes	yes	yes
nation FE	yes	yes	yes	yes	yes	yes
<i>N</i>	607486	594479	594479	594479	594479	594479
adj. <i>R</i> <sup>2</sup>	0.143	0.143	0.143	0.143	0.143	0.143

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01, standard errors are corrected for clustering at nation level.  
 Column 1 is the benchmark estimation from table 1, column 3. (2) is estimated on reduced sample where debt, deficit, elderly, and sstran is available.

Table C.15: Alternative specifications of inflation

dependent: SWD	(1)	(2)	(3)	(4)	(5)	(6)
	<i>linear probability model</i>			<i>logit</i>		
GDP/head	0.0008 (0.003)	0.0009 (0.003)	0.0011 (0.003)	0.0012 (0.004)	0.0012 (0.004)	0.0017 (0.004)
growth	0.0092** (0.003)	0.0100*** (0.003)	0.0087** (0.004)	0.0104*** (0.004)	0.0113*** (0.004)	0.0098** (0.004)
UE rate	-0.0177*** (0.003)	-0.0175*** (0.003)	-0.0177*** (0.003)	-0.0207*** (0.004)	-0.0205*** (0.003)	-0.0207*** (0.003)
inflation	-0.0041 (0.004)	-0.0109* (0.006)		-0.0048 (0.004)	-0.0117 (0.007)	
inflation <sup>2</sup>		0.0000 (0.001)			-0.0000 (0.001)	
inflation <sup>3</sup>		0.0000 (0.000)			0.0000 (0.000)	
inflation  <sub>inflation&gt;0</sub>			-0.0043 (0.004)			-0.0052 (0.004)
inflation  <sub>inflation&lt;0</sub>			0.0157 (0.011)			0.0206 (0.014)
individual controls	yes	yes	yes	yes	yes	yes
survey FE	yes	yes	yes	yes	yes	yes
nation FE	yes	yes	yes	yes	yes	yes
<i>N</i>	607486	607486	607486	607486	607486	607486
adj. <i>R</i> <sup>2</sup>	0.143	0.143	0.143			
pseudo <i>R</i> <sup>2</sup>				0.110	0.110	0.110

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , standard errors are corrected for clustering at nation level.  
Columns 5-7 report marginal effects.

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