Political Polarization and Economic Growth[ǂ]

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Abstract

This study examines the effect of political polarization, measured by the dispersion of self-reported political ideologies, on economic growth. Using a panel of 75 countries from 1990 to 2019, we show that political polarization has a negative effect on economic growth through its effect on private investment, human capital investment, and total factor productivity. We also show that state capacity—the government's ability to accomplish policy goals effectively—mitigates the adverse effect of polarization.

Keywords: political polarization, economic growth, investment, total factor productivity

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1. Introduction

Political polarization has been central to understanding contemporary politics and society. Reflecting this, many studies have explored the conceptualization and measurement of political polarization while others have characterized its nature and origins (Abramowitz and Saunders 2008; Fiorina and Abrams 2008; Hetherington 2009, 2011; Druckman et al. 2013; Iyengar et al. 2012, 2019; Iyengar and Westwood 2014; Poole and Rosenthal 1984). Related research has also examined the effect of political polarization on the quality of democracy (Graham and Svolik 2020; McCoy and Somer 2019; Orhan 2022). For instance, political polarization may result in a backsliding of democracy because it divides citizens into opposing blocks: one group always supports the policies of the party to which they are affiliated but blindly opposes those of the opposing party without properly considering their substance.[1] In sharply divided societies, voters may place partisan interests (or policy preferences) above democratic principles (Graham and Svolik 2020).

Political polarization has also attracted the attention of economists. Related economics research has analyzed the influence of political polarization on economic variables. For example, political polarization increases economic policy uncertainty and the volatility of economic variables (Azzimonti 2018; Azzimonti and Talbert 2014), lowers institutional quality (Keefer and Knack 2002; Melki and Pickering 2020), and reduces the size of government (Lindqvist and Östling 2010). Empirical research is possible because democratic countries have experienced different trajectories of political polarization (Boxell et al. 2022).

[1] On the contrary, political polarization at the elite level may facilitate more consistent political attitudes by providing voters with clear ideological differences between major parties (Levendusky 2010; Hetherington 2011; Pierce and Lau 2019)

Although there have been many studies on either polarization or economic growth, they have tended to deal with these two subjects independently. One exception is Azzimonti (2011, 2018). Azzimonti (2011) uses a theoretical model to show that political polarization decreases economic growth by increasing barriers to private investment. Azzimonti (2018) developed a partisan conflict index based on newspaper articles and found a negative correlation between this index and aggregate investment in the United States. However, there is little empirical evidence of the effect of political polarization on economic growth.

This study makes three contributions to the literature. First, we provide the first empirical evidence of the effect of political polarization on economic growth. According to partisan theory, left-wing and right-wing politicians adopt economic policies that reflect the preferences of their constituents (Potrakfe 2017). For instance, left-wing governments tend to promote expansionary policies, while right-wing governments are more active in privatization and market deregulation (Alesina 1987; Hibbs 1977; Bjørnskov 2005; Castro and Martins 2018; Potrakfe 2017). When parties with widely different ideologies alternate in power, political turnover generates economic policy uncertainty, which, in turn, generates uncertainty about the returns on investment (Azzimonti and Talbert 2014). Therefore, ideological polarization is likely to influence real economic outcomes. However, previous empirical studies have mainly focused on the effect of the mean value of ideology rather than the distribution of ideology, i.e., political polarization (e.g., Bjørnskov 2005).[2]

[2] In addition, the related literature has examined the effect of political instability (measured for instance by political violence and cabinet changes) on economic growth (Aisen and Veiga 2013; Alesina et al. 1996; Alesina and Perotti 1996; Barro 1991; Jong-A-Pin 2009). However, political polarization and political instability (a multidimensional concept) are two distinctive ideas.

Second, we fill a gap in the literature by examining the transmission mechanism through which political polarization influences economic growth. One channel suggested by Azzimonti (2011, 2018) is private (corporate) investment. Nevertheless, other determinants of economic growth, such as investment in human capital and total factor productivity, have not not systematically considered, although the literature on economic growth suggests that the majority of variation in per capita real GDP across countries can be explained by these factors (Solow 1956; Lucas 1988; Easterly and Levine 2001).

Third, we investigate the impact of state capacity, defined as the government's ability to effectively accomplish policy goals, on the relationship between political polarization and economic growth. One may argue that countries with a higher level of state capacity can moderate the adverse effect of polarization on growth more effectively. However, this hypothesis has not been empirically explored.

We assemble a panel dataset of 75 countries for six non-overlapping 5-year periods from 1990 to 2019 (1990-1994, 1995-1999, 2000-2004, etc.). As our measure of political polarization, we use the dispersion of self-reported political ideologies, as well as dispersion of responses to economic policy questions, ranging from 1 (left) to 10 (right), obtained from the World Values Survey (WVS) and European Values Survey (EVS).[3] The main dependent variable is the log of real per capita GDP. To examine the transmission mechanism, we use four alternative dependent variables: per capita private investment, per capita government investment, a human capital index, and TFP. To measure state capacity, we employ government

[3] The question asks: "In political matters, people talk of the left and the right. How would you place your views on this scale, generally speaking?" Respondents are instructed to choose a number between 1 and 10, where 1 is labeled "Left" and 10 is labeled "Right".

effectiveness, regulation quality, and the rule of law from the World Governance Indicators (WGI).

To address the potential endogeneity problem in estimating the causal effect of polarization on economic growth, our empirical strategy employs the system GMM estimator and instrumental variables (IV) approach. For the IV approach, our main instrument is the leader's extraordinary personal characteristics, such as trustworthiness, that can bridge deep political divides. For instance, after being elected president of South Africa in 1994, Nelson Mandela united a severely divided country partly through his personal traits of respect and inclusion (International Foundation for Electoral Systems 2003). The "person of the leader" variable is newly available from the Varieties of Democracy (V-Dem) dataset.

We find that political polarization has a robust, negative effect on per capita real GDP. In terms of the magnitude of the effect, a one standard deviation increase in a polarization measure, based on self-reported political ideology, would be associated with a 3.2% decrease in per capita real GDP. Our results are robust to alternative measures of political polarization based on economic issues of the left and right: equality, government ownership, government responsibility, and competition. Our results are also robust to alternative methods of constructing polarization measures, such as the measure developed by Esteban and Ray (1994).

In addition, we show that polarization adversely affects private investment, human capital investment, and total factor productivity. Thus, these three variables provide a transmission mechanism linking political polarization to economic growth. Finally, we find that countries with a high level of state capacity (measured by government effectiveness, regulatory quality, and rule of law) experience a smaller effect of polarization on per capita real GDP.

The remainder of this paper is organized as follows. Section 2 explains the influence of political polarization on economic growth. Section 3 describes the data, and section 4 explains the empirical strategy. Section 5 presents the empirical findings. Section 6 presents the conclusions.

2. Links from political polarization to growth

The key drivers of per capita economic growth are physical capital accumulation, human capital accumulation, and technological developments. Among these, the literature on political polarization discusses its effect on physical capital accumulation more extensively than the other two. For example, Azzimonti (2011, 2018) found that polarization (or partisan conflict) depresses private investment. This finding is in line with the argument that intense political disagreement about fiscal policy (e.g., the size and composition of government) discourages private investment by increasing fiscal policy uncertainty such as larger swings in spending and revenue (Azzimonti and Talbert 2014; Azzimonti 2018).[4] Generally, higher political polarization induces greater economic policy uncertainty, which, in turn, generates uncertainty about the returns on private investment and affects real economic outcomes (Azzimonti and Talbert 2014; Baker et al. 2020; Frye 2002).[5] Using the partisan conflict index based on lawmakers' disagreements about policy, Azzimonti (2018) showed that partisan discord is negatively associated with investment at the firm level in the US.[6] Political polarization is also

[4] Investment decisions are delayed to the extent that investment requires fixed upfront costs and are irreversible (Azzimonti 2018).

[5] Political turnover in polarized societies generate uncertainties in economic policies because parties with widely different ideologies alternate in power (Azzimonti and Talbert 2014).

[6] Woo (2003, 2005) similarly showed that social polarization measured by income inequality causes larger fiscal deficits and more volatile fiscal outcomes, and thus lower economic growth.

likely to lower the expected return on investments by reducing the quality of policy reforms that may prevent adverse shocks to the economy (Alesina and Drazen 1991; Azzimonti 2018; Frye 2002). For instance, governments in polarized and unstable societies have less incentives to undertake legal reforms to protect property rights, thus reducing investment (Svensson 1998).[7]

There is debate on whether political polarization increases the size of the government. Polarization may increase the loss of utility from losing office and seeing the opposition party's platform implemented (Alt and Lassen 2006; Azzimonti 2011).[8] Hence, the incumbent has a stronger incentive to overspend and be reelected. Since overspending is financed by distortionary taxes, greater government spending reduces investment (Azzimonti 2011). For instance, countries with polarized political systems have inefficient tax structure and rely more on seigniorage (Cukierman et al. 1992). In contrast, some studies have found that political polarization negatively affects government size (Lindqvist and Östling 2010; Bellani and Scervini 2020). Lindqvist and Östling (2010) measured polarization by the dispersion of self-reported political preferences and showed that political polarization is associated with smaller governments in democracies. In line with this finding, Bellani and Scervini (2020) use a panel of 23 European countries to show that heterogeneity in preferences for redistribution reduces redistributive expenditures.[9]

[7] Additionally, political polarization may undermine democracy because even voters who value democracy may trade off democratic principles for partisan interests to elect politicians they support (Svolik 2019).

[8] The utility loss increases with the distance between platforms of the incumbent and the opponent (Alt and Lassen 2006).

[9] The heterogeneity in preferences for redistribution is measured by the share of individuals taking extreme positions on the Likert scale, i.e., share of individuals answering 'strongly agree' or 'strongly disagree' to the statement 'The government should take measures to reduce differences in income levels.'

Less attention has been paid to the effect of political polarization on human capital accumulation, one of the key drivers of per capita income growth. Similar to investment in physical capital, investment in human capital depends on the expected returns on the investment (Aisen and Veiga 2013). Political polarization is likely to reduce the expected returns from investing in human capital because it increases uncertainty about future policy and returns on education. This may even induce economic agents with high levels of human capital to migrate to other countries (Gyimah-Brempong and Camacho 1998).

Finally, related research found that polarized societies tend to have lower productivity because polarization increases transaction costs by increasing the social distance between individuals in the economy and elevating social conflict (Gradstein and Justman 2002; Alesina et al. 1999; Easterly and Levine 1997; Layman and Carsey 2002; Esteban and Schneider 2008). Similarly, diversity in cultural values (such as trust and norms) negatively affects regional economic development (Beugelsdijk et al. 2019). Political polarization may influence productivity of the economy to the extent that political preferences are related to social preferences.

3. Data

Our measure of political polarization is based on respondents' self-reported political ideologies ranging from 1 (left) to 10 (right), obtained from the WVS and the EVS. These two surveys, conducted independently, are designed to be compatible and comparable across countries and waves; thus they are presented as an integrated dataset. Although the coverage

varies depending on the wave, the integrated dataset covers a wide range of countries across waves.[10]

To illustrate the evolution of political polarization over time, Panels (a) through (d) of Figure 1 present the distributions of political ideology in 1990 (Wave 2) and 2015 (Wave 7) for South Korea, Mexico, France, and the United States, respectively. The figure shows that the distributions have evolved differently for each country over waves. For instance, between Wave 2 and Wave 7, Mexico and the United States experienced a large increase in the share of respondents with two extreme values in the political spectrum. In South Korea, the mean distribution of the political spectrum shifted to the left between the two waves, whereas in France, it shifted to the right.

[Figure 1 Here]

To measure polarization, we use the standard deviation of self-reported political ideologies, ranging from 1 (left) to 10 (right) by country and wave (Lindqvist and Östling 2010; Azzimonti and Talbert 2014; Grechyna 2016). Standard deviation is the most common measure of the dispersion of a set of values because of its simplicity and transparency. However, one limitation of using the standard deviation is that it fails to consider whether responses are clustered into distinct groups (Lindqvist and Östling 2010). Following the previous literature, we use two alternative measures: the polarization measure developed by Esteban and Ray (1994) and the proportion of respondents that reply either "1" or "10."

[10] The number of countries included in the dataset is 24 in 1981 (Wave 1), 43 in 1990 (Wave 2), 55 in 1995 (Wave 3), 71 in 2000 (Wave 4), 82 in 2005 (Wave 5), 60 in 2010 (Wave 6), and 81 in 2015 (Wave 7). In total, the integrated dataset, conducted from 1981 to 2017, covers 115 countries, including more than 645,000 interviews.

As alternative measures of political polarization, we use responses to multiple-choice questions that measure various left and right economic issues (Lindqvist and Östling 2010). Specifically, we use the question: "How would you place your views on this scale [from 1 to 10]?" for the following four statements.[11]

(1) Equality: 1 "Income should be made more equal" to 10 "We need larger income differences as incentives."

(2) Government ownership: 1 "Government ownership of business should be increased" to 10 "Private ownership of business should be increased."

(3) Government responsibility: 1 "The government should take more responsibility to ensure that everyone is provided for" to 10 "People should take more responsibility for providing for themselves."

(4) Competition: 1 "Competition is harmful. It brings out the worst in people" to 10 "Competition is good. It stimulates people to work hard and develop new ideas."

The main dependent variable is the log of per capita GDP in constant 2015 dollars obtained from the World Development Indicators (WDI). To investigate the transmission mechanism linking political polarization to growth, we employ four alternative dependent variables: real per capita private investment and real per capita general government investment from the International Monetary Fund, and TFP and a human capital index from the Penn World Tables 10.0.[12] To measure the state capacity that moderates the effect of polarization on growth, we

[11] We recode all the questions so that a higher number indicates the right.

[12] The human capital index is based on the average years of schooling and an assumed rate of return to education.

use government effectiveness, regulation quality, and the rule of law from the World Governance Indicators (WGI).

The control variables are gross fixed capital formation (a proxy variable for the savings rate), trade openness (the sum of exports and imports divided by GDP), population growth, inflation, and urbanization, all taken from the WDI. In addition, we include the proportion of respondents with higher than lower-level tertiary education from the WVS and EVS.[13]

Our sample includes an unbalanced panel of 75 countries for six non-overlapping 5-year periods from 1990 to 2019 (1990-1994, 1995-1999, 2000-2004, etc.). All control variables except for lower-level tertiary education are averaged over each 5-year period. Appendix Table A1 lists the 75 countries included in the final sample. Appendix Table A2 presents summary statistics of the main variables used in this study.

4. Empirical strategy

To test the effects of political polarization on economic growth, we consider a standard dynamic panel specification (Islam 1995; Acemoglu et al. 2019):

$$\ln y_{i,t} = \beta_1 \ln y_{i,t-1} + \beta_2 POL_{i,t-1} + \beta_3 Mean_{i,t-1} + \Phi X_{it} + \alpha_i + \theta_t + u_{i,t} \quad (1)$$

where $\ln y_{i,t}$ is the log of real per capital GDP for country i and time period t (which indexes five-year periods). $POL_{i,t-1}$ is a measure of political ideology polarization, and $Mean_{i,t-1}$ is the mean value of the responses. $X_{i,t}$ is a vector of the standard control variables in the growth regression, as described in Section 3. α_i is a country fixed effect that absorbs the impact of any time-invariant country characteristics such as geography; θ_t denotes a set

[13] The data are available for a larger sample of countries than the secondary enrolment rate in the WDI.

of period fixed effects that will capture technological progress at the frontier, as well as any cyclical trends in the global economy; and $u_{i,t}$ is the error term.

We employ the system GMM estimator developed by Blundell and Bond (1998) for two reasons:[14] First, the presence of country fixed effects and the lagged dependent variable causes potential bias in the OLS estimator (Nickell 1981). This bias is unlikely to be small in our sample because the average time-series length of our panel is approximately 3.3 periods of 5 years. The GMM estimator controls for country unobserved heterogeneity as well as the bias from the lagged dependent variable.

Second, the GMM estimator addresses the potential endogeneity problem when estimating the causal effect of polarization on GDP. For instance, voters may blame politics for poor economic performance, regardless of the party in power, which may weaken the ruling coalition and push voters to become more ideologically extreme (Mian et al. 2014; Funke et al. 2016). Then, political polarization would be the consequence, not the cause, of changes in economic performance (Dalgaard and Olsson 2013; Grechyna 2016). Another possibility is that time-varying unobservable variables may affect both political polarization and GDP.

We use Windmeijer's (2005) correction for small sample bias in standard errors because the standard error estimates from a two-step estimation tend to be biased downward. In addition, we collapse instruments to address the problem of too many instruments (Roodman 2009). For specification checks, we provide two tests of the system GMM estimator: a test for serial correlation in the first-differenced errors (H: there is no second-order serial correlation in the

[14] The system GMM is derived from the estimation of a system of two simultaneous equations, one in levels (with lagged first differences as instruments) and the other in first differences (with lagged levels as instruments) (Blundell and Bond 1997).

first-difference errors) and Hansen's J test for overidentifying restrictions (H: instruments are uncorrelated with the errors).

Our alternative strategy for addressing the endogeneity problem adopts an instrumental-variables (IV) approach. We use two external instruments for political polarization: (1) the person of the leader (leader's extraordinary personal characteristics, such as charm and trustworthiness) and (2) the egalitarian component index (a measure of equal protection of rights and freedoms and equal access to power across all social groups), both obtained from the V-Dem dataset.[15]

A valid instrumental variable in our study requires two criteria: it should affect political polarization and not directly affect economic growth. *Persona* of the leader, our first instrument, can influence political polarization yet is not directly related to future economic performance. For instance, consider a charismatic leader who can unite different groups of people by bridging deep political divides and reducing mistrust among political opponents. A strand of political science literature emphasizes that a political leader's character traits, such as trustworthiness, are major determinants of political trust or public confidence in the political process (e.g., Citrin 1974; Citrin and Green 1986; Greenstein 2000). For example, after being elected president of South Africa in 1994, Nelson Mandela united a severely divided country in part through his personal characteristics of respect and inclusion (of all sections, including those no longer in

[15] Person of the leader is measured by the question "To what extent is the chief executive portrayed as being endowed with extraordinary personal characteristics and/or leadership skills (e.g., as father or mother of the nation, exceptionally heroic, moral, pious, or wise, or any other extraordinary attribute valued by the society)?" Egalitarian component index is measured by the question: "To what extent is the egalitarian principle achieved?" The egalitarian principle of democracy is achieved when (1) rights and freedoms of individuals are protected equally across all social groups, (2) resources are distributed equally across all social groups, and (3) access to power is equally distributed by gender, socioeconomic class and social group.

power; International Foundation for Electoral Systems 2003). Appendix Figure A3 shows that the distribution of political ideology in South Africa became less polarized in Wave 3 (survey year 1996), after Nelson Mandela took office, relative to the distribution in Wave 2 (survey year 1990). Note, however, that leaders with extraordinary personal characteristics do not necessarily experience higher economic growth. Additionally, there is little consensus that the emergence of extraordinary leaders is a direct consequence of economic circumstances.

The egalitarian principle of democracy, our second instrument, reduces political polarization by protecting the rights and freedoms of individuals equally and ensuring equal access to power across groups with different ideologies (Dahl 1971). For instance, when rights and freedoms are protected equally across all groups, it can help minimize feelings of resentment and disenfranchisements among some groups, which is a source of polarization (Dahl 1971; Sigman and Lindberg 2018). In addition, equal distribution of power diversifies political leadership, which leads to less polarizing policies. However, the egalitarian principle does not appear to be directly relevant to GDP growth to the extent that it has more to do with equal protection of rights and equal access to power than with the efficient allocation of resources.

By separating the variation in polarization that are driven by the personality of the leader and egalitarian principle of democracy, our IV strategy mitigates the possibility that idiosyncratic changes in a country's political institutions that may be endogenous to GDP growth bias our results (see Acemoglu et al. 2019 for a similar argument).

5. Estimation results

5.1 Main results

To begin the analysis, we show that political polarization, measured by the standard deviation of political spectrum ranging from 1 (left) to 10 (right), is negatively associated with per capital real income. Table 1 presents the fixed effects estimates (Columns 1 and 2) and the GMM estimates for per capita real GDP (Columns 3 and 4).[16] Columns 1 and 3 include polarization and a set of control variables, and Columns 2 and 4 add the mean value of the political spectrum because polarization might be correlated with the mean value of the responses (Lindqvist and Östling 2010).

For all specifications, Table 1 shows that political polarization (POL) has a negative and statistically significant effect on real per capita GDP. Based on Column 4, our preferred specification, evaluated at the mean, a one standard deviation shock to POL would be associated with a 3.2% decrease in real per capita GDP.

[Table 1 Here]

Subsequently, we examine the transmission mechanism that links political polarization to per capita real GDP. Table 2 presents the GMM estimates for the four alternative dependent variables: real private investment per capita (Column 1), real government investment per capita (Column 2), human capital investment per worker proxied by the human capital index (Column 3), and total factor productivity (Column 4). The results indicate that POL has negative and significant effects on private investment, human capital investment, and total factor productivity. In contrast, POL has a statistically insignificant effect on real government investment. Consistent with the discussions in Section 2, these results indicate that political polarization influences economic development mainly by depressing private investment and

[16] In Columns 1 and 2, robust standard errors are clustered by country to account for country-level serial correlation.

productivity rather than by affecting public investment (Azzimonti and Talbert 2013; Azzimonti 2018).

[Table 2 Here]

5.2 IV estimates

This section presents the results of estimating two-stage least squares regression (2SLS), employing the "person of the leader" and "egalitarian component index" from the Varieties of Democracy dataset as instrumental variables.

The results are reported in Table 3. Columns 1 and 2 show the IV estimates for real per capita GDP. In Column 1, the first-stage regression results show that the estimated coefficients for "person of the leader" and "egalitarian component index" are negative and statistically significant. The first-stage F-statistics is 11.41, indicating that the instruments are not weak (Staiger and Stock 1997). In Column 2, the second-stage results show that the effect of POL on GDP is negative and significant. The IV estimate is much larger in magnitude than the GMM estimate. Hansen's J-test for over-identifying restrictions does not reject the null hypothesis of instrument validity.

The remaining columns correspond to the IV estimates for the transmission mechanism using four alternative dependent variables: real private investment per capita, real government investment per capita, human capital investment per worker, and total factor productivity. The first-stage regressions (in Columns 3, 5, 7, and 9) show that the estimated coefficients for two instruments remain negative and significant. In Columns 4, 6, 8, and 10, the second-stage results show that POL has negative and significant effects on private and human capital investments. The effects of POL on government investment and total factor productivity are statistically insignificant.

[Table 3 Here]

5.3 Alternative measures of political polarization

To test the robustness of our basic results, we consider alternative measures of political polarization. Following Lindqvist and Östling (2010), we employ polarization measures based on the responses to specific questions on economic policies from the WVS and the EVS on (1) equality, (2) government ownership, (3) government responsibility, and (4) competition.

Table 4 present the results. Each column shows the effect of the polarization measure based on the responses to each of the four economic policy questions. In Columns 2 through 4, political polarization has a negative and statistically significant effect on real per capita GDP. However, in Column 1, the effect of the polarization measure based on equality is statistically insignificant.

[Table 4 Here]

Thus far, the standard deviation of the responses has been used as the main measure of polarization. As alternative measures, we employ (1) Esteban and Ray's (1994) polarization measure, which considers clusters of responses and (2) a bipolarization measure, which is the share of respondents who answer either 1 or 10 (see Lindqvist and Östling 2010). Both measures are highly correlated with the standard deviation.[17] Columns 1 and 2 of Table 5 present the results. Both alternative measures of polarization have a robust and negative effect on per capita real GDP.

[17] The correlation between POL and Esteban and Ray's measure is 0.92, and the correlation between POL and Bipolarization is 0.89.

Additionally, Column 3 of Table 5 shows the results of excluding 22 developed countries from the sample.[18] These countries typically have a higher real per capita GDP and more established democracies (thus, a stable political environment). The main results do not change qualitatively.

[Table 5 Here]

5.4 The effect of political polarization conditional on state capacity

The effect of political polarization on economic growth potentially depends on state capacity, which is defined as the government's ability to accomplish policy goals (Dincecco 2017). State capacity may moderate the detrimental effect of polarization on growth because economic policy uncertainty reduces when the government can effectively implement appropriate public policies and reforms.

To measure state capacity, we employ three indicators: government effectiveness, regulatory quality, and rule of law (Kaufmann et al. 2010). Government effectiveness captures the quality of policy implementation and the credibility of the government's commitment to such policies. Regulatory quality captures the government's ability to implement sound policies that promote economic development. The rule of law captures the extent to which people have confidence in the quality of contract enforcement, property rights, and the courts. All three indicators are obtained from the Worldwide Governance Indicators (www.govindicators.org).

[18] The countries include Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States.

Table 6 shows the effect of polarization on per capita real GDP conditional on each measure of state capacity: government effectiveness, regulatory quality, and the rule of law. This means adding a state capacity measure and its interaction term with polarization to Equation (1). In all columns, the interaction terms are positive and significant. In other words, countries with a high level of state capacity (that is, effective government, high-quality regulation, and strong rule of law) tend to experience a smaller effect of polarization on real per capita GDP than would be the case otherwise. However, we are aware that our polarization measures are potentially correlated with state capacity. Therefore, we are cautious about these results.

[Table 6 Here]

Panels (a)-(c) of Figure 2 illustrate how the effect of polarization on GDP varies with the degree of government effectiveness, rule of law, and regulatory quality, respectively. The figures show the 90 percent confidence interval for the relationship between polarization and per capita GDP, conditional on the level of state capacity measures.

At low levels of state capacity, the polarization effect is negative and significant at the 10 percent level as the confidence intervals are below the zero line (Brambor et al. 2006). In contrast, at high levels of state capacity, polarization has a statistically insignificant effect on economic growth. These findings indicate that political polarization is more likely to hamper growth in countries with low levels of state capacity, as measured by an ineffective government, low-quality regulation, or a weak rule of law.

6. Conclusions

Political polarization is regarded as a key phenomenon in contemporary democracies. A vast body of the literature suggests that this is a serious underlying problem that affects various aspects of democratic systems. Previous research has found that political polarization decreases the quality of political parties and the government. Although political polarization has recently attracted much attention from economists, literature on its economic effects remains limited.

This study raised three questions: Does political polarization reduce economic growth? If so, what are the channels through which polarization results in lower growth rates? Does state capacity mitigate the adverse effect of polarization on the economy?

Using polarization measures based on self-reported ideologies from the WVS and EVS, and the system GMM and IV approach, we found a robust negative correlation between political polarization and economic growth. The magnitude of this effect is considerable. Based on the system GMM estimates, an increase of one standard deviation in the polarization measure is associated with a 3.2% decrease in per capita GDP. We further uncovered a transmission mechanism that translates polarization into lower economic growth. We find that polarization reduces growth not only through physical investment but through human capital investment and productivity. We also show that strong state capacity, such as government effectiveness, regulatory quality, and the rule of law, prevents polarization from dampening growth. This finding indicates that the combination of polarization and weak state capacity poses an important threat to economic growth.

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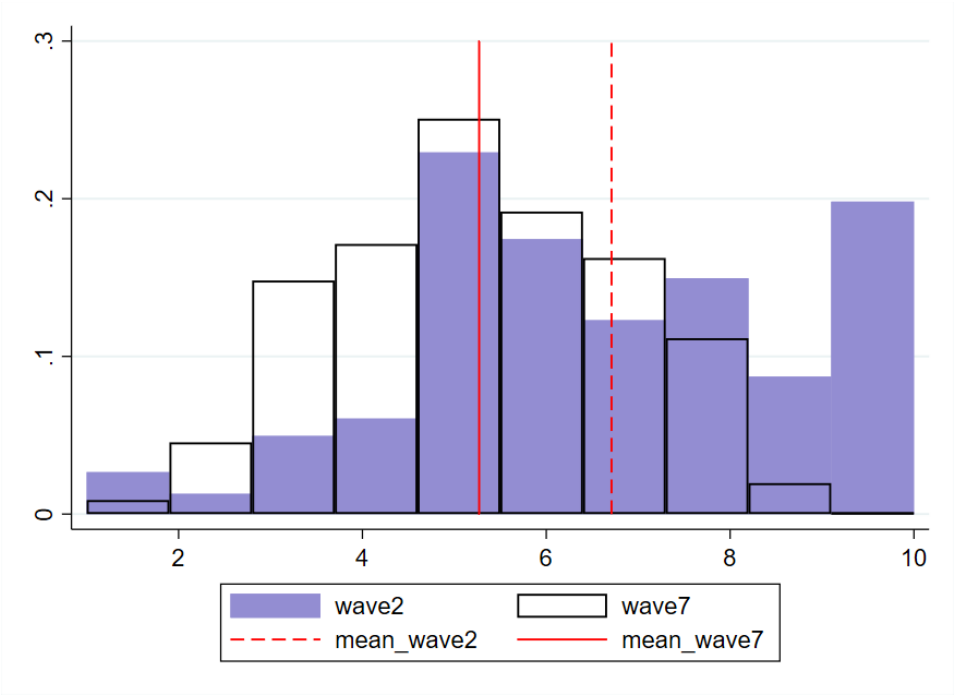
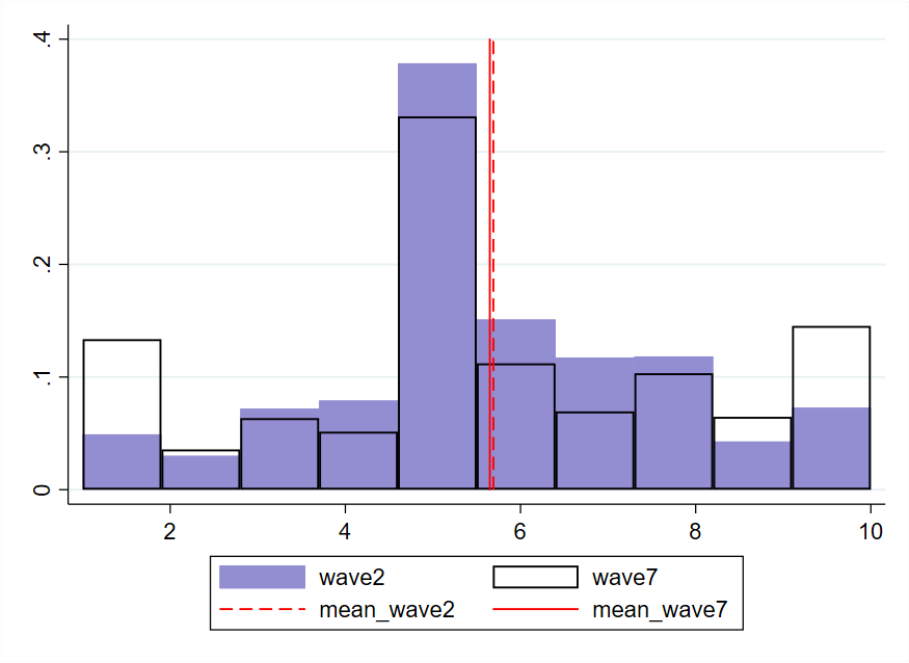
Figure 1. Distributions of political ideology, wave 2 and wave 7

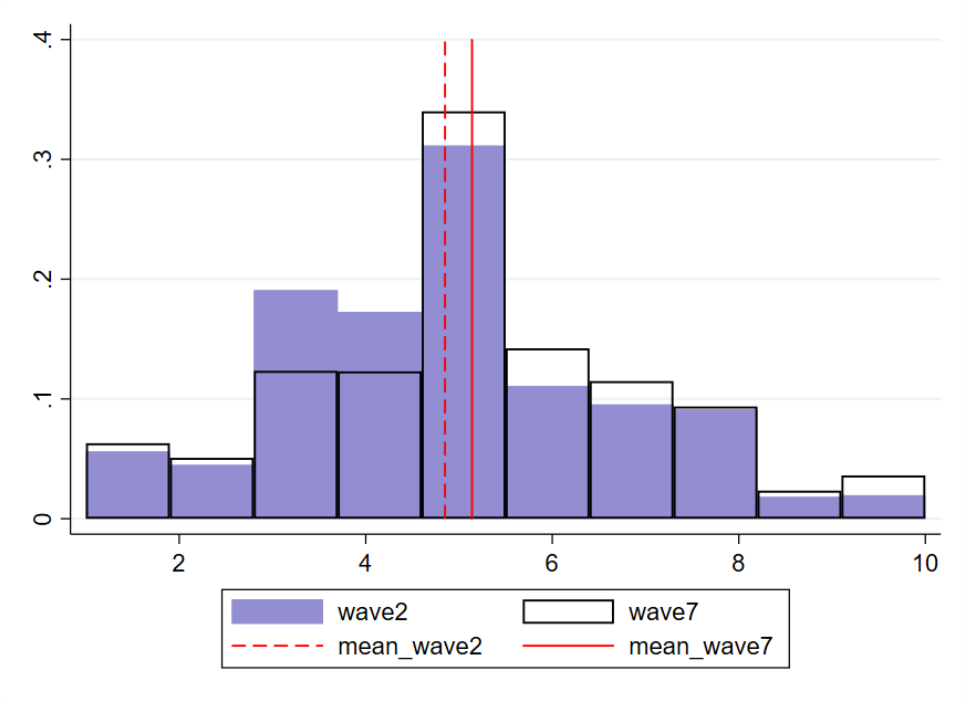
Panel (a) South Korea



Panel (b) Mexico



Panel (c) France



Panel (d) United States

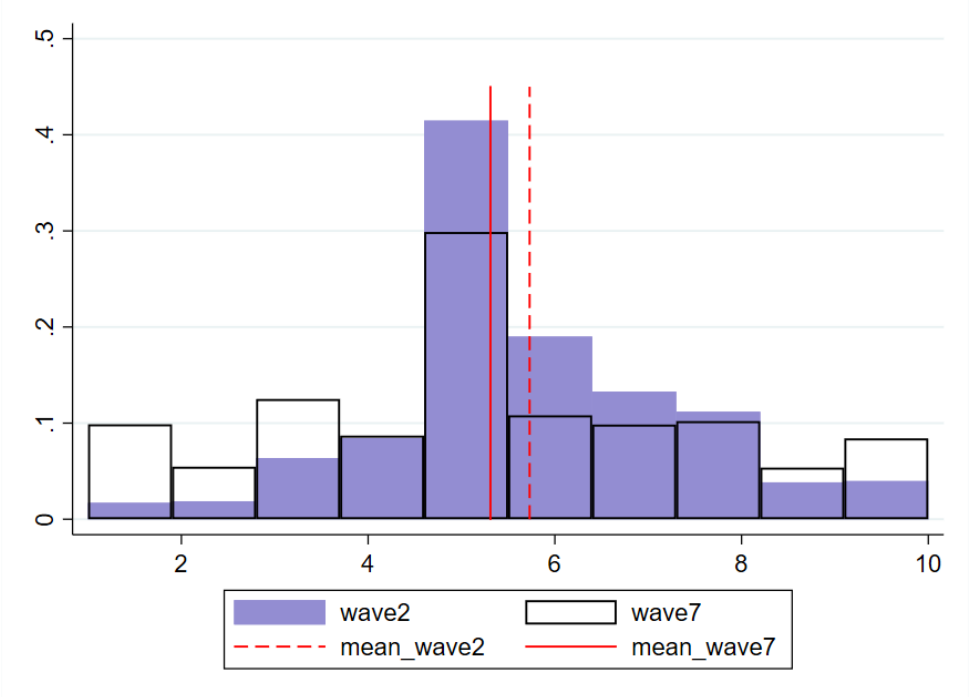
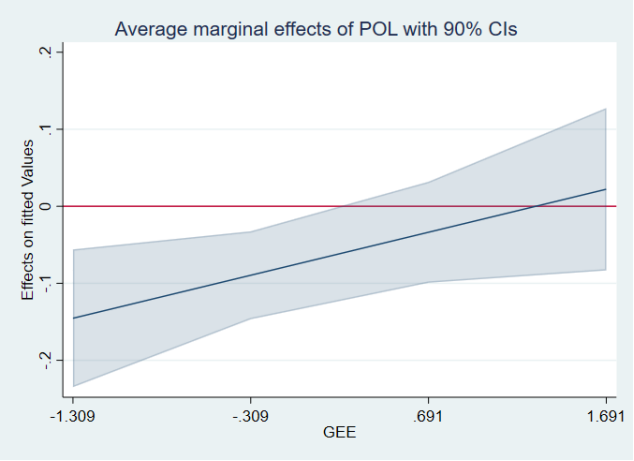
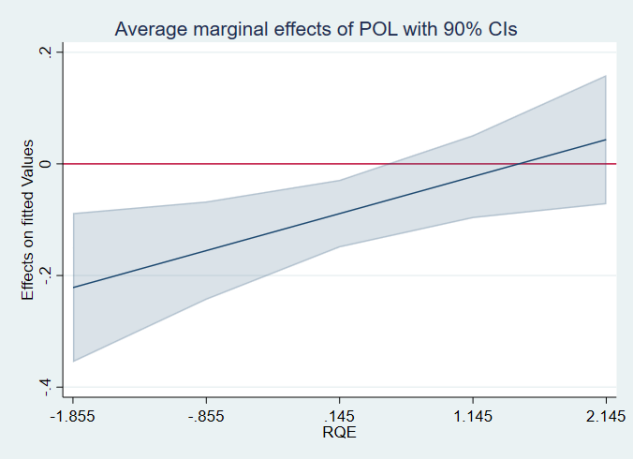


Figure 2 Effects of political polarization on per capita GDP with state capacity measures

Panel (a) GEE



Panel (b) RQE



Panel (c) RLE

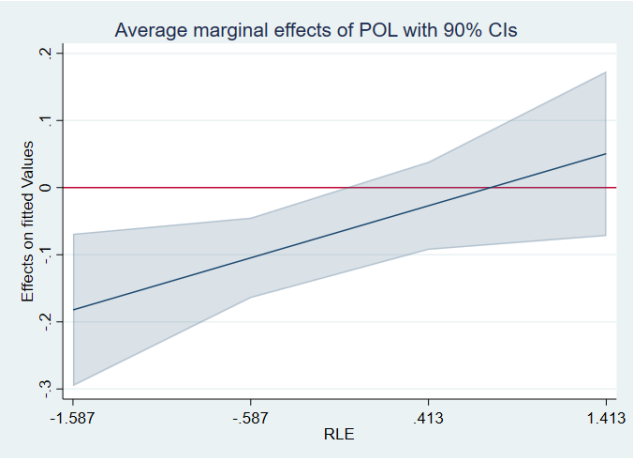


Table 1. The effect of political polarization on real per capita GDP

	Fixed effects		GMM	
	1	2	3	4
Lagged ln GDP per capita	0.402***	0.409***	0.919***	0.924***
	(0.076)	(0.077)	(0.022)	(0.023)
Mean		0.017		-0.002
		(0.021)		(0.030)
POL	-0.072*	-0.072*	-0.077**	-0.090**
	(0.039)	(0.039)	(0.036)	(0.039)
POP growth	-0.035	-0.035	-0.041**	-0.047***
	(0.028)	(0.028)	(0.018)	(0.016)
GFCF	0.007**	0.007**	0.0001	0.0004
	(0.003)	(0.003)	(0.004)	(0.003)
Trade	0.002***	0.002***	0.00078**	0.0008*
	(0.0008)	(0.0008)	(0.00032)	(0.0004)
Tertiary	0.101*	0.100*	0.015	-0.002
	(0.058)	(0.058)	(0.071)	(0.067)
INF	-0.0002	-0.0002	-0.0008	-0.001
	(0.0002)	(0.0002)	(0.0006)	(0.001)
Urban	-0.005	-0.005	-0.001	-0.002
	(0.006)	(0.006)	(0.001)	(0.002)
Wave dummy	Yes	Yes	Yes	Yes
AR(1) / AR(2)			0.017/0.102	0.008/0.102
Hansen test			0.752	0.969
R-square	0.835	0.836		
Observations	257	257	257	257
No. countries	75	75	75	75

Notes. The dependent variable is real per capita GDP (in natural logs). POL is the level of political polarization based on the self-reported political ideologies. MEAN is the average level of political ideology. All columns include country fixed effects and wave dummies. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 2. Transmission mechanism, system-GMM estimates

Dep. Var.	1 ln PINV	2 ln GINV	3 ln HCAP	4 ln TFP
Lagged ln PINV	0.756*** (0.086)			
Lagged ln GINV		0.649*** (0.110)		
Lagged ln HCAP			0.927*** (0.029)	
Lagged ln TFP				0.658*** (0.093)
Mean	0.046 (0.082)	-0.065 (0.146)	0.012 (0.010)	0.010 (0.019)
POL	-0.189** (0.090)	-0.045 (0.211)	-0.019* (0.010)	-0.070*** (0.026)
Wave dummy	Yes	Yes	Yes	Yes
AR(1) / AR(2)	0.032/0.115	0.024/0.224	0.017/0.254	0.032/0.398
Hansen test	0.917	0.785	0.710	0.961
Observations	250	250	227	227
No. countries	73	73	65	65

Notes. Among the dependent variables, PINV is real private investment per capita, GINV is real general government investment per capita, HCAP is human capital investment per worker, and TFP is total factor productivity. POL is the level of political polarization based on self-reported political ideologies. MEAN is the average level of political ideology. Other control variables (not reported) include population growth, gross fixed capital formation (GFCF), trade openness, tertiary education (except in Column 3), inflation, and urbanization. All columns include country fixed effects and wave dummies. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 3. IV estimates of the effect of political polarization

	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage	1st stage	2nd stage
	1	2	3	4	5	6	7	8	9	10
Dep. Var.	POL	ln GDPpc	POL	ln PINV	POL	ln GINV	POL	ln HCAP	POL	ln TFP
$\widehat{POL}$		-0.445***		-0.428*		0.043		-0.040**		-0.069
		(0.140)		(0.221)		(0.384)		(0.016)		(0.112)
Karisma	-0.084***		-0.086***		-0.079***		-0.060**		-0.066**	
	(0.028)		(0.031)		(0.029)		(0.030)		(0.029)	
Egal	-0.623***		-0.725***		-0.815***		-0.787***		-0.791***	
	(0.218)		(0.245)		(0.211)		(0.224)		(0.237)	
Lagged ln GDPpc	-0.315***	0.294***								
	(0.117)	(0.093)								
Lagged ln PINV			-0.076	0.036						
			(0.062)	(0.067)						
Lagged ln GINV					-0.044	0.148**				
					(0.038)	(0.064)				
Lagged ln HCAP							-0.684	0.746***		
							(0.710)	(0.064)		
Lagged ln TFP									-0.560***	0.539***
									(0.168)	(0.075)
Mean	0.012	0.026	0.026	0.040	0.032	0.111	0.041	0.011***	0.038	-0.002
	(0.056)	(0.027)	(0.057)	(0.044)	(0.056)	(0.069)	(0.057)	(0.004)	(0.055)	(0.012)
POP growth	0.123**	0.045	0.112*	-0.046	0.102*	-0.050	0.105	0.007	0.109	-0.006
	(0.060)	(0.044)	(0.065)	(0.075)	(0.062)	(0.087)	(0.065)	(0.005)	(0.068)	(0.022)
GFCF	0.004	0.007**	0.007	0.038***	0.005	0.035***	-0.002	0.0002	0.0002	-0.004*
	(0.006)	(0.003)	(0.006)	(0.006)	(0.006)	(0.007)	(0.005)	(0.0004)	(0.005)	(0.002)
Trade	0.001	0.003***	0.002	0.002	0.0020	0.005**	0.001	0.00022*	0.0005	0.0009**
	(0.001)	(0.001)	(0.002)	(0.002)	(0.0015)	(0.0025)	(0.002)	(0.00013)	(0.002)	(0.0004)

Tertiary	0.136	0.113**	0.152	0.287**	0.154	0.134			0.235**	0.033
	(0.093)	(0.056)	(0.100)	(0.111)	(0.103)	(0.178)			(0.098)	(0.042)
INF	0.005	-0.018	0.00004	-0.013	0.0002	-0.028	-0.007	-0.001**	-0.010	0.002
	(0.011)	(0.013)	(0.009)	(0.015)	(0.009)	(0.030)	(0.009)	(0.0005)	(0.009)	(0.003)
Urban	0.004	-0.002	0.009	-0.006	0.008	-0.031**	0.009	0.0016*	-0.003	-0.004
	(0.012)	(0.008)	(0.011)	(0.010)	(0.011)	(0.014)	(0.011)	(0.0009)	(0.011)	(0.005)
Wave dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kleibergen-Paap	11.41		9.59		10.17		9.82		7.37	
F-statistics [p-value]	[0.000]		[0.000]		[0.000]		[0.000]		[0.001]	
Hansen's J test [p-value]		2.623		0.344		0.288		0.987		2.079
		[0.105]		[0.558]		[0.591]		[0.321]		[0.149]
Observations		254		249		249		226		226
No. countries		74		73		73		65		65

Notes. Among the dependent variables, PINV is real private investment per capita, GINV is real general government investment per capita, HCAP is human capital investment per worker, and TFP is total factor productivity. POL is the level of political polarization based on self-reported political ideologies. MEAN is the average level of political ideology. In each first stage, political polarization is estimated (Columns 1, 3, 5, 7, and 9) and the resulting value used to estimate its effect on lnGDP per capita (Column 2), lnPINV (Column 4), lnGINV (Column 6), lnHCAP (Column 8), and lnTFP (Column 10) in the second stage, respectively. The main instruments used in the first stage include "Person of the leader" and "Egalitarian component index". All columns include country fixed effects and wave dummies. Cluster-robust standard errors at the country-level are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 4. The effect of alternative political polarization measures on real per capita GDP, system-GMM estimates

	1	2	3	4
Lagged ln GDP per capita	0.920***	0.889***	0.908***	0.895***
	(0.031)	(0.025)	(0.025)	(0.023)
Mean_equality	0.022**			
	(0.011)			
POL_equality	0.002			
	(0.031)			
Mean_ownership		-0.016		
		(0.025)		
POL_ownership		-0.088**		
		(0.034)		
Mean_responsible			0.043**	
			(0.020)	
POL_responsible			-0.090**	
			(0.044)	
Mean_compete				0.035
				(0.035)
POL_compete				-0.095*
				(0.050)
Wave dummy	Yes	Yes	Yes	Yes
AR(1)/AR(2)	0.017/0.128	0.007/0.134	0.015/0.221	0.017/0.102
Hansen test	0.721	0.952	0.833	0.888
Observations	247	244	256	253
No. countries	75	75	75	75

Notes. The dependent variable is real per capita GDP (in natural logs). Other control variables (not reported) include population growth, gross fixed capital formation (GFCF), trade openness, tertiary education, inflation, and urbanization. All columns include country fixed effects and wave dummies. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5. Robustness checks

	1 All	2 All	3 Excl. developed countries
Esteban and Ray	-0.186** (0.075)		
Bipolarization		-0.454*** (0.159)	
POL			-0.074** (0.037)
Wave dummy	Yes	Yes	Yes
Set of controls			
AR(1) / AR(2)	0.008/0.115	0.009/0.113	0.007/0.108
Hansen test	0.912	0.943	0.890
R-square			
Observations	257	257	187
No. countries	75	75	53

Notes. The dependent variable is real per capita GDP (in natural logs). Other control variables (not reported) include population growth, gross fixed capital formation (GFCF), trade openness, tertiary education, inflation, and urbanization. All columns include country fixed effects and wave dummies. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 6. The effect of political polarization conditional on state capacity, system GMM estimates

	1	2	3
Lagged ln GDP per capita	0.911***	0.884***	0.920***
	(0.037)	(0.030)	(0.044)
Mean	0.001	-0.015	-0.021
	(0.034)	(0.037)	(0.040)
POL	-0.072**	-0.099**	-0.059*
	(0.033)	(0.038)	(0.032)
POL * GEE	0.056*		
	(0.033)		
POL * RQE		0.066**	
		(0.033)	
POL * RLE			0.078*
			(0.043)
GEE	-0.101		
	(0.073)		
RQE		-0.099	
		(0.063)	
RLE			-0.170
			(0.108)
Wave dummy	Yes	Yes	Yes
AR(1)/AR(2)	0.001/0.181	0.001/0.184	0.002/0.226
Hansen test	0.943	0.905	0.875
Observations	234	234	234
No. countries	75	75	75

Notes. The dependent variable is real per capita GDP (in natural logs). Other control variables (not reported) include population growth, gross fixed capital formation (GFCF), trade openness, tertiary education, inflation, and urbanization. All columns include country fixed effects and wave dummies. Robust standard errors are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix

Table A1. List of countries

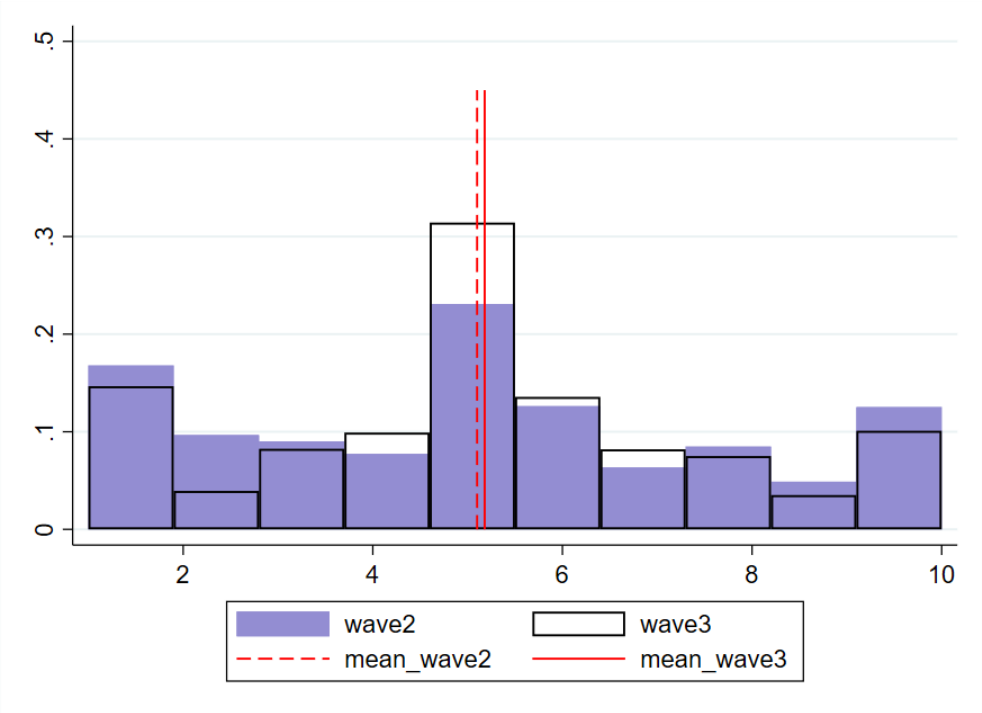
Albania, Argentina, Armenia, Australia, Austria, Azerbaijan, Bangladesh, Belarus, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, Chile, Colombia, Croatia, Cyprus, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Georgia, Germany, Ghana, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Ireland, Italy, Japan, Jordan, Malta, Latvia, Lithuania, Luxembourg , Malaysia, Mexico, Peru, Moldova, Montenegro, Morocco, Netherlands, New Zealand, Nigeria, Macedonia, Norway, Philippines, Poland, Portugal, Puerto Rico, Romania, Russian Federation, Rwanda, Serbia, Slovak Republic, Slovenia, Spain, South Africa, South Korea, Sweden, Switzerland, Thailand, Tunisia, Turkey, Ukraine, United Kingdom, United States, Uruguay, Zimbabwe.

Table A2. Summary statistics

Variable	Definition	Obs.	Mean	SD
POL	Standard deviation of political ideology	257	2.20	0.35
Mean	Average of political ideology	257	5.57	0.50
ln GDP per capita	Log of real GDP per capita	257	9.13	1.20
POP growth	5yr average of population growth	257	0.63	0.90
GFCF	5yr average of gross fixed capital formation	257	23.09	5.06
Trade	5yr average of trade openness	257	80.05	53.41
Tertiary	Ratio of respondents with low-level tertiary education	257	20.64	13.80
INF	5yr average of inflation rate	257	25.75	131.74
Urban	5yr average of urbanization rate	257	68.29	16.89
ln PINV	Log of real general private investment per capita	252	0.91	1.10
ln GINV	Log of real general government investment per capita	252	-0.58	1.06
ln HCAP	Log of human capital index	227	1.03	0.21
ln TFP	Log of total factor productivity	227	-0.07	0.16
POL_equality	Standard deviation of opinions on equality	247	2.73	0.36
MEAN_equality	Average of opinions on equality	247	5.75	0.97
POL_ownership	Standard deviation of opinions on ownership	244	2.57	0.43
MEAN_ownership	Average of opinions on ownership	244	5.83	0.84
POL_responsible	Standard deviation of opinions on being responsible	256	2.72	0.35
MEAN_responsible	Average of opinions on being responsible	256	5.19	1.05
POL_compete	Standard deviation of opinions on competition	253	2.38	0.34
MEAN_compete	Average of opinions on competition	253	7.25	0.61
Esteban and Ray	Polarization measure in Esteban and Ray (1994)	257	0.13	0.09
Bipolarization	Ratio of respondents that answer “1” or “10”	257	0.86	0.16

GEE	Government effectiveness	234	0.51	0.91
RQE	Regulation quality	234	0.56	0.88
RLE	Rule of law	235	0.41	0.97

Figure A3. South Africa's Distributions of political ideology, Wave 2 and Wave 7



Notes. The 2nd wave World Values Survey for South Africa's was conducted in 1990 and the 3rd in 1996, and Nelson Mandela took office in 1994.