

Dörffel, Christoph; Freytag, Andreas

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## The poverty effect of democratization

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# *The Poverty Effect of Democratization*

Christoph Dörffel | Andreas Freytag

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# The Poverty Effect of Democratization\*

Christoph Dörffel<sup>†</sup>

Andreas Freytag<sup>‡</sup>

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## Abstract

In this paper we examine the interrelatedness between regime types of democracy and non-democracy and poverty reduction. The liberal international order and democratic principles have been challenged by the populace's general discontent in recent years, while the reduction of poverty is a central goal of the global development agenda as embodied by the Sustainable Development Goals. Democracies could promote poverty reduction by encouraging redistribution, lifting barriers for poor people, or giving better access to the institutions of society. Democracies might hinder poverty reduction if they are captured by elites or become dysfunctional in general. Our data cover around 140 countries and a period from 1980-2018. We use a mix of methods to address endogeneity concerns. In dynamic panel estimates that control for past influences of poverty, GDP and inequality we find no significant impact of democratization on poverty rates. In more flexible and causal treatment effects estimates we find democratization reduces poverty rates by about 11-14% in the first five years after democratization on a 95% significance level and about 20% 10-14 years after democratization on a 90% significance level. Although we find mixed results, we are still confident that democratic political institutions matter greatly, and societies are better off when the political systems are more inclusive. The fact that our results do not find *clear* support for this suggest that this is too often not the case, even in democracies.

**Keywords:** Poverty, Democracy, Human Development

**JEL Codes:** I32, O15, P48

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<sup>†</sup> University of Jena, Carl-Zeiss-Str. 3, 07743 Jena, Germany, email: christoph.doerffel@uni-jena.de

<sup>‡</sup> University of Jena, University of Stellenbosch, CESifo Research Network; email: andreas.freytag@uni-jena.de

## **1 Introduction**

In recent years, discontent with the liberal international order has increased, not in the least due to the widespread feeling that globalization has only helped a rich minority in Western democracies. At the same time, a reduction of poverty is one of the most important items on the global agenda as illustrated by the United Nations (2015)'s Sustainable Development Goal No. 1 being that of "ending poverty in all its forms everywhere", meaning that by 2030 no-one in the world should live under \$1.90 a day. Despite much progress since 1990 the world is not on track to achieve this goal.

Much research has been done on poverty reduction. The link between growth and poverty is especially well researched where usually the finding is that growth reduces poverty (Dollar and Kraay, 2002; Dollar and Kraay, 2004; Dollar et al. 2013; Ravallion, 2001). Poverty is seen by many as a more pressing policy issue than inequality. In 18 Afrobarometer countries, "poverty outranked inequality as a pressing political problem by a multiple of 20" (Bermeo, 2009, p. 26). This illustrates the importance of poverty reduction for individuals in poor societies.

Although there is widespread consensus that "institutions matter" (North, 1994), little is known about link between institutions and poverty.<sup>1</sup> By structuring behavior of individuals through setting rules and giving incentives, economic activity is influenced by institutions. Thus, they naturally also influence the prevalence of poverty in societies. This is the link we investigate in this paper. We proxy institutions by electoral democracy and investigate empirically whether changes in these institutions during democratizations result in changes in poverty rates. This question has not yet been answered, although it seems highly relevant. This is especially interesting against the background of mixed empirical evidence with respect to the questions of whether democratization causes growth (Acemoglu et al. 2019; Colagrossi et al. 2020) and whether there are effects of democratization on other outcomes such as inequality or

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<sup>1</sup> According to North (1990, p. 97) institutions can be defined as "humanly devised constraints that structure political, economic and social interactions".

health indicators (Acemoglu et al. 2015).

Economic theory suggests that democratization could affect poverty rates through several channels. Extending voting rights of poorer segments of society may lead to more redistribution towards them, or democratization might lift barriers forcing the poor to work low wage agricultural jobs (Meltzer and Richard, 1981; Moore Jr., 1966). However, democracies might be captured – economically or physically – by the previous elite who could work to prevent pro-poor policies. Middle-class bias could cause redistribution towards the middle class rather than the poor, or newly gained market opportunities might increase pressure on wages and increase poverty (Acemoglu and Robinson, 2008).

We assess the question with a dataset covering years from 1980 to 2018 for around 140 countries. We use a democracy measure from Acemoglu et al. (2019) that proxies institutions of electoral democracy. Much of the literature does not adequately address endogeneity issues (Acemoglu et al. 2015; Ross, 2006). Our empirical strategy reflects the need to address endogeneity in two ways. First, we estimate a dynamic panel model using the two-way fixed effects (TWFE) estimator to account for unobserved heterogeneity and GMM estimations to correct for Nickel bias. To control for selection into democracy we include lags of poverty, GDP and inequality. Secondly, we estimate non-parametric treatment effects which can be deemed causal under some plausible assumptions. Treatment effects estimations are more flexible in the timing of when democratization affects poverty rates and do not impose a linear effect as does regression estimators do. Our dynamic panel estimates show an insignificant impact of democracy throughout a variety of specifications. These are robust to a number of alternative specifications. Treatment effects estimates find a causal effect of democracy on poverty rates. On a 95% significance level, democracy reduces poverty rates by about 11-14% in the first five years after democratization and with 90% significance about 20% 10-14 years after democratization.

These results suggest that a mix of forces is at play. It is likely that many democracies

redistribute income, decrease inequality and enact pro-poor policies at least to some extent so that poverty rates decrease more compared to non-democracies. On the other hand, as made clear by anecdotal evidence, many democracies are also plagued by corruption, the influence of rich elites, or the middle-class using their electoral power to redistribute incomes and wealth to themselves.<sup>2</sup>

The remainder of this paper follows a straightforward structure. Section 2 outlines our theoretical considerations. Section 3 describes the empirical approach, the data we use, results and robustness checks. Section 4 discusses our results and section 5 concludes.

## **2 The Effect of Democracy on Poverty in Theory**

### **2.1 The Literature**

#### **2.1.1 Democratization and Growth**

Institutions are a complex matter. As North's definition suggests, one can distinguish between political, economic and social institution. Because of this complexity much of the literature looks at a narrower concept of institutions, specifically at democratic (political) institutions which are conceptually better to grasp as well as easier to quantify. We will follow this approach and focus on democratizations to proxy (changes in) political institutions.<sup>3</sup> The literature looking at democratization and GDP/growth shows a mixed evidence (Doucouliagos and Ulubaşoğlu, 2008; Gerring et al. 2005; Przeworski et al. 1995, 2000; Rodrik and Wacziarg, 2005). Przeworski et al. (1995) survey the literature looking at whether democracy increases GDP through guaranteeing property rights or bolstering private economic activity. The studies they survey show a mixed picture, i.e. one which does not clearly favor democracies. Przeworski

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<sup>2</sup> This is supported by many authors highlighting country heterogeneity in processes of democratization and institutional change (e.g. Bermeo, 2009; Bourguignon, 2004; Colagrossi et al. 2020)

<sup>3</sup> However, poverty reduction cannot occur only through political institutions. We assume that political, economic and social institutions are closely linked, and that democratization similarly triggers changes in economic and social institutions. It does not seem to be far-fetched that economic institutions such as property rights protection will change after democratization.

et al. (2000) find an ambiguous result where democracies tend to have higher output than autocracies but the latter tend to allocate capital more efficiently. Gerring et al. (2005) looked at the role of political capital captured by the stock of democracy and find a positive relationship with GDP. Rodrik and Wacziarg (2005) look at democratic transitions and find they positively impact the growth rate in the 10 years following a successful transition as well as decrease growth volatility for 24 countries that transition to democracy. Doucouliagos and Ulubaşoğlu (2008) find no direct effect of democracy on growth but rather an indirect effect through human capital in their meta study. More recent influential work is from Acemoglu et al. (2015) who make an effort to look at the causal link between democracy and growth and find that democracy increases long-run GDP by about 20-25% and a new meta study from Colagrossi et al. (2020) of 2000 regressions finding a positive direct effect of democracy on GDP.

### **2.1.2 What Drives Poverty Rates**

The empirical literature on what drives poverty rates is not very extensive. Exceptions are papers by Ravallion and Chen who regularly investigate global poverty trends e.g. Chen and Ravallion, 2010; Ravallion, 2001. Fosu (2017) shows that there are substantial differences among regions in the world. Analyzing the elasticities with a focus on the African continent, Fosu finds a large geographical variation with respect to the responsiveness of poverty to income growth between African states (Fosu, 2010). These differences are likely in part due to differences in institutions as Rodrik et al. (2004) show that geographical factors do not play a role anymore once institutions are controlled for.

In the context of poverty reduction, the notion of “inclusive growth” has received some attention in the literature (Adams, 2004; Dörffel et al. 2021; Fosu, 2010, 2017; Kalwij and Verschoor, 2007; Ravallion, 2001). Most authors’ main argument is that growth only translates into poverty reduction if there is a high initial level of equality and social inclusion within the society. Hence, equality mediates the positive or negative

effect of growth on poverty reduction (as also argued below). To investigate this empirically, Adams (2004), Fosu (2017), and Kalwij and Verschoor (2007) estimate the effect of income growth and inequality changes on poverty. The general findings are that higher income growth leads to faster poverty reduction and higher changes in inequality leads to poverty increases.

There is small number of papers looking at the effect of democratic institutions on outcomes that are related to poverty. Health outcomes are closely related to poverty because large changes in health outcomes tend to affect poorer people the most. Many studies find democracies to have higher life expectancy, people consume on average more calories and lower infant mortality (see Acemoglu et al. 2015, p. 1907f. for details). However, Ross (2006) finds no effect of democracy on infant mortality rates in a panel of 44 countries, i.e. he finds no effect of democracy on poverty.<sup>4</sup> Kapstein and Converse (2008) have looked at correlations between economic and political conditions and successful versus failed democratizations. They find that poverty rates are twice as high in countries where democratization failed compared to democratizations that sustained. This indicates that permanent democratization at least coincides with lower poverty. However, the literature has yet not investigated the direct relationship between democratic institutions and poverty rates. This is the gap we intend to fill.

### **2.1.3 The Mechanics Between Growth, Inequality, and Poverty**

A decrease of poverty is often seen as by-product of economic growth. However, poverty rates do not automatically decrease when GDP increases. We use the definition of poverty of the poverty headcount ratio; i.e. the fraction of the population in a given country that lives below the poverty line. Bourguignon illustrates the dynamics of the poverty-inequality-growth triangle. He shows that changes in poverty is a function of growth, the income distribution and changes in the distribution. Assuming that all

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<sup>4</sup> While we agree that poverty overall is a multidimensional problem, that includes also aspects such education, health, adequate housing, access to water, sanitation, as suggested e.g. by Alkire and Santos (2014), we focus on income poverty (rates) in our work for the sake of clarity. We argue this is a valid approach to look at poverty in general, since there is likely to be high correlation between incomes and other poverty dimensions.

incomes across the population grow by the same rate, then income growth lifts people out of poverty and the poverty rate decreases. However, this must not necessarily be true. If only incomes above the poverty line grow, the poverty rate remains unchanged.<sup>5</sup> The change in poverty is also affected by the distribution because the shape of the distribution (its flatness and size of the tails) influences how many people get lifted out of poverty even when incomes grow at the same rate. Lastly, changes in the income distribution (i.e. through differential taxation or redistribution) directly influence the poverty rate except when changes only occur in the part of the income distribution above the poverty line (Bourguignon, 2004).

## **2.2 Theoretical Mechanisms**

The mechanics between growth, inequality and poverty imply that only limited statements about the effect of institutions on poverty are possible when we attempt to derive them from changes in GDP or inequality. The literature mentioned above suggests that GDP and inequality may be channels through which democracy might impact poverty rates. Further economic theories provide several possible mechanisms by which democratization might decrease poverty and also several factors that might mitigate this impact. We will briefly present the major influences identified in the literature here. For a more extensive discussion see the survey article by (Acemoglu et al. 2015).

The first and most prominent mechanism has been outlined by Meltzer and Richard (1981). They argue that, starting from a situation where only a small part of the society has voting rights, the extension of voting rights to a larger part of the population due to democratization will shift the median voter down on the income distribution to a relatively poorer part of society. In consequence, policies are expected to be relatively more pro-poor (e.g. by increasing transfers or establishing social security programs). A similar argument has been made by Sen (1981) who argues that the electoral process in democracies allows the poor to penalize governments (Ross, 2006) and to avoid

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<sup>5</sup> This would be “anti-poor” growth as opposed to pro-poor growth where incomes below the poverty line increase faster than incomes above the poverty line, resulting in a reduction in poverty rates (Ravallion and Chen, 2003).

this, governments will enact pro-poor policies. Also related to this argument is the argument that democracies – because of the electoral progress – tend to produce more public goods and more redistribution (Deacon, 2003; Lake and Baum, 2001; McGuire and Olson, 1996; Niskanen, 1997; Ross, 2006). Another similar argument has been made by Olson (1993), arguing the protection of private property rights or more efficient supply of inputs in democracies leads to higher output which can in turn result in poverty reduction.

The second channel is based on the argument that democratization will lift barriers of mobility out of the rural sector and therefore speed up structural transformation in the economy. Barriers that were present before democratization are enacted through policies that benefit the politically powerful at the expense of the rest of society. Such policies could then push wages down by repression and other means. Lifting such barriers could increase wages for the poor and lead to a more equal distribution of income and thus is likely to decrease poverty (Acemoglu et al. 2015, pp. 1888, 1893).

A third theoretical explanation comes from North et al. (2009) who develop a theoretical framework for explaining the state and its institutions in general, and the transition “limited access orders” (LAO) to “open access orders” (OAO). Although some precision of concepts gets lost, one can broadly frame autocracies in terms of limited access orders and democracies in terms of open access orders.<sup>6</sup> While in LAOs the creation of organizations in economic and political spheres is limited to the members of dominant coalition and their associates, in OAOs this activity is allowed for the wide strata of society. This allows the poorer part of society to seek economic rents by political influence (e.g. to increase redistribution) or by engaging in profitable economic activities.

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<sup>6</sup> The most important aspect of the state in general is to deal with violence that would occur without it and LAO and OAO differ in terms of how they solve the problem of violence. LAOs provide order by using the political system to limit economic entry to create rents, and then using the rents to stabilize the political system and limit violence. LAOs support a dominant coalition that establishes institutions and can be in itself a seed for new violence. In OAO, open access and entry into economic and political organizations sustains economic and political competition. Social order is sustained by competition rather than rent-creation. OAOs allow for establishing and consolidating strong army and police forces – subjected to clear, strict and self-enforcing rules – who serve to deter violence. Simultaneously, non-governmental organizations are deprived of the ability to use violence which in LAOs would be used for the purposes of arrangement enforcement, creation of rents, etc.

Both are severely restricted in LAOs since the dominant coalition will exclude them from pursuing economic rents to protect their own or even worse - extract rents from them. Hence, poverty should decrease in OAOs through redistribution or access to economic activity.<sup>7</sup>

There are several less elaborated mechanisms through which democratization also might reduce poverty in theory. For example, Sen (1981) – as cited by Ross (2006) – argues that democracies allow better information flow through freedom of press. This leads to better knowledge by policymakers about poor people and therefore will lead to more pro-poor policies. Furthermore, Bermeo (2009)) argues that foreign aid is often conditional on institutional change or good governance, and therefore poor democracies might receive more foreign aid that can be used for poverty reduction than poor autocracies. Lastly, Tavares and Wacziarg (2001) argue that trade unions and workers are given more power in democratic societies. Thus, companies are forced to pay higher wages, which can induce poverty reduction. In autocracies this component does not exist.

However, the literature also has developed many arguments why the mechanisms above might not be harnessed and democratization could therefore have an ambiguous or even negative effect.

The first reason is that democracy might be “captured” (Acemoglu and Robinson, 2008); and the authors posit three possible arguments as to how. The first argument is that the rich people in a society can take costly investments to hold their *de facto* power even when *de jure* power changes due to democratization. They can also gain *de facto* power through methods such as lobbying, repression, control of local law enforcement or nonstate armed actors which lead to control of all parties or to a change political ideology via the media (Acemoglu et al. 2015, p. 1895). Second, a newly

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<sup>7</sup> Tullock (1987) argues that autocracies also need to create rents. Due to the inefficiency of tax collecting in autocracies typically monopolies for certain economic activities are granted to individuals close to the ruler, who then will take a large of the rents in return. Thus, we can make a similar argument as with the framework of North et al. (2009): autocracies will tend to extract rents from the poorer population and redistribute them to the richer part of the population, thus increasing poverty in the process.

transitioned democracy may be highly dysfunctional or effectively captured because its institutional architecture is often chosen by previous rulers/elites (Acemoglu et al. 2015, p. 1896). Furthermore, a young democracy might be captured via constitutional provisions that restrict the scope for redistribution (and therefore for pro-poor policies), while the threat of capital flight may increase the cost of redistribution (Acemoglu et al. 2015, p. 1896).

The second reason democratization of a country can lead to an increase of poverty is through an increase in market opportunities after democratization which puts pressure on wages especially in the low-skilled part of society (Acemoglu et al. 2015, p. 1897). If inequality increases and wages of the poor decrease the poverty rate could increase.

The third reason is a modification of “Directors’ law” insinuating a middle-class bias of democracy. Because democratization empowers the middle class, “which uses its power to redistribute to themselves and not to the poor, the resulting income distribution might be more or less equal (it will be more equal if the middle class is much poorer than the rich, and less equal if the middle class are much richer than the poor)” (Acemoglu et al. 2015, p. 1898). In any case, it entails income redistribution which is directed from rather than towards the poor; potentially leading to increased poverty.

The fourth aspect is that social cleavages or identities in society may be such that they tend to reduce the likelihood that a coalition favoring redistribution would form (Acemoglu et al. 2015, p. 1898). Varshney (2005) argues that pro-poor policies are more likely to be enacted when economic class and ethnicity coincide for the poor because they can then put more pressure on governments. However, when class and ethnicity clash, the voting bloc for pro-poor policies is smaller as ethnic divisions often also divide voting blocs.

The fifth reason is that most redistribution under democracy does not take the form of transfers but social insurance (Acemoglu et al. 2015, p. 1898). Moene and Wallerstein (2001) develop a model to show that inequality effects (and therefore poverty reducing

effects) are ambiguous when both transfers and insurance are possible policy options.

A final reason is brought forward by Olson (1982) who argues that rent-seeking behavior of special interest groups leads to institutional sclerosis which will lead to economic stagnation and political instability which both can result in less poverty reduction.<sup>8</sup>

### **3 Data, Method and Results**

#### **3.1 Empirical Approach**

A potential reason why the effects of institutions on poverty rates are not well researched is that data is only sparsely available. Poverty data for most countries are available from the 1980's onwards. Since more data becomes available as time progresses, we can profit from more recent observations that were simply not available 10 or 20 years ago. We can make use of over 1600 data points with poverty data from surveys. Although this is still somewhat limited, we are confident that data coverage is large enough to provide us with some useful insights.

To tackle the issue of developing a metric for institutions we follow Acemoglu et al. (2019)'s methods . They develop a democracy dummy that is robust to spurious changes in democratic institutions by combining different sources and therefore should be less prone to measurement error. The metric is based on the polity2 score and the Freedom House measure of political freedom. Thus, this concept of democracy covers institutions that are connected to electoral democracies. Institutional elements are free and competitive elections, checks on the power of the executive, an inclusive political process that allows various groups access to be represented politically, which are represented by the polity2 score, as well as the extent of civil liberties covered by Freedom House. This measure of democracy leaves out some aspects of the institutional setting,

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<sup>8</sup> There are several further reasons that make the effect of democratization on poverty ambiguous. The first addresses the influence of social mobility on the demand of redistribution. When rates of social mobility are high and tax policy is sticky, people who are poor today may not support high rates of taxation and redistribution because they worry that it will negatively impact them should they become rich in the future (Acemoglu et al. 2015, p. 1898).

such as clientelism, corruption or state capacity that can also be considered important democratic institutions. Using a democracy dummy has the further advantage that we identify shocks to institutions by the events of changes in the dummy. These shocks to the institutional environment are helpful to identify effects on other outcomes (in our case, poverty).

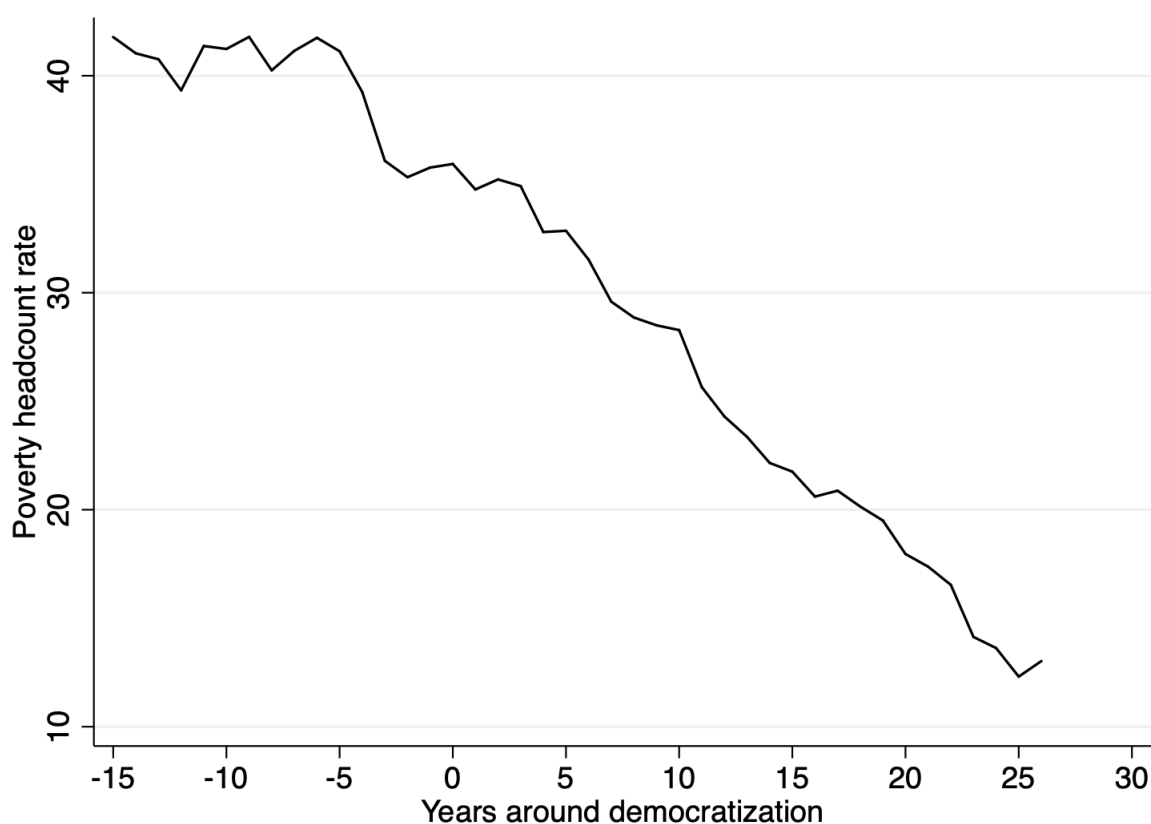
Much of the literature we cite so far which estimated an effect of democracy on growth or e.g. health outcomes has difficulties to identify causal effects. Many of these studies received criticism for such things as estimating cross-section or panel effects without fixed effects which leads to bias in estimates (Acemoglu et al. 2015; Ross, 2006).<sup>9</sup> Estimating causal effects is a difficult endeavor. Measurement errors, unobserved characteristics that introduce biases, and unaccounted dynamics that violate parallel trends assumption can all introduce biases in estimations. In dealing with these we follow Acemoglu et al. (2019). Measurement errors in the democracy measures are reduced by combining several sources to code the democracy dummy as described above. Unobserved characteristics are addressed by using two-way fixed effects (TWFE) settings which filter out period specific or country specific heterogeneity. Furthermore, we use the GMM estimator (Arellano and Bond, 1991) to deal with the Nickell bias likely to affect FE estimates. Lastly, unobserved characteristics are addressed by estimating non-parametric treatment effects (more specifically the average treatment effect on the treated, ATET) for different time periods. They have the advantage that they do not rely on the assumption of a linear functional form (as regression estimators do) which allows effects to be delayed and not necessarily in the same period. This estimation captures the causal effect of democracy on poverty as long as there are no unobserved characteristics that influence poverty rates and the selection into democracy at the same time (apart from GDP, poverty and inequality which we control for as described below). Figure 1 shows the path of average poverty rate for countries that democratize from 15 years before democratization until 25 years afterwards. It demonstrates that,

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<sup>9</sup> To illustrate this with an example, Kalwij and Verschoor (2007) do not take it into account the conditions under which economic growth is transformed into poverty reduction. Hence, much of the past literature does not account for endogeneity in the relationship between democracy and growth.

in the 5 years that precede democratization, poverty rates tend to fall sharply while in the 10 years prior to that, they are rather stable. Hence, this fall in poverty rates might affect democratization itself and must therefore be adequately addressed because it violates the parallel trend assumption in standard regression estimators. To address this, we model this decline in poverty rates in estimations by including a sufficient number of lags of the poverty rates which filters out this decline. Because democratization is likely to not only be influenced by poverty but also by GDP and inequality before the event, we additionally control for these dynamics. We control for these dynamics in both, FE/GMM estimations and treatment effects estimations. By addressing these challenges, and under some plausible assumptions which we discuss below, we can interpret TWFE and GMM estimates as unbiased and treatment effects estimates as causal.

Figure 1: Poverty Headcount Rate (at the \$1.90 Poverty Line) Before and After Democratization



### 3.2 Data and Descriptive Statistics

We use poverty data from the World Development Indicators (WDI) database which has also been used in various important studies (see Alvaredo and Gasparini, 2015; Chen and Ravallion, 2004, 2010, among others). Because poverty data is collected from individual household surveys in each country, the data is relatively sparse, especially in low- and middle-income countries. We use simple linear interpolation to fill the gaps between missing years.<sup>10</sup> This provides a large (unbalanced) sample of over 2200 observations in the baseline sample of around 145 countries covering the period 1981-2017 (see Table A12 in the Appendix for included countries).<sup>11</sup> The WDI contain multiple poverty measures (poverty headcount, poverty gap) at different poverty lines (\$1.90, \$3.20 and \$5.50) measured in international PPP dollars, and the Gini coefficient as inequality measure.<sup>12</sup> We use the poverty headcount rate at the \$1.90 poverty line as our main measure and check the sensitivity of our results to the poverty measure as a robustness check. GDP data come from the WDI as well.

To assess the effect of democracy on poverty we add multiple democracy dummies to this dataset. First, our main democracy dummy is taken from Acemoglu et al. (2019)'s dataset and extended until 2018 to increase sample size. This democracy dummy is coded as one when the polity2 score<sup>13</sup> from Polity IV (Marshall et al. 2014) is positive, and Freedom House considers it "Free" or "Partially Free". Otherwise, it is coded as zero. When one of these two sources is unavailable, the democratic status of a country is confirmed by the democracy measures from Boix et al. (2013), or Cheibub et al.

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<sup>10</sup> Linear interpolation increases our sample of poverty data from around 1600 observations to around 3400.

<sup>11</sup> Because of later use we define some notation here: we use  $n$  as the number of countries in the sample,  $T$  as the number of years in the sample and  $N$  ( $n \times T$ ) as the overall number of observations. In regressions  $N$  differs from  $36 \times 145$  because our panel is unbalanced.

<sup>12</sup> The poverty headcount indicates the fraction of population living below a defined poverty line (we mainly use 1.90\$ per day as the poverty line). The poverty gap on the other hand is a measure that indicates how far people are away from the poverty line on average. It is the sum of distances of incomes to the poverty line for all people below the poverty line, again normalized by the size of the population. Formally, it is expressed as  $PG = 1/N \sum_{i=1}^H ((z - y_i)/z)$ , where  $N$  is the size of the population,  $H$  the number of people living below the poverty line,  $z$  is the poverty line itself and  $y_i$  the income itself. See Foster et al. (1984).

<sup>13</sup> The polity2 index ranges from -10 to 10 (autocracy to democracy).

(2010). To check the sensitivity of our results to this democracy measure we use two other democracy measures to rerun our analysis. These are the dummies from Boix et al. (2013) and Cheibub et al. (2010).

For robustness checks we also use non-binary democracy measures. The measures we use are the polity2 index from Polity IV (Marshall et al. 2014) and the continuous democracy indices from Gründler and Krieger (2016, 2018), in addition to the SVM DI and the V-Dem polyarchy index from Coppedge et al. (2021). The SVM DI (Support Vector Machine Democracy Index) developed by Gründler and Krieger (2016, 2018) uses a support vector machines algorithm that detects patterns of democracy and translates it into a continuous measure for democracy – capturing a broad concept of democracy on a range between 0 and 1. The V-Dem polyarchy index captures the concept of electoral democracy based on country expert judgements who code them and is also standardized to a range between 0 and 1 Coppedge et al. (2021).

Table 1: Descriptive Statistics of Main Sample

	Non-democracies			Democracies		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
GDP per capita	707	2368.96	2148.19	1,534	14631.67	18004.63
Poverty headcount rate \$1.90	707	29.12	25.80	1,541	16.75	21.94
Poverty headcount rate \$3.20	707	49.17	30.14	1,541	28.83	30.39
Poverty headcount rate \$5.50	706	69.50	26.37	1,541	42.06	35.62
Poverty gap \$1.90	707	11.51	12.54	1,541	6.70	9.89
Poverty gap \$3.20	707	23.03	18.69	1,541	13.39	16.37
Poverty gap \$5.50	706	38.67	22.37	1,541	22.87	23.06
Gini	696	40.59	6.78	1,527	40.86	9.98

**Note:** See text for a full description of the variables and their sources. The sample is restricted to observations in column one of Table 2.

Table 1 shows the descriptive statistics for the main variables used in the analysis. They show that democracies have overall higher average incomes and less poverty by any measure compared to non-democracies. However, the average Gini coefficient is about the same, indicating that democracies are not necessarily more equal than non-democracies. Looking at the observations, we also see that data in non-democracies is scarcer than in democracies, stemming from poverty and inequality data rather than

the GDP data.

### 3.3 Dynamic Panel Estimates

We start from an simple equation that relates the level of poverty to the levels of income and inequality respectively, as can be found for example in Adams (2004):

$$\log H_{it} = \alpha + \beta \log \bar{y}_{it} + \gamma \log G_{it} + \varepsilon_{it} \quad (1)$$

where  $H_{it}$  is the poverty rate,  $\bar{y}_{it}$  is mean income (GDP p.c. in our case),  $G_{it}$  the Gini coefficient in country  $i$  in year  $t$ , all taken in their natural logarithm and  $\varepsilon$  is an unobserved error term.

However, since we want to assess the effect of democracy on the poverty rate, we add our democracy measure  $D_{it}$  to the equation. Additionally, we control for past levels of poverty, inequality and GDP, which might affect the selection into democracy, by adding lags of these to the equation.

$$\log H_{it} = \beta D_{it} + \sum_{j=1}^p \gamma_j \log H_{it-j} + \sum_{j=1}^p \delta_j \log \bar{y}_{it-j} + \sum_{j=1}^p \theta_j \log G_{it-j} + \alpha_i + \nu_t + \varepsilon_{it}, \quad (2)$$

where additionally to the notation above,  $D_{it}$  is the democracy dummy,  $\alpha_i$  denote country fixed effects which control for unobserved time-invariant heterogeneities between countries,  $\nu_t$  denote year fixed effects which control for unobserved country-invariant heterogeneities over time,  $p$  denotes the lags of poverty, GDP as well as inequality. The error term  $\varepsilon_{it}$  includes all other time-varying unobservable shocks to the poverty rate.

This specification relates the regime type (democracy/non-democracy) to the poverty rate, while addressing the possible dependence on poverty rates, inequality, and GDP in this relationship. Because the democracy dummy varies only between zero and one, the estimated coefficient captures the effect of regime changes (i.e. democratizations) on poverty the poverty rate. Since we only control only for past levels of GDP and

inequality, we leave the mechanism open that democracies impact poverty through changes in current inequality or growth.

Country fixed effects (FE) control for unobserved time-invariant heterogeneities between countries. Thus, they eliminate any unobserved differences that are time-invariant, that is, those that do not change over time; these could include different tax systems, law systems, etc. In a similar fashion, year FE control for unobserved country-invariant heterogeneities for specific years. They control for unobserved systematic shocks such as global recessions, price shocks that hit every country at the same time. Adding both country and year fixed effects results in the TWFE estimator.

### **3.3.1 Main Results TWFE**

One important assumption for dynamic panel models is sequential exogeneity. It requires that our main independent variable (democracy) and past values of poverty are independent of current and future shocks to poverty (our dependent variable) and that the error term is serially uncorrelated. This means we need to include enough lags of poverty to remove residual serial correlation in the error term and the influence of the decrease in poverty rates right before democratization as seen in Figure 1. This imposes the so so-called parallel trends assumption, that countries that transition to democracy are not on a different poverty trend relative to other countries with similar poverty levels in the previous years which are captured by lags of poverty and the level of long-run development captured by fixed effects. However, since the literature suggests that democratization may not only be dependent on past poverty but especially on GDP and to a lesser extent on inequality, we need to control for past levels of these factors, too, since they are likely to influence the likeness of countries to democratize.

Table 2: Main Results for the Effect of Democratization on Poverty Rates (\$1.90 poverty line) Using the TWFE Estimator

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Democracy	1.876 (2.681)	0.375 (2.319)	-1.185 (2.456)	0.137 (2.532)	-0.421 (2.326)	-1.784 (2.778)	0.221 (2.667)	-0.204 (2.439)	-1.576 (2.839)	2.081 (4.474)	13.564 (39.633)	-52.265 (63.417)
Poverty first lag	0.882*** (0.026)	0.887*** (0.060)	0.847*** (0.063)	0.863*** (0.026)	0.865*** (0.062)	0.821*** (0.065)	0.860*** (0.026)	0.858*** (0.064)	0.810*** (0.063)	0.980** (0.344)	0.459 (1.129)	0.123 (0.900)
Poverty second lag		0.080 (0.093)	0.010 (0.069)		0.080 (0.092)	0.010 (0.069)		0.092 (0.094)	0.019 (0.068)		0.424 (1.897)	0.471 (1.565)
Poverty third lag		-0.038 (0.087)	-0.013 (0.079)		-0.028 (0.087)	-0.003 (0.078)		-0.041 (0.086)	-0.016 (0.075)		1.289 (1.417)	0.281 (1.478)
Poverty fourth lag		-0.015 (0.052)	0.037 (0.072)		-0.017 (0.052)	0.039 (0.072)		-0.009 (0.054)	0.048 (0.077)		-1.159* (0.513)	0.101 (1.244)
GDP first lag				-0.259*** (0.073)	-0.500*** (0.184)	-0.681** (0.212)	-0.271*** (0.074)	-0.532** (0.195)	-0.779** (0.242)	-0.362 (0.481)	-1.237 (1.367)	-0.532 (1.094)
GDP second lag					-0.030 (0.176)	-0.020 (0.210)		-0.002 (0.198)	-0.010 (0.270)		2.178 (2.699)	1.826 (2.374)
GDP third lag					0.409* (0.187)	0.670** (0.254)		0.395 (0.204)	0.747** (0.275)		-0.747 (2.570)	-1.706 (2.492)
GDP fourth lag					-0.078 (0.158)	-0.309 (0.233)		-0.055 (0.168)	-0.357 (0.253)		-0.297 (1.022)	0.687 (1.933)
Gini first lag							0.056 (0.117)	0.368 (0.438)	0.190 (0.535)	-0.783 (1.172)	-2.677 (3.026)	-3.025 (2.855)
Gini second lag								-0.722 (0.571)	-0.189 (0.656)		6.067 (6.001)	7.109 (5.360)
Gini third lag								0.708 (0.447)	0.170 (0.603)		-2.406 (5.188)	-4.148 (5.028)
Gini fourth lag								-0.362 (0.263)	0.115 (0.481)		-0.989 (1.986)	0.116 (3.610)
Observations	2248	1811	1311	2239	1805	1309	2209	1778	1285	2209	1778	1285
Countries in sample	143	134	105	142	133	104	141	132	103	141	132	103
p-value poverty lags 5 to 8			[0.903]			[0.873]			[0.898]			[0.096]
p-value poverty lags 5 to 8						[0.477]			[0.417]			[0.457]
p-value poverty lags 5 to 8									[0.813]			[0.375]

**Note:** This table presents the results of the effect of democracy on the poverty headcount ratio. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects. Columns 3, 6, 8 and 12 include 8 lags of poverty as controls but we report only the p-value of a joint significance test for lags 5 to 8 in the lower part of the table. Columns 10-12 include additional interaction terms between democracy and one lag (column 10), 4 lags (column 11) and 8 lags (column 12) of poverty GDP and inequality but coefficients are not shown. Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\*p<0.05, \*p>0.1.

Including several lags allows us to control for the influence of past levels of poverty, GDP and inequality on the likeliness of democratizations. Under this assumption, Table 2 shows the main results using the TWFE estimator. In columns 1-3 we control for different lags of poverty; in columns 4-6 we additionally control for lags of GDP; in columns 7-9 we add controls for inequality and in columns 10-12 we add interaction terms between democracy and lags of poverty, GDP and inequality (the coefficients are not reported in Table 2 but are in Table A1 in the Appendix).

With these estimations considered, democracy has no significant effect on the poverty headcount rate.

Apart from this, in column 1 – where we control for the first lag – poverty is highly significant indicating that poverty rates are highly persistent over time indicated by the coefficient close to one. The first lag of poverty is also significant in columns 2 and 3 where we add more lags. In column 2, we include four lags to control the decrease in poverty rates in the years before democratization seen in Figure 1. Lags two to four are not significant. In column 3 we include eight lags. We do not report the coefficients but only the p-value of a joint significance test for lags five to eight which shows they are jointly not significant.

We include one lag of poverty and one lag of GDP in column 4, four lags of both in column 5 and 8 lags of both in column 6. This same pattern is repeated in columns 7-9 when we add inequality lags. Estimates show that past GDP lags are especially important factors influencing current poverty rates, as the first lag of GDP is significant in all regressions in columns 4 to 8 and the third lag is also significant in three out of four regressions included. On the other hand, inequality does not play an important role as the Gini coefficient is not significant in any of the specifications.

Because past poverty, GDP levels and inequality could each affect poverty on their own, but could also be reinforced by the level of institutions, we add interaction terms in columns 10-12. Specifically, in column 10 we add six interaction terms: the interactions of democracy with lagged poverty, with lagged GDP and with lagged inequality as

well as the interaction of poverty with GDP, the interaction of poverty with inequality and the interaction of GDP with inequality. In the same pattern as before, we add four lags of all terms in columns 11 (amounting to 24 interaction terms) and 8 lags of all terms in columns 12 (amounting to 48 interaction terms). Overall, they do not change the insignificance of the democracy coefficient. Additionally, coefficients of poverty and GDP lags that were significant before lose their significance; indicating that these interaction terms capture some of the dynamics that are otherwise captured by the simple lags. In Table 2 we do not report the coefficients themselves to save space, but we report them in Table A1 in the Appendix. It reveals that most interaction terms are not significant. The only significant interaction terms are that of democracy with the first lag of poverty and the first two lags of inequality, as well as the first and third lag of poverty and GDP. They show that past poverty rates and past inequality in current democracies do matter for current poverty rates but in current nondemocracies they do not. This confirms that they influence democratization itself. Furthermore, the significant interaction terms between poverty and GDP show that these two reinforce each other in reducing poverty, even though the magnitude is rather small.<sup>14</sup>

### **3.3.2 Main Results Arellano and Bonds' GMM Estimator**

The TWFE estimator of the dynamic panel model shown in Table 2 can suffer from Nickel Bias in the order of  $1/T$ , also called “small panel bias”, which results in the failure of strict exogeneity (Nickell, 1981). In the TWFE estimations shown in Table 2 each country is observed around 15 times which results in a potential bias of  $1/15 = 6.66\%$  which is not neglectable. Therefore, we use Arellano and Bond's GMM estimator which deals with this bias (Arellano and Bond, 1991).

We also report the p-value of an AR2 test for serial correlation in the residuals for GMM estimations in Table 3. This is necessary because the GMM estimator uses first differences of the independent variables in the model as instruments and the absence

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<sup>14</sup> Lastly, the coefficient of democracy becomes very large in size (e.g. column 12) and changes its sign in column 3. This might indicate that estimates become unstable because of high cross-correlation between variables included.

of serial correlation between the residuals of these differences is required for consistent estimation. The p-value is larger than 0.1 throughout all estimations, indicating that we cannot reject the null of no serial correlation in the residuals. This indicates that our specification adequately controls for the past dynamics of poverty, GDP and inequality.

Lastly, one drawback of Arellano and Bonds' GMM estimator is that the number of instruments used increases with  $T^2$  and therefore the number of instruments becomes fairly large and introduces as bias in the order of  $1/N$  in GMM estimates. However, we argue that this bias is fairly small in our case since we have on average only 15 observations per country. The bias depends on the size of the beta coefficient and is only substantial for "large positive beta" coefficients. Hahn et al. (2007) perform Monte Carlo simulations to give a sense of the size of this bias. For a panel of ten time periods and 500 observations (which comes closest to our panel size), they report a bias of -3.15% for a (small) beta with size 0.1 and a -8.74% bias for a (large) beta with size 0.9. Our significant coefficients for the first poverty lag would be a "large beta" and would therefore carry a slightly larger bias than the ones for the first GDP lag which would be "small betas" and therefore carry a rather small bias. Furthermore, our sample size (T and N) are larger than the reference values cited above reported by Hahn et al. (2007) which means that the actual bias in our estimates should still be smaller than that (but not zero).<sup>15</sup>

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<sup>15</sup> GMM methods use so-called internal instruments because they instrument with the lagged differences of the independent variable. Another approach would be to use a "external" instrument, i.e. to find a exogenous source of variation to instrument the democracy variable. The advantage is that it can deliver unbiased results even in presence of omitted variables that may affect poverty and democracy at the same time and it diminishes possible measurement in the measurement of democracy. Acemoglu et al. (2019) provide such an instrument based on regional waves of democratization. We used this instrument to for instrumental variable estimations, but the instrument turned out to be too weak, with KP F-statistics being way below 10. This might be the results because of the smaller sample we use starting in the 1980s while Acemoglu et al. (2019)'s sample starts in 1960 which means the can exploit 20 more years of regional democratization.

Table 3: Main Results for the Effect of Democratization on Poverty Rates (\$1.90 poverty line) Using the Arellano and Bond GMM-Estimator

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Democracy	3.533 (3.393)	2.354 (3.144)	-1.625 (2.998)	1.813 (3.145)	1.153 (3.142)	-2.018 (3.377)	1.322 (3.429)	0.956 (3.153)	-1.091 (3.420)	3.671 (4.465)	63.428 (55.996)	-118.266 (62.398)
Poverty first lag	0.834*** (0.030)	0.799*** (0.060)	0.826*** (0.061)	0.823*** (0.028)	0.787*** (0.060)	0.802*** (0.062)	0.804*** (0.030)	0.789*** (0.062)	0.794*** (0.061)	0.683* (0.319)	0.018 (1.194)	-0.239 (0.949)
Poverty second lag		0.091 (0.086)	0.010 (0.068)		0.089 (0.086)	0.007 (0.067)		0.093 (0.088)	0.020 (0.066)		0.821 (1.823)	0.640 (1.469)
Poverty third lag		-0.048 (0.078)	-0.004 (0.079)		-0.038 (0.079)	0.005 (0.078)		-0.048 (0.079)	-0.007 (0.074)		1.352 (1.399)	0.511 (1.377)
Poverty fourth lag		0.027 (0.050)	0.036 (0.072)		0.021 (0.050)	0.042 (0.072)		0.028 (0.052)	0.048 (0.076)		-1.132 (0.607)	0.190 (1.215)
GDP first lag				-0.225* (0.092)	-0.513** (0.195)	-0.822*** (0.230)	-0.273** (0.096)	-0.576** (0.206)	-0.791** (0.254)	-0.736 (0.598)	-2.331 (1.298)	-0.923 (1.000)
GDP second lag					0.012 (0.169)	0.046 (0.203)		0.054 (0.192)	-0.003 (0.263)		3.376 (2.676)	1.853 (2.244)
GDP third lag					0.344* (0.169)	0.633** (0.245)		0.319 (0.186)	0.722** (0.265)		-0.982 (2.618)	-1.758 (2.286)
GDP fourth lag					-0.088 (0.153)	-0.256 (0.232)		-0.037 (0.158)	-0.345 (0.246)		-0.525 (1.143)	0.943 (1.759)
Gini first lag							0.344* (0.164)	0.212 (0.470)	0.194 (0.507)	-1.466 (1.366)	-5.103 (3.085)	-4.021 (2.673)
Gini second lag								-0.489 (0.602)	-0.217 (0.641)		8.556 (5.950)	6.951 (5.110)
Gini third lag								0.637 (0.427)	0.188 (0.589)		-3.128 (5.190)	-3.929 (4.643)
Gini fourth lag								-0.403 (0.290)	0.087 (0.476)		-1.111 (2.412)	0.779 (3.359)
AR2 test p-value	0.40	0.29	0.78	0.41	0.30	0.81	0.42	0.33	0.72	0.44	0.26	0.49
Observations	2095	1673	1205	2087	1668	1204	2058	1642	1181	2058	1642	1181
Countries in sample	137	125	101	136	124	101	135	123	100	135	123	100
p-value poverty lags 5 to 8			[0.948]			[0.843]			[0.859]			[0.125]
p-value poverty lags 5 to 8						[0.438]			[0.361]			[0.376]
p-value poverty lags 5 to 8									[0.731]			[0.366]

**Note:** This table presents the results of the effect of democracy on the poverty headcount ratio. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects. The AR2 row reports the p-value of a test of serial correlation in the residuals of the poverty series. Columns 3, 6, 8 and 12 include 8 lags of poverty as controls but we report only the p-value of a joint significance test for lags 5 to 8 in the lower part of the table. Columns 10-12 include additional interaction terms between democracy and one lag (column 10), 4 lags (column 11) and 8 lags (column 12) of poverty GDP and inequality but coefficients are not shown. Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\*p<0.05, \*p>0.1.

Table 3 mirrors Table 2 but shows results for the GMM estimator. The main results stay the same: democracy has no significant impact on poverty reduction, but the first lags of poverty and GDP do significantly impact poverty rates. Estimates for poverty are slightly smaller and estimates for GDP are slightly larger in magnitude. The only difference is that the first lag of inequality is significant in regression of column 7, indicating that higher inequality leads to higher poverty rates, which is the expected result based on the literature. However, the significance of inequality vanishes in regressions of columns 8-12. Looking at the interaction terms in Table A1 in the Appendix shows broadly the same results as the TWFE estimations. Overall, the GMM estimations show that the Nickel bias is rather small in our case.

The significance of lags of growth and inequality is in line with the literature and the expected direction. Several authors report that higher GDP growth leads to lower poverty and higher inequality leads to higher poverty (Adams, 2004; Alvaredo and Gasparini, 2015; Fosu, 2017). However, in our estimations the influence of inequality is less pronounced, likely because we use a lagged specification rather than a contemporaneous one.

Since we specify our model in terms of log variables, we can interpret the coefficients in terms of percentage changes. The TWFE and GMM estimations estimate the first lag of poverty between 0.683 and 0.98, which means a one percent increase in the poverty rate in the previous year leads to 0.68-0.98% increase in poverty contemporaneously. This underlines the high persistence of poverty over time. Similarly, a one percent increase in GDP p.c. in the previous year decreases the poverty rate by 0.23 to 0.79 percent. The Gini coefficient is significant in only one GMM estimation (Table 3 column 7) which indicates that a one percent increase in inequality in the previous year leads to a 0.34 percent increase in contemporaneous poverty.

In summary, in dynamic panel estimates we do not find poverty rates to be significantly higher nor lower in democracies compared to non-democracies. This also means that democracies do not affect poverty indirectly by means of higher growth or more

redistribution. Theory suggests that democracies could be captured, increase market opportunities which in turn increase inequality and prevent poverty reduction, or that redistribution in democracies goes to the middle class, not towards the poor. Furthermore, regression estimators could be too restrictive in terms of the timing of the effect and assumed linearity to capture the effect properly.

### **3.3.3 Robustness Checks**

We run a number of robustness checks that address different poverty lines (Table A2), different poverty measures (Table A2), democracy measures (Table A3), restrictions to subsamples (Table A4) and different lengths of panel spells (Table A5). Overall, they do not systematically differ from baseline results, therefore we place the respective tables in Appendix and address the results here briefly.

#### **Poverty lines**

Descriptive statistics in Table 1 show that poverty rates differ quite largely when using higher or lower poverty lines. Using the main poverty line of \$1.90, the average poverty rate in the sample is 29% in non-democracies and 16% in democracies. At the higher poverty line of \$3.20, (i.e., everyone earning less than \$3.20 a day counts as poor) the average poverty rate is 49% in nondemocracies and 28% in democracies. Table A2 shows only the democracy coefficients of TWFE and GMM regression that mirror Tables 2 and 3. The upper part the table shows that results are somewhat insensitive to the used poverty line. The democracy dummy stays insignificant throughout. Thus, the results are not systematically different from the main results.

#### **Poverty measures**

Other poverty measures define poverty in a different way. The measure used in the main results simply counts the number of poor persons in a country. Alternative measures, such as the poverty gap, additionally take into account how poor these poor persons are. Descriptive statistics in Table 1 show that these also differ quite substantially compared to the main measure used. The poverty gap also differs substantially

between democracies and nondemocracies, with the latter having almost twice as large poverty gaps.

The lower part Table A2 shows whether the main results are sensitive to that. Again, Table A2 shows only the democracy coefficients of TWFE and GMM regression that mirror Tables 2 and 3. The results support our main results in that democracy also does not affect poverty when measured by the poverty gap (at different poverty lines). Thus, the used poverty measure does also not systematically drive the main results.

### **Democracy measures**

Although the democracy measure of Acemoglu et al. (2019) reduces measurement errors it does not completely eliminate possible errors. A dichotomous coding of a polity into democracy/non-democracy or democracy/dictatorship is associated with some amount of arbitrariness when making these coding decisions. Hence, the measurement error has the potential to be quite large which increases the uncertainty around the measured coefficients. We check whether results are sensitive to the measurement error of one specific democracy measure by re-estimating main results with the democracy dummies from (Boix et al. 2013, abbr. as BMR) and (Cheibub et al. 2010, abbr. as CGV)). Table A3 in the Appendix reports the coefficients for the democracy measure only of regressions corresponding to Table 2 and 3, i.e. controlling for different numbers lags of GDP, poverty and inequality as indicated in the lower part of the table. The upper part of the table shows TWFE and GMM estimations for the BMR measure and the lower part for the CGV measure. Only two regressions, FE and GMM regressions with the CGV measure and one lag of all three covariates, show a significant effect of democracy on poverty rates. Here, democracy would decrease poverty rates by 5.2-6.8%. All other specification supports the main results in finding no effect of democracy on poverty.

### **Subsamples**

Adams (2004), Fosu (2010, 2017), and Kalwij and Verschoor (2007) find geographical heterogeneities in poverty elasticities. Thus, in robustness checks shown in Table A4,

we restrict the sample to different country groupings compared to main results, which applies no sample restrictions at all. The table shows the regression corresponding to column 8 in the main results, including 4 lags of poverty, GDP and inequality for the subsamples of LDCs (column 1), for non-LDCs (column 2), low- and middle-income countries (LMICs, column 3) and high-income countries (HICs, columns 4) using the TWFE estimator. Column 5-8 repeat the same specification and sample restriction using the GMM estimator.

Throughout columns 1 to 8, the reported democracy dummy is not significant, indicating that the effect of democracy on poverty does not depend on these subsamples. This agrees with the finding of Acemoglu et al. (2019) who find that the democracy effect (on growth) does not depend on income level.

### **Panel length**

In the way we set up our dynamic panel model, democratization is assumed to affect poverty rates within the same year. However, the effect might not be that immediate but take some time – especially if poverty reduction works through changes in the income distribution or social insurance rather than direct transfers to the poor that affect poverty rates more quickly. To allow the effect some more time, we construct a 5-year panel instead of using annual data by using only every fifth observation in our annual dataset. We use this method instead of taking 5-year averages of all variables – as is often seen in the literature – to avoid serial correlation problems within those averages. Table A5 in the Appendix shows estimation results for the TWFE estimator in the upper part of the table, and GMM estimator in the lower part of the table. We include specifications with one and two lags of poverty, GDP and inequality, which mean in this case that we use observations from 5 years prior and 10 years prior. The results show that our main results are not driven by using an annual dataset. The coefficient for democracy is insignificant throughout. The persistence of poverty is

similar to the annual dataset, while GDP seems less persistent in this setting.<sup>16</sup>

### **Non-binary regime measures**

Because we expect that some measurement error remains when using binary democracy which might result in large standard errors, we explore whether non-binary regime indicators yield different results.

We show results in the same pattern as the main results but add regressions that control for lags of democracy. Since we do not use a binary measure anymore, we cannot rely on regime change shocks to identify changes in political institutions. Rather, these continuous measures show, by their nature, more gradual. Therefore, we need to control for past levels of institutions since they are likely to influence current levels of institutions and poverty rates. We report estimates for the polity2 index in Table A6 (TWFE) and A7 (GMM), for the V-Dem polyarchy index in Table A8 (TWFE) and A9 (GMM) and for the SVMDI in Table A10 (TWFE) and A11 (GMM).

Tables A6 and A7 paint a similar picture as the main results in Tables 2 and 3. Democracy as measured by the polity2 index is not significant. Lags of poverty and GDP are significant influences on poverty rates, but lags of inequality are not. Furthermore, the added regression that controls for past levels of democracy suggest that poverty rates do not depend on past institutions. Tables A8 and A9, using the V-Dem polyarchy index as a democracy metric, largely confirm this; although, one specification in column 10 of Table A8 controlling for one lag of democracy, poverty, GDP and inequality suggests democracy reduces the poverty rates by about 22% percent. However, this is not robust to adding more lags or using the GMM estimator in Table A9. Tables A10 and A11, using the SVMDI as democracy measure also confirm this evidence. When controlling for 4 and 8 lags of democracy, FE results suggest that democracy has a significant effect on poverty rates. GMM estimates that control for 8 lags of democ-

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<sup>16</sup> The GMM estimations in columns 6 and 8 have extremely low sample sizes and should therefore not be taken at face value. Furthermore, to allow even more time to let democratization affect poverty rates, we also ran specifications where we used the 5-year panel set-up and lagged all independent variables one period, i.e. democracy by one period, poverty, GDP and inequality by two and three periods. Results are not shown for the sake of brevity, but results do not differ from those shown in Table A5.

racy suggest the same. These significant coefficients suggest that democracy reduces poverty rates between 9.3 and 11%. However, this result is not robust for the other lag structures.

The results with continuous democracy measures are not robust enough to refute our main findings that the effect of democracy on poverty is not significant. Thus, the main results are not driven by using a dichotomous measure of democracy.

### **3.4 Treatment Effects Estimates**

As a second major approach we follow Acemoglu et al. (2019), and calculate treatment effects of democratization. There are several advantages compared to regressions. First, it does not rely on the assumption of a linear relationship between poverty and democracy which therefore allows for more flexibility. Secondly, it allows for the possibility that countries revert back to nondemocracy over time. Thirdly, it does not suppose that the effect of transitioning to and away from democracy has the same size (as TWFE does). Most importantly, it does not restrict the time pattern of the effect. In TWFE estimates, the assumption is that the effect occurs within the same time period and the long-run effect is then extrapolated from this. Treatment effects estimates directly calculate long-run effects which allows for effects taking a longer time to show up in the data. This also makes sense economically. While some mechanisms might affect poverty rates immediately (public good provision, direct transfers through tax credits or programs such as food stamps), others might take a longer time and take effect only after several years (e.g. increased incomes due to higher human capital).

The estimation equating is given by

$$\beta^s = E(\Delta H_{it}^s(1) - H_{it}^s(0) | D_{it} = 1, D_{it-1} = 0), \quad (3)$$

where  $\beta^s$  is the causal effect of a transition of democracy at time  $t$  on the poverty headcount rate  $s$  years after the democratization,  $H_{it}^s$  is the change in the poverty rate

between the year of democratization and  $s$  years afterwards. The equation expresses the change in the poverty rates between the year of democratization and  $s$  years afterwards between countries that democratized and countries that remained a non-democracy.

Although the calculation of treatment effects does not rely on a parametric process of poverty itself, it is necessary to specify a model to adjust for non-random selection into democracy. The potential issue is that countries that democratize might be different than countries that do not. This difference can be modeled by conditioning on past values of poverty, GDP and inequality, since they might influence the selection into democracy and the assumption that among non-democracies there are no other confounding factors that influence the likeliness to democratize and that are related to subsequent poverty reduction. This assumption is similar to the assumption for TWFE estimations and GMM estimations where we conditioned on past lags of poverty, GDP and inequality to remove the influence of these factors before democratization. The treatment effect estimations impose that either omitted characteristics that affect both the likelihood of democratizations and poverty (such as the decrease in poverty seen in Figure 1) are fully captured by including lags of poverty, or that any such omitted characteristics are common to all non-democracies at time  $t-1$  (e.g. institutional features in non-democracies), so that the countries that democratize are not on a different trend relative to other non-democracies with similar levels of poverty in the recent past.

Following Acemoglu et al. (2019), we use two alternative approaches to estimate treatment effects (treatment effects on the treated; ATET). The first one uses linear regression with past levels of poverty, GDP and inequality (4 lags) and fixed effects for non-democracies to form a counterfactual for countries that to transition to democracy (Acemoglu et al. 2019; Jordà, 2005; Kline, 2011). Although the selection into democracy is modeled by a linear regression, the effect itself is not modeled linearly because it is calculated for each  $s$  individually. In other words, the regression adjustment estimator models the outcome (the poverty level) to account for non-random treatment assignment.

The second approach estimates the effect of democratizations on poverty by conditioning on the propensity score for transitioning to a democracy (Acemoglu et al. 2019; Angrist and Kuersteiner, 2011; Angrist et al. 2018), which is in turn modeled by a probit regression on fixed effects and 4 lags of poverty, GDP and inequality. The counterfactual is then estimated by weighting with the inverse propensity score (Hirano et al. 2003). This weighting scheme gives higher weight to countries that are likely to democratize according to their propensity score but remained a non-democracy and had similar dynamics in poverty, GDP and inequality as democratizers to match the countries that democratized as closely as possible. Put differently, the inverse probability weighting estimator models the treatment to account for non-random treatment assignment.

Figure 2 shows the estimates of  $\beta^s$  using the regression adjustment and Figure 3 using the inverse probability weighting approach. The estimates for the years before democratization should not be affected by subsequent democratization and are included to check whether the specification can successfully control for the dynamics of poverty, GDP and inequality before democratization (e.g. the large decrease in poverty rates in the years before democratization visible in Figure 1 should not be visible here). The solid line shows the point estimates, and the dashed lines show the 95% confidence intervals based standard errors from 100 bootstrap replications clustered on the country level.

Figure 2 shows that before democratization there is no increase nor decrease in poverty rates; indicating that the estimation procedure successfully controls for the dynamics in poverty rates in the years before democratization. After democratization, point estimates indicate a lower poverty headcount rate in democracies of about 15% after 5 years, and about 17% after 10 and 15 years and an around 40% higher poverty rate after 20 years. However, 95% confidence intervals suggest this effect is not significant at any point after democratization. After 15 years confidence intervals become very large (both in Figures 2 and 3) which is in part due to smaller sample sizes for estimations with longer time frames.

Figure 2: Estimate of the Treatment Effect of Democracy on the Poverty Headcount Rate Using a Regression Model to Estimate the Counterfactual

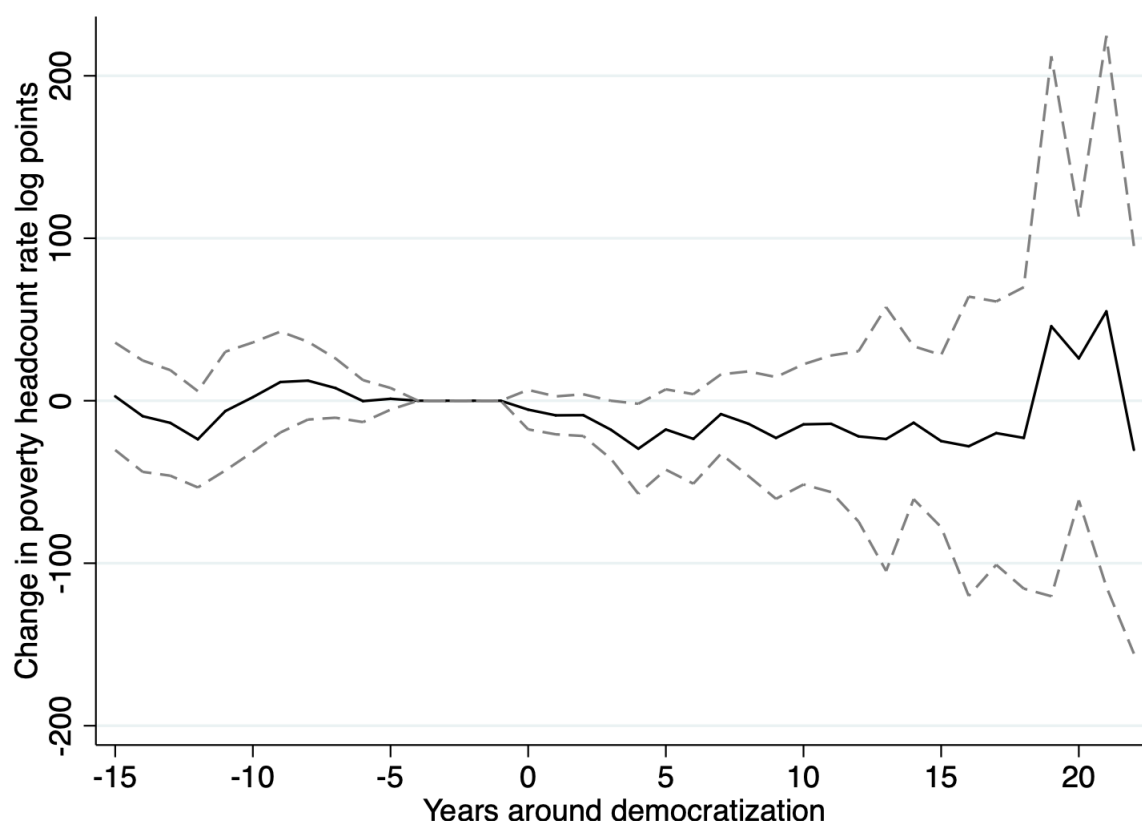
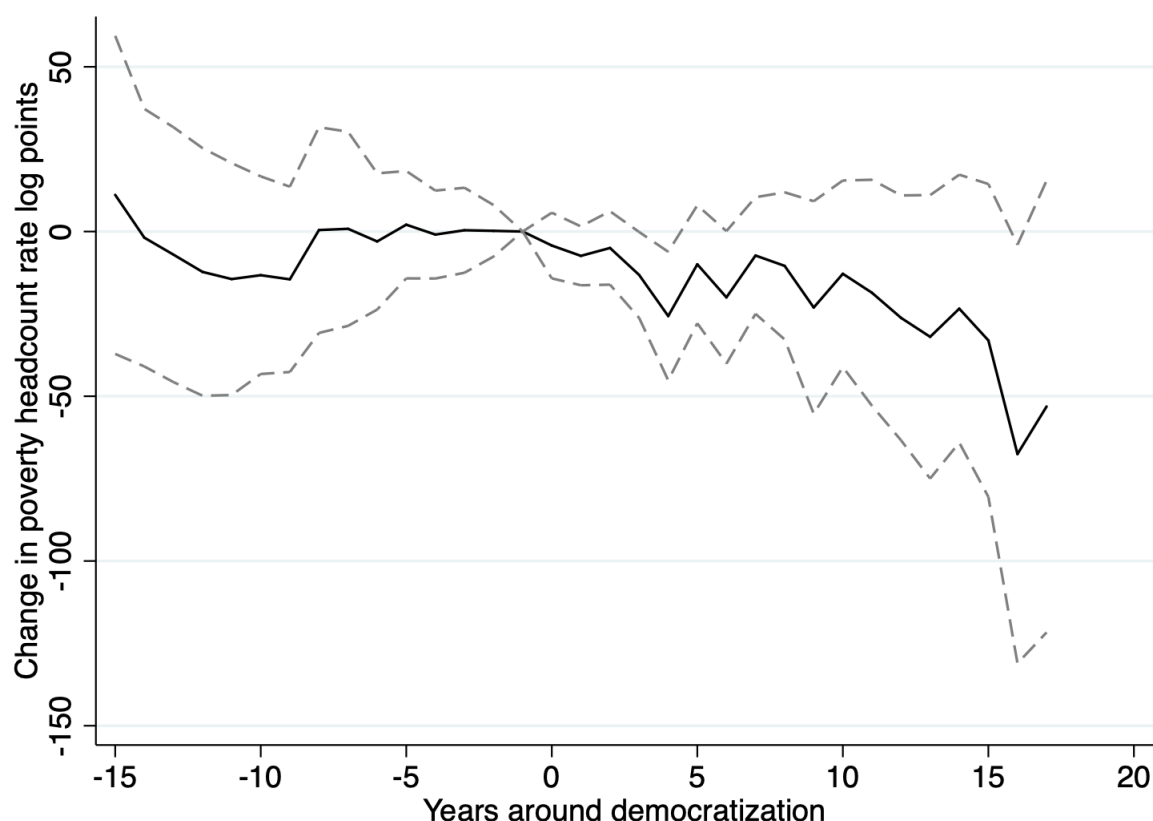


Figure 3 shows estimates of  $\beta^s$  using the second approach (inverse probability weighting based on propensity scores). The downward trend of decreasing poverty rates is even more pronounced as in Figure 2. Poverty rates in democracies are round 25% lower after 5 years around 23% lower after 10 years, around 23% lower after 15 years. After that, points estimate of poverty rates decline steeply suggesting a very large decrease of poverty. However, as in Figure 2, 95% confidence intervals suggest this effect is not significant throughout, especially after 15 years and later confidence intervals become very large.

Overall, this supports evidence from estimations of dynamic panels models shown above, that democratization does not have a significant impact on poverty reduction.

However, when we recalculate Figures 2 and 3 with 90% confidence intervals (see Figure A1 and A2 in the Appendix), we see some significant effects for the first five

Figure 3: Estimate of the Treatment Effect of Democracy on the Poverty Headcount Rate Using Inverse Propensity Score Weighting



to ten years after democratization. This is supported by Table 4, where we report the average effects we see in Figures 2 and 3 in 5-year intervals (i.e., for the first 5 years after democratization, years 5-9 after democratization and so on) with their respective bootstrapped standard errors. These estimates propose that poverty rates are significantly lower at the 95% level in the 5 years after democratization using the regression adjustment and significantly lower for up to 19 years using inverse probability weighting. These estimations suggest that poverty rates decrease between 11 and 14 percent in the first five years after democratization and around 14% in the second five-year interval, over 20 percent in years 10-14 and around 50% after about 20 years. However, these estimations are not very robust since the regression adjustment estimations do not confirm this. Nonetheless, we take this as a small suggestion that new democracies are likely to decrease poverty rates. There are several reasons why

Table 4: Estimates of the Effect of Democratization on the Poverty Headcount Rate for Different Time Horizons

Average Effects from	(1) -5 to -1 years	(2) 0 to 4 years	(3) 5 to 9 years	(4) 10 to 14 years	(5) 15 to 19 years	(6) 20 to 22 years
Panel A: Regression Adjustment						
Average effect of democracy on log poverty	0.237 (0.680)	-14.135** (6.502)	-17.293 (13.847)	-17.551 (23.705)	-9.958 (36.947)	16.949 (47.443)
Panel B: Inverse Probability Weighting Adjustment						
Average effect of democracy on log poverty	0.352 (4.867)	-11.090** (4.985)	14.142* (10.238)	-22.598* (17.371)	-51.232* (28.341)	

**Note:** This table presents treatment effects estimates of democratization on the log poverty headcount rate (non-parametric) for different time horizons using regression adjustment and inverse probability weighting to account for selection into democracy (parametric). We report estimates of the average effect on the treated (ATET). Robust standard errors in parenthesis obtained via bootstrapping. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p > 0.1$ .

we are rather optimistic about this. First, these treatment effects estimates include countries where democracies might have reverted to a non-democracy at some point. While TWFE and GMM estimations capture a permanent transition effect, Kapstein and Converse (2008) have shown that they often reverse. Thus, we would consider these estimations as “lower bounds” since they would likely be larger when countries transition permanently. In addition, there may be other drivers of poverty that are relevant in the long run.

Second, data availability is still a major constraint. The longer the time horizon, the less instances of democratic transitions are available to estimate  $\beta^s$ . For example, for 5 years after democratization,  $\beta^s$  is estimated with 23 instances of democratization but to calculate  $\beta^s$  for 15 years after transition, there are data from only 12 instances.<sup>17</sup> Naturally, the standard errors are large, especially for the estimations for longer time horizons, making identification of the effect more difficult.

## 4 Discussion

In this section we discuss our results in relation to the literature. The previous empirical literature has not yet analyzed this relationship between democratization and poverty rates directly; therefore, we can draw no direct comparison of our estimations to others. Our empirical results suggest that a mix of forces are at play. It is likely that many democracies redistribute income, decrease inequality, and enact pro-poor

<sup>17</sup> The data for the control is 426 observations for 5 years after and 172 15 years after. 10 years after democratization there are 17 transitions and 286 non-transitions. 20 years after there are 5 transitions and 92 non-transitions.

policies at least to some extent so that poverty rates decrease more compared to non-democracies. On the other hand, as anecdotal evidence suggests, many democracies are also plagued by corruption, the influence of rich elites, or the middle-class using their electoral power to redistribute incomes and wealth to themselves.

One might argue that the non-effect in TWFE estimates is due to reversal in democracy. Kapstein and Converse (2008) indicate that many democracies revert, which could also be a reason for a non-effect. When democratizations occur in a volatile situation, no matter if politically or economically, redistribution might not even be a viable policy option because the government is focused on stabilizing the situation. However, if this would be the case, we would see the insignificance in treatment effects estimates rather than TWFE estimates, since the former includes reversal in the sample and the latter does not. Therefore, we are confident that reversals do not drive our results.

Some part of the literature argues that democracy and human capital are highly correlated (Acemoglu et al. 2019; Doucouliagos and Ulubaşoğlu, 2008; Tavares and Wacziarg, 2001), i.e. that the effect of democracy is channeled through human capital. We argue that our results do not depend on human capital. Since we do not control for human capital, we leave the possibility open that it affects poverty rates indirectly.

Many authors highlight country heterogeneity in processes of democratization and institutional change (Bermeo, 2009; Bourguignon, 2004; Colagrossi et al. 2020) which can cause the non-significance in TWFE estimations. This means that although we might be able to identify shocks in political institutions (of electoral democracy) by changes in the democracy metric we use, simultaneous changes in other political institutions, economic institutions and society in general are heterogeneous in a way that may not allow for generalizations from political institutions towards poverty reduction. Similarly, Varshney (2005) argues that heterogeneity within dictatorships is high - they have the best and worst track records in poverty reduction while democracies lie somewhere in the middle. This underlines that heterogeneity in institutions might cause the non-effect. Bourguignon (2004, p. 17) argues that “social conflict and

political stability are other channels which relate inequality to efficiency or growth.” This further points toward other institutional aspects (that are not in the scope of our analysis) playing a role for poverty reduction.

According to Acemoglu et al. (2015), democratization increases the share of GDP and population not in agriculture, and secondary school enrollment. This indicates that democratization does trigger structural transformation in the economy. The effect of democratization on poverty still being absent indicates that this structural transformation does not trigger higher wages or redistribution towards the poor but is rather likely to put pressure on people with low wages. Their finding that democratization increases inequality in places with lower share of population in agriculture corroborates this. Thus, structural transformation may induce expansion of opportunities that counteract any redistribution.

Acemoglu et al. (2015) investigate several further channels through which poverty rates could be affected indirectly. They find that democratization increases government taxation and revenue as fraction of GDP, confirming the previous literature. This points towards a lack of changes redistribution and pro-poor policies and would rather suggest that the increased government revenue funds public goods or other programs that benefit the middle-class or richer segment of society rather than the poorer part. Additionally, in support of our findings, Acemoglu et al. (2015) find no effect of democratization on inequality (while the previous literature is ambiguous). However, they do find some evidence that democratization in the presence of powerful land-elites increases inequality, and that democracy redistributes from the rich and the poor to the middle. That is, the effect on inequality may depend on the relative position of the middle class relative to the poor.

This is rather strong evidence that rules out one channel through which democratization can impact poverty rates (namely changes in the income distribution) which might be a possible reason for our results. Dorsch and Maarek (2019) qualify this non-result of inequality on democratization. They show that the inequality effect of democratization

is dependent on the level of inequality before the transition. Non-democracies with high level of inequality tend to decrease inequality afterwards while non-democracies with low levels of inequality tend to increase inequality. Thus, democracies tend to take the middle ground and are not unequivocally pro-poor.<sup>18</sup> This supports the view, that democracies do not unconditionally redistribute to the poor such that poverty rates decrease. Perhaps, as Bermeo (2009, p. 26) puts it: “democratization is not a redistribution game at all – that is, it is not about ‘whether the median voter can soak the rich’ but rather ‘about whether all voters can obtain impartial protections from the state against violations of contracts and property rights.’”

Lastly, Acemoglu et al. (2015) survey of the literature finds positive effects of democratization on education expenditure and enrollment rates and health outcomes in terms of higher life expectancy, calories consumed and less infant mortality – although much of literature does not properly account for endogeneity as argued by Acemoglu et al. (2015) or Ross (2006). Notwithstanding, this and higher government revenues (as argued above) are evidently not enough to effectively reduce poverty in democracies. The literature suggests that redistribution in democracy seems too weak to counter possible inequality increasing effects and reduce poverty rates more than in non-democracies. However, these results rely on estimates that require a rather immediate change in outcomes after the events of democratization. Thus, we want to point out again that our treatment effects estimates, which allow for medium- for long-run effects; suggest that the democracies are not completely ineffective in tackling poverty (in the medium-run). They also suggest that long-run effects are difficult to estimate with the given data.

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<sup>18</sup> They take this as evidence that democratization does not lead to fiscal redistribution as suggested by theory. They show that democratization leads to different kinds of structural reforms, depending on the initial degree of inequality. In high inequality countries, democratization leads to an increase in the states’ fiscal capacity and provision of pro-poor public goods. In low inequality countries, democratization leads to economic liberalizations and opening of the economy, which might lead to increases in inequality and enrichment of upper segments of society (see Dorsch and Maarek, 2019, p. 3). Based on their reasoning, we also estimated a similar specification (not shown) that include the interaction terms of democracy and inequality, and democracy and poverty to account for possible non-linearities (dependence on the initial levels) in the relationship. We were not able to reproduce their main findings that democracy and inequality are significant after including their interaction nor when replacing inequality by poverty in this relationship, accounting for non-linearities in poverty reduction.

Although other authors find positive effects of democratization on education expenditure, school enrollment rates, higher life expectancy, infant mortality as well as tax revenue, this does not seem to be enough to unequivocally reduce poverty in democracies. The most plausible explanation is that democratization does not lead to sufficient changes in income redistribution and the implementation of pro-poor policies.

## **5 Conclusion**

We examined the question of interrelatedness between regime types in the form of democracy and non-democracy and poverty reduction. The relevance of this question stems from the importance of poverty reduction for the global development agenda as embodied by the Sustainable Development Goals as well as some discontent in recent years with the liberal international order and the democratic principles it is based on. Specifically, we wanted to find out whether countries with democratic institutions are better at poverty reduction than non-democracies. This research is especially valuable against the background of poverty reduction and the important goal of the development agenda, foreign aid often being conditioned on democratic intuitions in the form of good governance, and the diminishing public resistance to let democratic norms and practices slide.

Our contribution to the literature is that we are the first who analyze the dependence of poverty reduction on different types of political institutions (democratic and non-democratic ones) and support this with rigorous empirical work to estimate unbiased correlations and causal effects.

Our theoretical framework relates democratizations to considerations on poverty, wealth redistribution and poverty. Overall, theory is ambiguous about the impact on poverty. Positive impacts might occur when democratic institutions encourage redistribution to the lower part of the income distribution, lift barriers for economic activities for poor people and allow broad society access to institutions and to the mechanisms that determine these institutions. Negative impacts might occur when

institutions get captured by the elite or be dysfunctional in way that prevents pro-poor policies and redistribution; Democratization increases inequality and poverty due to increased market opportunities that put pressure on wages; incomes might be redistributed from the poor to middle class; or social and ethnic cleavages might prevent coalescing behind pro-poor policies as a political goal.

To address our research question, we use a large dataset covers years from 1980 to 2018 for around 140 countries. We use a democracy measure from Acemoglu et al. (2019) that proxies institutions connected to electoral democracy. Our empirical strategy extends and refines the previous literature by looking directly at poverty rates and not at other proxies of poverty such as health outcomes, as well as by using a mixture of estimation methods to deal with endogeneity issues, each of them with different advantages and disadvantages, that complement rather than oppose each other. First, we estimate a dynamic panel model using the TWFE estimator to account for unobserved heterogeneity and GMM estimations to correct of Nickel bias. We control for selection into democracy by including lags of poverty, GDP and inequality. Secondly, we estimate non-parametric treatment effects. As opposed to TWFE and GMM they allow more flexibility in the timing of when democratization affects poverty rates and does not impose a linearity in the effect. Treatment effects estimations can be deemed causal under some plausible assumptions while the goal of TWFE and GMM estimations is to obtain unbiased correlations.

Our TWFE results show that democratization does not significantly impact poverty rates. They show an insignificant impact of democratization throughout a variety of specifications. In robustness checks, which support the main result, we address (i) the use of other poverty lines and poverty measures, (ii) the use of other democracy measures, (iii) possible dependence on subsamples, (iv) timing of the effect by using a 5-year panel structure instead of an annual structure. Estimating causal effects with treatment effects estimations we find democratization reduces poverty rates by about 11-14% in the first five years after democratization on a 95% significance level and about 20% 10-14 years after democratization on a 90% significance level. Confidence

bands get extremely wide after this due to limited data restrictions in time dimension. Although our TWFE estimates are insignificant we argue that there likely is an effect of democracy on poverty reduction as the treatments effects estimates suggest, which is the superior estimator because of its higher flexibility and allowing the estimation of causal effects.

Although our results concerning the effect of electoral democracy poverty are mixed, we are still convinced that democratic political institutions matter, and societies are better off when the political system is more inclusive and vulnerable people in particular get heard. The fact that our results do not find clear support for this suggest that this is too often not the case, even in democracies.

Future research could firstly look at more specific institutions and their impact on poverty (i.e., whether specifically redistributive or pro-poor institutions impact poverty in a meaningful way), and secondly, how these sorts of institutions that encourage redistribution and pro-poor policies emerge.

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## Appendix A

Table A1: Interaction Terms for Regressions in Columns 10-12 in Tables 2 and 3 (Main Results)

	(1)	(2)	(3)	(4)	(5)	(6)
Democracy	78.969 (42.581)	13.564 (39.633)	-52.265 (63.417)	3.671 (4.465)	63.428 (55.996)	-118.266 (62.398)
Democracy x lag one Poverty	-0.068* (0.029)	-0.156 (0.163)	-0.313* (0.142)		-0.120 (0.183)	-0.304* (0.119)
Democracy x lag two Poverty		-0.103 (0.264)	0.021 (0.221)		-0.175 (0.285)	-0.026 (0.215)
Democracy x lag three Poverty		0.234 (0.237)	0.468 (0.308)		0.264 (0.216)	0.442 (0.296)
Democracy x lag four Poverty		-0.004 (0.126)	-0.335 (0.303)		-0.059 (0.138)	-0.303 (0.286)
Democracy x lag one GDP	-0.060 (0.033)	0.125 (0.263)	-0.557 (0.308)		0.024 (0.344)	-0.681* (0.314)
Democracy x lag two GDP		-0.365 (0.339)	-0.218 (0.481)		-0.551 (0.421)	-0.094 (0.491)
Democracy x lag three GDP		0.498 (0.333)	0.919 (0.544)		0.291 (0.409)	0.910 (0.512)
Democracy x lag four GDP		-0.308 (0.297)	-0.763 (0.519)		0.137 (0.302)	-0.621 (0.524)
Democracy x lag one Gini	-0.036 (0.118)	1.614 (1.185)	3.247** (1.186)		1.329 (1.064)	3.249** (1.138)
Democracy x lag two Gini		-1.911 (1.418)	-3.250* (1.452)		-2.153 (1.553)	-3.148* (1.376)
Democracy x lag three Gini		1.005 (1.439)	0.262 (1.838)		1.416 (1.587)	0.350 (1.746)
Democracy x lag four Gini		-0.629 (0.693)	0.300 (1.266)		-0.491 (0.839)	0.375 (1.318)
lag one Poverty x lag one GDP	-0.000* (0.000)	-0.000 (0.000)	0.001 (0.000)	-0.000 (0.000)	0.000 (0.001)	0.001 (0.000)
lag two Poverty x lag two GDP		0.001 (0.001)	0.000 (0.001)		0.000 (0.001)	0.000 (0.001)
lag three Poverty x lag three GDP		-0.001* (0.001)	-0.001 (0.001)		-0.001 (0.001)	-0.001 (0.001)
lag four Poverty x lag four GDP		0.000 (0.000)	-0.000 (0.001)		0.000 (0.000)	-0.000 (0.001)
lag one Poverty x lag one Gini	0.001 (0.001)	0.002 (0.002)	0.001 (0.002)	0.001 (0.001)	0.002 (0.002)	0.002 (0.002)
lag two Poverty x lag two Gini		-0.002 (0.004)	-0.002 (0.003)		-0.003 (0.004)	-0.002 (0.003)
lag three Poverty x lag three Gini		-0.001 (0.003)	0.000 (0.003)		-0.002 (0.003)	-0.000 (0.003)
lag four Poverty x lag four Gini		0.002 (0.001)	0.001 (0.003)		0.002 (0.001)	0.001 (0.003)
Lag one GDP x Lag one Gini	0.001 (0.001)	0.002 (0.004)	0.000 (0.003)	0.002 (0.002)	0.005 (0.003)	0.002 (0.003)
Lag two GDP x Lag two Gini		-0.006 (0.007)	-0.005 (0.006)		-0.008 (0.007)	-0.005 (0.006)
Lag three GDP x Lag three Gini		0.003 (0.007)	0.005 (0.006)		0.004 (0.007)	0.005 (0.006)
Lag four GDP x Lag four Gini		0.001 (0.003)	-0.001 (0.005)		0.001 (0.003)	-0.002 (0.004)
AR2 test p-value				0.44	0.26	0.49
Observations	2209	1778	1285	2058	1642	1181
Countries in sample	141	132	103	135	123	100

Note: This table presents the results of the effect of democracy on the poverty headcount ratio. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects. Columns 3 and 6 include 8 lags of all independent variables as controls but we do not report the coefficients. Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\*p<0.05, \*p>0.1.

Table A2: Main Results With Alternative Poverty Lines and the Poverty Gap as Alternative Poverty Measure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Poverty Measure: Poverty Headcount Rate Poverty Line: \$3.20												
	TWFE Estimates											
Democracy	1.450 (1.883)	1.486 (1.744)	1.079 (1.505)	0.337 (1.789)	1.261 (1.678)	1.637 (1.859)	0.533 (1.914)	1.198 (1.733)	1.603 (1.953)	2.485 (2.131)	36.018 (40.096)	-21.754 (58.951)
	GMM Estimates											
Democracy	1.262 (2.049)	2.049 (2.142)	-0.065 (1.864)	-0.107 (1.981)	1.760 (2.079)	0.338 (1.998)	-0.335 (2.063)	1.139 (2.181)	0.838 (2.277)	1.264 (2.197)	90.421 (55.406)	-129.836 (88.861)
AR2 test p-value	0.06	0.56	0.42	0.06	0.56	0.39	0.06	0.54	0.41	0.06	0.43	0.27
Poverty Line: \$5.50												
	TWFE Estimates											
Democracy	2.283 (1.349)	2.522 (1.351)	1.108 (0.954)	1.601 (1.275)	2.223 (1.248)	1.310 (0.996)	1.898 (1.382)	2.872* (1.370)	2.507 (1.324)	1.728 (1.074)	40.710 (33.826)	-24.205 (43.006)
	GMM Estimates											
Democracy	1.464 (1.433)	1.770 (1.519)	0.638 (1.317)	0.703 (1.404)	1.500 (1.434)	0.997 (1.357)	1.031 (1.485)	2.071 (1.626)	2.831 (1.746)	0.368 (1.409)	37.110 (45.008)	-11.469 (65.304)
AR2 test p-value	0.29	0.99	0.12	0.29	1.00	0.09	0.29	0.95	0.08	0.28	0.80	0.25
Poverty Measure: Poverty Gap Poverty Line: \$1.90												
	TWFE Estimates											
Democracy	-1.491 (3.235)	-2.940 (2.669)	-5.361 (3.217)	-3.111 (3.182)	-3.735 (2.747)	-6.850 (3.495)	-3.217 (3.340)	-3.683 (2.874)	-6.608 (3.485)	1.855 (5.234)	-20.416 (37.111)	-52.627 (63.428)
	GMM Estimates											
Democracy	3.557 (3.877)	-0.517 (3.694)	-5.517 (3.738)	2.276 (3.843)	-1.632 (3.786)	-7.650 (4.259)	2.171 (4.094)	-2.092 (3.766)	-7.025 (3.951)	5.350 (4.988)	-26.956 (46.227)	-115.554 (72.726)
AR2 test p-value	0.05	0.29	0.81	0.04	0.25	0.78	0.04	0.27	0.86	0.04	0.20	0.31
Poverty Line: \$3.20												
	TWFE Estimates											
Democracy	1.351 (2.386)	0.135 (1.923)	-0.211 (1.853)	-0.019 (2.278)	-0.236 (1.932)	-0.392 (2.110)	0.068 (2.397)	-0.366 (2.009)	-0.500 (2.157)	1.660 (2.771)	1.923 (33.544)	-36.316 (53.904)
	GMM Estimates											
Democracy	3.143 (2.762)	1.553 (2.462)	-0.988 (2.232)	1.967 (2.737)	1.492 (2.506)	-0.595 (2.550)	1.689 (2.922)	1.225 (2.592)	-0.658 (2.646)	3.068 (3.083)	17.451 (40.447)	-77.360 (53.342)
AR2 test p-value	0.96	0.12	1.00	0.95	0.13	0.94	0.94	0.14	0.86	0.91	0.31	0.96
Poverty Line: \$5.50												
	TWFE Estimates											
Democracy	1.451 (1.702)	1.411 (1.647)	0.101 (1.229)	0.652 (1.612)	1.047 (1.571)	0.215 (1.441)	0.848 (1.724)	1.472 (1.639)	0.815 (1.519)	2.064 (1.462)	38.842 (32.985)	-13.779 (46.595)
AR2 test p-value												
	GMM Estimates											
Democracy	1.405 (1.725)	0.289 (1.830)	-0.586 (1.578)	0.485 (1.685)	-0.061 (1.784)	-0.291 (1.763)	0.468 (1.751)	-0.307 (1.838)	0.307 (1.732)	0.977 (1.534)	12.542 (41.070)	-5.173 (63.717)
AR2 test p-value	0.81	0.32	0.31	0.81	0.33	0.34	0.81	0.31	0.26	0.84	0.11	0.25

**Note:** This table presents TWFE and GMM estimates of the effect of democracy on the poverty headcount ratio. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects and 4 lags of poverty, GDP and inequality but coefficients are not shown. The number of observations and countries in sample are not shown but behave similar to columns in Table 2 and 3 (Observations range from about 2200 in column 1 to 1200 in column 12 and countries in the sample range from about 140 in column 1 to 100 in column 12). Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\*p<0.05, \*p>0.1.

Table A3: Robustness Checks Using Alternative Democracy Dummies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Democracy Measure: BMR												
Democracy	1.458 (2.206)	-0.210 (2.058)	-1.782 (3.034)	0.489 (2.213)	-0.780 (2.269)	-3.392 (3.460)	0.460 (2.330)	-0.906 (2.502)	-4.195 (3.801)	-6.823 (3.510)	10.491 (45.044)	-77.677 (73.575)
Democracy	-0.142 (3.366)	0.090 (3.308)	-2.674 (3.587)	-1.194 (3.162)	-0.620 (3.186)	-4.447 (3.872)	-1.627 (3.401)	-1.495 (3.434)	-4.274 (3.872)	-7.260 (3.752)	46.137 (47.218)	-85.114 (75.802)
AR2 test p-value	0.29	0.64	0.47	0.30	0.71	0.47	0.31	0.78	0.44	0.33	0.53	0.23
Democracy Measure: CGV												
Democracy	0.324 (2.184)	-0.097 (2.088)	-2.435 (2.768)	-1.658 (2.016)	-1.669 (2.404)	-4.812 (3.522)	-1.423 (2.139)	-1.967 (2.528)	-5.229 (3.713)	-5.282* (2.447)	31.551 (42.431)	-24.375 (74.700)
Democracy	-1.511 (3.191)	-0.132 (2.943)	-3.360 (3.019)	-3.747 (2.890)	-1.737 (2.743)	-6.890* (3.348)	-4.042 (3.112)	-1.933 (2.859)	-6.205 (3.762)	-6.785* (3.071)	117.431 (70.553)	-42.494 (79.397)
AR2 test p-value	0.29	0.72	0.34	0.29	0.76	0.33	0.29	0.79	0.28	0.32	0.78	0.17
No. of poverty lags incl.	1	4	8	1	4	8	1	4	8	1	4	8
No. of GDP lags incl.	0	0	0	1	4	8	1	4	8	1	4	8
No. of inequality lags incl.	0	0	0	0	0	0	1	4	8	1	4	8

**Note:** This table presents TWFE and GMM estimates of the effect of democracy on the poverty headcount ratio using alternative democracy dummy measures. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects and the number of lags as indicated in the lower part of the Table. The number of observations and countries in sample are not shown but behave similar to columns in Table 2 and 3 (Observations range from about 2200 in column 1 to 1200 in column 12 and countries in the sample range from about 140 in column 1 to 100 in column 12). Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\*p<0.05, \*p>0.1.

Table A4: Robustness Checks Using Different Subsamples for the Estimation

	(1) FE LDC	(2) FE non-LDC	(3) FE LMIC	(4) FE HIC	(5) GMM LDC	(6) GMM non-LDC	(7) GMM LMIC	(8) GMM HIC
Democracy	-0.545 (0.493)	-0.303 (4.138)	-0.011 (2.387)	-7.101 (6.926)	-0.545 (0.460)	1.127 (4.704)	-0.379 (3.037)	-0.789 (7.925)
Poverty first lag	1.581*** (0.120)	0.848*** (0.064)	0.878*** (0.082)	0.847*** (0.100)	1.581*** (0.111)	0.789*** (0.062)	0.816*** (0.082)	0.770*** (0.088)
Poverty second lag	-0.729*** (0.116)	0.089 (0.094)	-0.010 (0.121)	0.142 (0.129)	-0.729*** (0.108)	0.080 (0.088)	0.012 (0.116)	0.123 (0.112)
Poverty third lag	0.132 (0.083)	-0.035 (0.086)	0.085 (0.092)	-0.119 (0.105)	0.132 (0.077)	-0.028 (0.081)	0.069 (0.084)	-0.112 (0.097)
Poverty fourth lag	-0.004 (0.034)	-0.013 (0.055)	-0.046 (0.042)	-0.004 (0.092)	-0.004 (0.032)	0.011 (0.051)	0.020 (0.048)	0.014 (0.078)
GDP first lag	0.057 (0.047)	-0.743** (0.257)	-0.506* (0.202)	-0.197 (0.620)	0.057 (0.044)	-0.690** (0.258)	-0.533* (0.214)	-0.271 (0.531)
GDP second lag	-0.089 (0.050)	0.060 (0.293)	-0.046 (0.201)	-0.213 (1.076)	-0.089 (0.047)	0.096 (0.281)	-0.040 (0.193)	0.185 (0.845)
GDP third lag	0.052 (0.056)	0.577 (0.311)	0.353 (0.195)	0.753 (1.080)	0.052 (0.052)	0.463 (0.280)	0.331 (0.183)	0.043 (0.877)
GDP fourth lag	-0.049 (0.030)	-0.118 (0.238)	-0.013 (0.149)	-0.346 (0.607)	-0.049 (0.028)	-0.058 (0.241)	0.019 (0.151)	0.395 (0.534)
Gini first lag	0.126 (0.108)	0.248 (0.527)	-0.040 (0.500)	2.094* (0.931)	0.126 (0.100)	0.231 (0.517)	-0.181 (0.516)	2.114* (0.913)
Gini second lag	-0.307 (0.223)	-0.651 (0.612)	0.035 (0.668)	-3.524* (1.322)	-0.307 (0.208)	-0.529 (0.599)	0.156 (0.673)	-3.327** (1.193)
Gini third lag	0.361 (0.200)	0.720 (0.492)	0.203 (0.417)	2.481 (1.333)	0.361 (0.186)	0.753 (0.471)	0.164 (0.390)	2.442* (1.179)
Gini fourth lag	-0.229* (0.089)	-0.241 (0.300)	-0.275 (0.233)	-0.637 (0.762)	-0.229** (0.083)	-0.399 (0.327)	-0.287 (0.250)	-0.687 (0.716)
AR2 test p-value					0.19	0.52	0.87	0.41
Observations	376	1402	1282	496	344	1298	1183	459
Countries in sample	32	100	99	33	31	92	95	28

**Note:** This table presents TWFE and GMM estimates of the effect of democracy on the poverty headcount ratio using different subsamples for the Estimation. The main sample is split into Least Developed Countries (LDCs) and non-LDCs and Low- and Middle-Income Countries (LMICs) and High-Income Countries (HICs). The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects and 4 lags of poverty, GDP and inequality. Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\*p<0.05, \*p>0.1.

Table A5: Robustness Checks Using Different Panel Length (5-Year Panel)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TWFE Estimates								
Democracy	1.799 (13.980)	6.806 (20.780)	1.202 (15.027)	4.672 (18.641)	0.468 (15.214)	3.036 (16.923)	-2.058 (15.077)	-251.830 (208.142)
Poverty first lag	0.570*** (0.100)	0.511*** (0.127)	0.565*** (0.087)	0.499*** (0.122)	0.555*** (0.090)	0.481*** (0.114)	1.344 (1.086)	-0.688 (1.448)
Poverty second lag		-0.053 (0.111)		-0.068 (0.109)		-0.110 (0.126)		5.911*** (1.515)
GDP first lag			-0.072 (0.436)	-0.602 (0.669)	-0.096 (0.467)	-0.720 (0.699)	-1.837 (1.571)	-2.547 (1.997)
GDP second lag				0.037 (0.708)		-0.072 (0.752)		2.863 (3.126)
Gini first lag					0.193 (0.615)	0.156 (0.758)	-2.760 (3.686)	-1.846 (4.649)
Gini second lag						0.888 (0.855)		3.287 (6.534)
Observations	342	226	341	226	337	223	337	223
Countries in sample	115	90	114	90	113	89	113	89
GMM Estimates								
Democracy	16.335 (20.454)	-5.471 (19.692)	15.916 (20.352)	-26.469 (19.156)	12.068 (19.949)	34.395 (38.246)	2.590 (19.255)	0.000 (.)
Poverty first lag	0.513*** (0.135)	0.466** (0.145)	0.494*** (0.123)	0.433*** (0.123)	0.510*** (0.125)	0.304 (0.162)	-2.876 (2.374)	-51.967*** (11.920)
Poverty second lag		-0.001 (0.118)		-0.023 (0.116)		-0.008 (0.400)		25.678*** (4.181)
GDP first lag			0.118 (0.700)	0.157 (0.983)	0.060 (0.707)	1.852 (1.763)	-7.170* (3.301)	-29.002* (11.383)
GDP second lag				-0.571 (0.684)		-1.933 (3.169)		0.000 (.)
Gini first lag					-0.070 (0.736)	1.788 (2.430)	-16.617* (7.255)	-23.640 (18.904)
Gini second lag						5.168 (3.951)		-18.264 (13.826)
AR2 test p-value	0.40	0.22	0.41	0.13	0.40	0.74	0.45	0.25
Observations	226	136	226	130	223	25	223	25
Countries in sample	90	69	90	64	89	17	89	17

**Note:** This table presents TWFE and GMM estimates of the effect of democracy on the poverty headcount ratio using a 5-year panel for the estimation. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects. Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\*p<0.05, \*p>0.1.

Figure A1: Estimate of the Treatment Effect of Democracy on the Poverty Headcount Rate Using Regression Adjustment with 90% Confidence Intervals

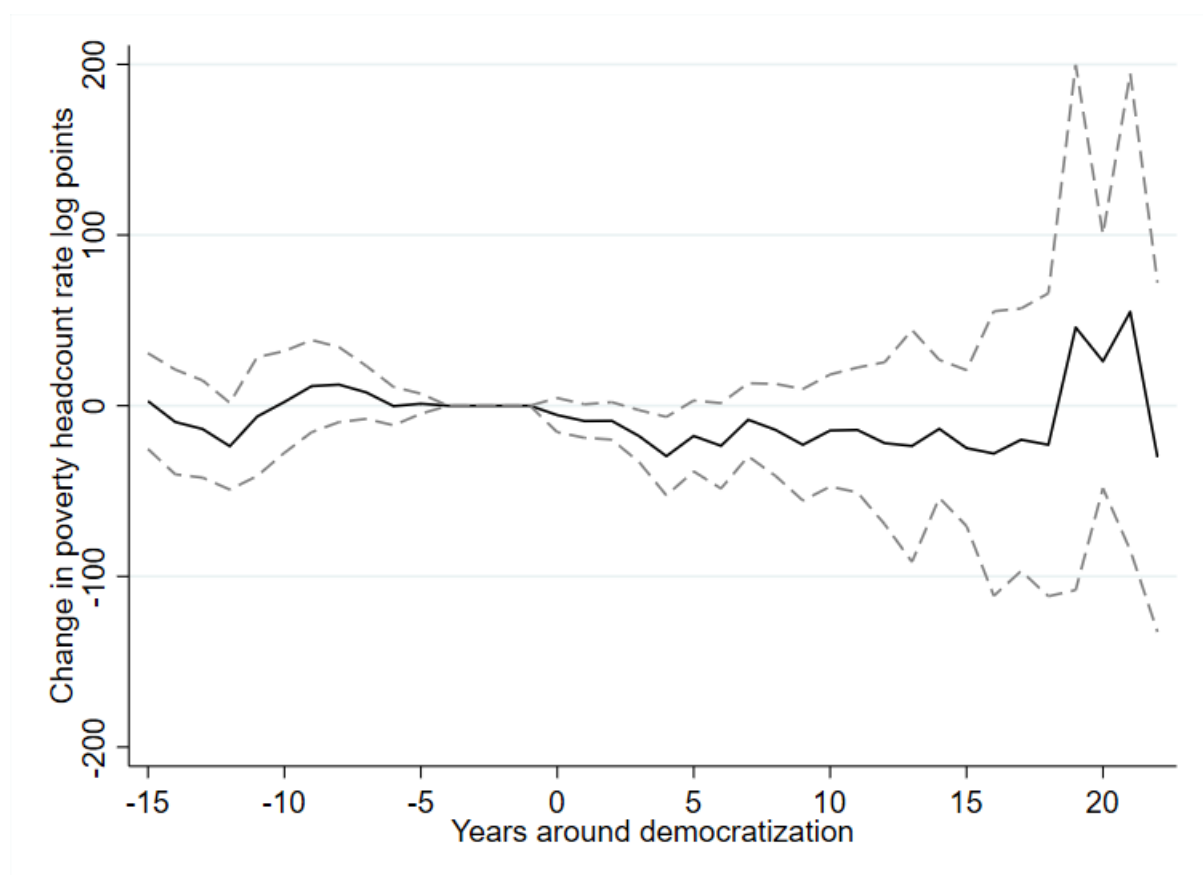


Figure A2: Estimate of the Treatment Effect of Democracy on the Poverty Headcount Rate Using Inverse Propensity Score Weighting Adjustment with 90% Confidence Intervals

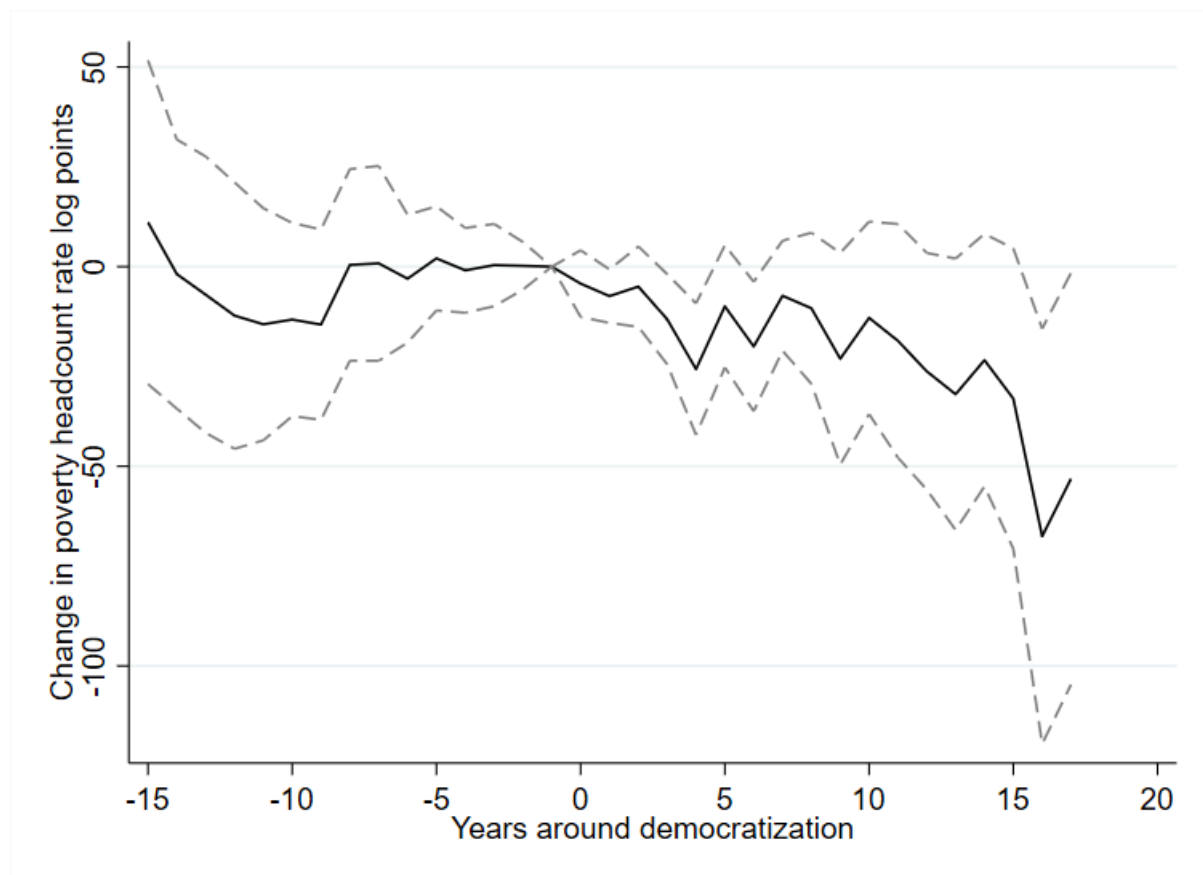


Table A6: Robustness Check Using the Polity2 Index as Alternative Democracy Measure in TWFE Estimations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Democracy	0.046 (0.193)	-0.069 (0.183)	-0.158 (0.229)	-0.110 (0.187)	-0.143 (0.198)	-0.258 (0.262)	-0.099 (0.195)	-0.146 (0.205)	-0.264 (0.264)	-0.265 (0.330)	-0.250 (0.393)	-0.363 (0.443)	-0.105 (0.308)	1.508 (3.531)	-1.547 (6.198)
Democracy first lag										0.202 (0.393)	-0.049 (0.567)	0.317 (0.561)			
Democracy second lag											0.294 (0.360)	0.059 (0.283)			
Democracy third lag											-0.730 (0.630)	-1.227 (0.678)			
Democracy fourth lag											0.852* (0.368)	1.071 (0.600)			
Poverty first lag	0.886*** (0.025)	0.887*** (0.060)	0.847*** (0.063)	0.867*** (0.026)	0.865*** (0.062)	0.821*** (0.065)	0.864*** (0.026)	0.857*** (0.064)	0.810*** (0.064)	0.864*** (0.026)	0.859*** (0.064)	0.815*** (0.063)	0.978** (0.360)	0.948 (0.907)	0.846 (0.820)
Poverty second lag											0.091 (0.095)	0.017 (0.068)		-0.614 (1.634)	-1.216 (1.495)
Poverty third lag											-0.040 (0.086)	-0.019 (0.074)		1.888 (1.455)	1.434 (1.366)
Poverty fourth lag											-0.009 (0.054)	0.051 (0.077)		-1.213* (0.578)	-0.708 (1.173)
GDP first lag											-0.519* (0.203)	-0.770** (0.243)	-0.254 (0.476)	-0.630 (1.462)	0.357 (1.199)
GDP second lag											-0.036 (0.215)	-0.027 (0.278)		1.894 (2.881)	0.960 (2.345)
GDP third lag											0.427 (0.221)	0.775** (0.279)		-1.203 (2.744)	-2.138 (2.446)
GDP fourth lag											-0.062 (0.175)	-0.423 (0.255)		-0.178 (1.091)	2.061 (1.984)
Gini first lag											0.051 (0.117)	0.170 (0.532)	-0.474 (1.137)	-0.530 (3.682)	1.129 (3.164)
Gini second lag											-0.723 (0.573)	-0.171 (0.649)		4.123 (7.001)	3.041 (5.626)
Gini third lag											0.703 (0.450)	0.182 (0.599)		-2.470 (5.818)	-4.472 (5.260)
Gini fourth lag											-0.357 (0.268)	0.104 (0.480)		-1.080 (2.243)	1.768 (3.778)
Observations	2170	1765	1294	2162	1760	1293	2132	1733	1269	2131	1732	1269	2131	1733	1269
Countries in sample	133	125	99	132	124	98	131	123	97	130	122	97	130	123	97
p-value poverty lags 5 to 8			[0.906]			[0.880]			[0.903]			[0.901]			[0.901]
p-value poverty lags 5 to 8						[0.485]			[0.436]			[0.408]			[0.480]
p-value poverty lags 5 to 8									[0.807]			[0.781]			[0.454]

**Note:** This table presents the results of the effect of democracy on the poverty headcount ratio. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects. Columns 3, 6, 8, 12 and 15 include 8 lags of poverty as controls but we report only the p-value of a joint significance test for lags 5 to 8 in the lower part of the table. Columns 10-12 include additional interaction terms between democracy and one lag (column 10), 4 lags (column 11) and 8 lags (column 12) of poverty. GDP and inequality but coefficients are not shown. Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\*p<0.05, \*p>0.1.

Table A7: Robustness Check Using the Polity2 Index as Alternative Democracy Measure in GMM Estimations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Democracy	0.071 (0.232)	0.078 (0.236)	-0.108 (0.247)	-0.035 (0.222)	0.009 (0.235)	-0.301 (0.264)	0.012 (0.235)	-0.008 (0.231)	-0.255 (0.259)	-0.067 (0.311)	-0.207 (0.372)	-0.360 (0.430)	0.035 (0.290)	1.798 (4.579)	-1.271 (5.887)
Democracy first lag										0.107 (0.361)	0.233 (0.502)	0.327 (0.541)			
Democracy second lag											0.290 (0.345)	0.062 (0.274)			
Democracy third lag											-0.863 (0.534)	-1.214 (0.655)			
Democracy fourth lag											0.777* (0.339)	1.068 (0.577)			
Poverty first lag	0.837*** (0.027)	0.821*** (0.060)	0.835*** (0.061)	0.824*** (0.027)	0.807*** (0.060)	0.810*** (0.063)	0.817*** (0.028)	0.800*** (0.061)	0.808*** (0.061)	0.817*** (0.028)	0.800*** (0.063)	0.811*** (0.060)	0.799** (0.292)	0.883 (0.969)	0.810 (0.781)
Poverty second lag											0.092 (0.091)	0.013 (0.066)		-0.661 (1.669)	-1.238 (1.429)
Poverty third lag											-0.040 (0.081)	-0.042 (0.073)		2.254 (1.441)	1.472 (1.310)
Poverty fourth lag											0.010 (0.050)	0.048 (0.075)		-1.336* (1.112)	-0.712 (1.112)
GDP first lag											-0.425** (0.193)	-0.764** (0.234)		-0.777 (1.373)	0.320 (1.131)
GDP second lag											-0.052 (0.203)	-0.037 (0.268)		1.616 (2.812)	0.974 (2.207)
GDP third lag											0.332 (0.205)	0.780** (0.269)		-0.652 (2.616)	-2.109 (2.290)
GDP fourth lag											-0.081 (0.158)	-0.415 (0.247)		-0.624 (1.093)	2.050 (1.890)
Gini first lag											0.462 (0.411)	0.122 (0.518)		-1.076 (3.543)	0.984 (2.980)
Gini second lag											-0.734 (0.543)	-0.167 (0.628)		3.510 (6.831)	3.035 (5.310)
Gini third lag											0.668 (0.468)	0.193 (0.577)		-1.152 (5.576)	-4.333 (4.966)
Gini fourth lag											-0.362 (0.286)	0.113 (0.466)		-1.918 (2.293)	1.721 (3.609)
AR2 test p-value											0.43 (0.286)	0.68 (0.466)		0.37 (2.293)	0.40 (3.609)
Observations	2027	1636	1194	2020	1632	1194	1991	1606	1171	1991	1606	1171	1991	1606	1171
Countries in sample	126	118	97	125	117	97	124	116	96	124	116	96	124	116	96
p-value poverty lags 5 to 8			[0.895]			[0.862]			[0.858]			[0.891]			[0.056]
p-value poverty lags 5 to 8						[0.489]			[0.402]			[0.411]			[0.368]
p-value poverty lags 5 to 8									[0.764]			[0.754]			[0.375]

Note: This table presents the results of the effect of democracy on the poverty headcount ratio. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects. Columns 3, 6, 8, 12 and 15 include 8 lags of poverty as controls but we report only the p-value of a joint significance test for lags 5 to 8 in the lower part of the table. Columns 10-12 include additional interaction terms between democracy and one lag (column 10), 4 lags (column 11) and 8 lags (column 12) of poverty. GDP and inequality but coefficients are not shown. Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\*p<0.05, \*p>0.1.

Table A8: Robustness Check Using the V-Dem Polyarchy Index as Alternative Democracy Measure in TWFE Estimations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Democracy	8.420 (8.850)	1.445 (7.662)	-6.209 (8.821)	5.061 (8.803)	-0.663 (7.469)	-6.293 (9.168)	5.664 (9.198)	-1.343 (7.521)	-6.198 (9.698)	-22.622* (11.077)	-29.002 (14.702)	-38.730 (21.545)	-10.363 (9.397)	0.295 (104.129)	-160.443 (175.223)
Democracy first lag										31.616 (16.244)	19.214 (28.864)	61.191 (39.720)			
Democracy second lag											3.023 (21.743)	-52.781** (18.408)			
Democracy third lag											-2.012 (16.413)	-1.193 (17.094)			
Democracy fourth lag											18.978 (13.939)	51.003* (22.703)			
Poverty first lag	0.882*** (0.026)	0.887*** (0.060)	0.846*** (0.063)	0.863*** (0.026)	0.866*** (0.062)	0.821*** (0.065)	0.860*** (0.027)	0.857*** (0.064)	0.810*** (0.064)	0.858*** (0.026)	0.851*** (0.063)	0.814*** (0.064)	1.011** (0.353)	0.543 (1.008)	0.355 (0.844)
Poverty second lag		0.081 (0.093)	0.010 (0.069)		0.080 (0.092)	0.010 (0.066)		0.093 (0.095)	0.019 (0.068)		0.095 (0.094)	0.021 (0.067)		0.306 (1.792)	-0.100 (1.547)
Poverty third lag		-0.038 (0.087)	-0.013 (0.079)		-0.028 (0.087)	-0.004 (0.078)		-0.041 (0.085)	-0.016 (0.074)		-0.043 (0.084)	-0.029 (0.072)		1.450 (1.408)	1.230 (1.593)
Poverty fourth lag		-0.015 (0.052)	0.037 (0.072)		-0.018 (0.052)	0.039 (0.071)		-0.009 (0.054)	0.048 (0.077)		-0.005 (0.054)	0.055 (0.077)		-1.211* (0.487)	-0.687 (1.282)
GDP first lag				-0.255*** (0.073)	-0.489** (0.185)	-0.667** (0.215)	-0.270*** (0.075)	-0.521** (0.196)	-0.764** (0.247)	-0.263*** (0.074)	-0.528** (0.193)	-0.768** (0.252)	-0.016 (0.499)	-0.296 (2.103)	1.033 (1.611)
GDP second lag					-0.049 (0.178)	-0.043 (0.215)		-0.023 (0.200)	-0.037 (0.278)		-0.014 (0.199)	-0.020 (0.281)		1.957 (3.392)	1.414 (2.521)
GDP third lag					0.419* (0.189)	0.676** (0.257)		0.405 (0.206)	0.759** (0.277)		0.385 (0.200)	0.703* (0.269)		-1.210 (3.473)	-2.051 (3.360)
GDP fourth lag					-0.079 (0.159)	-0.304 (0.236)		-0.055 (0.169)	-0.355 (0.257)		-0.019 (0.158)	-0.286 (0.259)		-0.423 (1.529)	1.480 (2.189)
Gini first lag							0.061 (0.118)	0.390 (0.441)	0.198 (0.531)	0.066 (0.118)	0.397 (0.440)	0.173 (0.522)	-0.486 (1.149)	-0.825 (3.943)	-0.055 (2.952)
Gini second lag								-0.747 (0.578)	-0.193 (0.655)		-0.763 (0.573)	-0.181 (0.642)		4.715 (7.297)	4.882 (5.704)
Gini third lag								0.701 (0.450)	0.170 (0.602)		0.724 (0.450)	0.196 (0.612)		-2.318 (6.185)	-3.826 (5.448)
Gini fourth lag								-0.352 (0.265)	0.113 (0.479)		-0.358 (0.267)	0.110 (0.475)		-1.389 (2.365)	0.674 (3.917)
Observations	2210	1785	1300	2201	1779	1298	2171	1752	1274	2171	1752	1274	2171	1752	1274
Countries in sample	139	130	102	138	129	101	137	128	100	137	128	100	137	128	100
p-value poverty lags 5 to 8			[0.910]			[0.881]			[0.904]			[0.874]			[0.211]
p-value poverty lags 5 to 8						[0.462]			[0.414]			[0.271]			[0.102]
p-value poverty lags 5 to 8									[0.815]			[0.754]			[0.513]

**Note:** This table presents the results of the effect of democracy on the poverty headcount ratio. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects. Columns 3, 6, 8, 12 and 15 include 8 lags of poverty as controls but we report only the p-value of a joint significance test for lags 5 to 8 in the lower part of the table. Columns 10-12 include additional interaction terms between democracy and one lag (column 10), 4 lags (column 11) and 8 lags (column 12) of poverty GDP and inequality but coefficients are not shown. Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\* p<0.05, \* p>0.1.

Table A9: Robustness Check Using the V-Dem Polyarchy as Alternative Democracy Measure in GMM Estimations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Democracy	5.131 (9.041)	1.219 (9.104)	-5.752 (9.186)	1.341 (9.036)	-0.382 (9.241)	-7.533 (9.586)	0.192 (9.119)	-1.370 (9.064)	-6.228 (9.462)	-11.898 (10.935)	-17.409 (17.838)	-38.927 (20.898)	-2.819 (10.533)	15.032 (123.297)	-153.837 (168.497)
Democracy first lag										14.485 (14.072)	18.409 (27.577)	60.408 (38.394)			
Democracy second lag											-9.918 (12.822)	-51.917** (17.807)			
Democracy third lag											-2.555 (15.672)	-1.195 (16.401)			
Democracy fourth lag											18.395 (21.750)	51.123* (21.750)			
Poverty first lag	0.829*** (0.026)	0.831*** (0.058)	0.841*** (0.061)	0.814*** (0.027)	0.812*** (0.059)	0.814*** (0.063)	0.811*** (0.028)	0.818*** (0.060)	0.807*** (0.061)	0.810*** (0.028)	0.814*** (0.060)	0.807*** (0.061)	1.019*** (0.288)	0.652 (1.086)	0.316 (0.805)
Poverty second lag		0.074 (0.088)	0.006 (0.068)		0.074 (0.087)	0.004 (0.067)		0.083 (0.090)	0.015 (0.066)		0.083 (0.090)	0.018 (0.066)		0.351 (1.908)	-0.143 (1.479)
Poverty third lag		-0.034 (0.082)	-0.006 (0.078)		-0.024 (0.082)	0.001 (0.077)		-0.036 (0.082)	-0.010 (0.073)		-0.040 (0.080)	-0.020 (0.071)		1.438 (1.395)	1.306 (1.524)
Poverty fourth lag		-0.004 (0.049)	0.035 (0.071)		-0.008 (0.049)	0.042 (0.070)		-0.002 (0.050)	0.045 (0.075)		0.006 (0.050)	0.055 (0.075)		-1.203* (0.494)	-0.697 (1.213)
GDP first lag				-0.269** (0.090)	-0.463* (0.181)	-0.759*** (0.210)	-0.294** (0.094)	-0.446* (0.190)	-0.719** (0.238)	-0.292** (0.093)	-0.453* (0.189)	-0.753** (0.242)	-0.044 (0.505)	0.073 (1.906)	0.986 (1.532)
GDP second lag					-0.010 (0.169)	0.028 (0.204)		-0.008 (0.195)	-0.050 (0.268)		0.008 (0.196)	-0.029 (0.270)		2.312 (3.172)	1.395 (2.388)
GDP third lag					0.356* (0.178)	0.641** (0.247)		0.324 (0.194)	0.756** (0.268)		0.304 (0.190)	0.701** (0.259)		-1.751 (3.197)	-1.901 (3.164)
GDP fourth lag					-0.089 (0.148)	-0.265 (0.234)		-0.046 (0.152)	-0.358 (0.249)		-0.016 (0.149)	-0.284 (0.251)		-0.557 (1.419)	1.427 (2.093)
Gini first lag							0.071 (0.155)	0.238 (0.446)	0.194 (0.516)	0.090 (0.158)	0.245 (0.441)	0.183 (0.502)	-0.493 (1.090)	-0.730 (3.601)	-0.202 (2.796)
Gini second lag								-0.595 (0.590)	-0.211 (0.634)		-0.608 (0.577)	-0.228 (0.616)		5.541 (6.878)	4.781 (5.385)
Gini third lag								0.698 (0.430)	0.187 (0.583)		0.798 (0.416)	0.202 (0.588)		-3.045 (5.686)	-3.558 (5.116)
Gini fourth lag								-0.513 (0.280)	0.103 (0.466)		-0.598* (0.275)	0.079 (0.465)		-1.536 (2.354)	0.608 (3.740)
AR2 test p-value	0.40	0.48	0.76	0.40	0.49	0.79	0.40	0.51	0.69	0.40	0.52	0.65	0.42	0.37	0.54
Observations	2061	1651	1197	2053	1646	1196	2024	1620	1173	2024	1620	1173	2024	1620	1173
Countries in sample	133	121	99	132	120	99	131	119	98	131	119	98	131	119	98
p-value poverty lags 5 to 8			[0.895]			[0.834]			[0.861]			[0.786]			[0.188]
p-value poverty lags 5 to 8						[0.432]			[0.382]			[0.233]			[0.049]
p-value poverty lags 5 to 8									[0.774]			[0.694]			[0.399]

Note: This table presents the results of the effect of democracy on the poverty headcount ratio. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects. Columns 3, 6, 8, 12 and 15 include 8 lags of poverty as controls but we report only the p-value of a joint significance test for lags 5 to 8 in the lower part of the table. Columns 10-12 include additional interaction terms between democracy and one lag (column 10), 4 lags (column 11) and 8 lags (column 12) of poverty GDP and inequality but coefficients are not shown. Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\*p<0.05, \*p>0.1.

Table A10: Robustness Check Using the SVMDI as Alternative Democracy Measure in TWFE Estimations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Democracy	1.375 (3.191)	-2.076 (3.076)	-5.677 (3.669)	-0.260 (3.162)	-2.408 (3.236)	-5.000 (4.200)	0.016 (3.371)	-2.998 (3.360)	-5.839 (4.322)	-6.656 (3.771)	-9.317* (4.392)	-11.027* (5.514)	-4.983 (3.516)	-104.932 (70.302)	-175.655 (110.834)
Democracy first lag										9.283** (4.519)					
Democracy second lag															
Democracy third lag															
Democracy fourth lag															
Poverty first lag	0.882*** (0.026)	0.887*** (0.060)	0.846*** (0.063)	0.863*** (0.026)	0.865*** (0.062)	0.821*** (0.065)	0.860*** (0.026)	0.858*** (0.064)	0.810*** (0.063)	0.859*** (0.026)	0.855*** (0.063)	0.810*** (0.064)	0.992** (0.349)	0.450 (1.027)	0.383 (0.755)
Poverty second lag		0.080 (0.093)	0.010 (0.069)		0.080 (0.092)	0.010 (0.068)		0.092 (0.094)	0.020 (0.068)		0.093 (0.095)	0.021 (0.068)		0.370 (1.774)	0.239 (1.392)
Poverty third lag		-0.038 (0.087)	-0.013 (0.079)		-0.028 (0.087)	-0.004 (0.078)		-0.042 (0.085)	-0.016 (0.074)		-0.043 (0.085)	-0.021 (0.074)		1.252 (1.320)	0.029 (1.341)
Poverty fourth lag		-0.015 (0.052)	0.038 (0.072)		-0.018 (0.052)	0.040 (0.071)		-0.009 (0.054)	0.049 (0.076)		-0.008 (0.054)	0.054 (0.076)		-1.046* (1.157)	0.335 (1.157)
GDP first lag				-0.259*** (0.072)	-0.494** (0.185)	-0.660** (0.213)	-0.272*** (0.074)	-0.525** (0.196)	-0.765** (0.240)	-0.267*** (0.074)	-0.517** (0.195)	-0.771** (0.237)	-0.269 (0.482)	-1.367 (1.536)	-0.377 (1.273)
GDP second lag					-0.037 (0.174)	-0.048 (0.211)		-0.014 (0.195)	-0.034 (0.195)		-0.046 (0.191)	-0.078 (0.267)		3.436 (2.754)	2.754 (2.445)
GDP third lag					0.409* (0.187)	0.673** (0.255)		0.396 (0.204)	0.755** (0.274)		0.394 (0.210)	0.790** (0.279)		-2.334 (2.645)	-3.483 (2.641)
GDP fourth lag					-0.079 (0.158)	-0.305 (0.234)		-0.054 (0.168)	-0.356 (0.253)		-0.011 (0.164)	-0.315 (0.274)		0.246 (1.089)	2.224 (2.549)
Gini first lag							0.056 (0.116)	0.363 (0.432)	0.189 (0.527)	0.061 (0.116)	0.371 (0.431)	0.209 (0.535)	-0.725 (1.158)	-2.064 (3.437)	-2.589 (2.927)
Gini second lag								-0.727 (0.570)	-0.200 (0.657)		-0.729 (0.569)	-0.229 (0.660)		5.523 (6.226)	6.383 (5.096)
Gini third lag								0.713 (0.447)	0.183 (0.602)		0.730 (0.446)	0.221 (0.606)		-2.724 (4.819)	-4.184 (4.412)
Gini fourth lag								-0.361 (0.264)	0.101 (0.478)		-0.366 (0.264)	0.119 (0.477)		-0.651 (2.002)	1.374 (3.907)
Observations	2248	1811	1311	2239	1805	1309	2209	1778	1285	2209	1778	1285	2209	1778	1285
Countries in sample	143	134	105	142	133	104	141	132	103	141	132	103	141	132	103
p-value poverty lags 5 to 8			[0.917]			[0.890]			[0.918]			[0.908]			[0.114]
p-value poverty lags 5 to 8						[0.486]			[0.438]			[0.535]			[0.595]
p-value poverty lags 5 to 8									[0.827]			[0.776]			[0.577]

Note: This table presents the results of the effect of democracy on the poverty headcount ratio. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects. Columns 3, 6, 8, 12 and 15 include 8 lags of poverty as controls but we report only the p-value of a joint significance test for lags 5 to 8 in the lower part of the table. Columns 10-12 include additional interaction terms between democracy and one lag (column 10), 4 lags (column 11) and 8 lags (column 12) of poverty GDP and inequality but coefficients are not shown. Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\* p<0.05, \* p>0.1.

Table A11: Robustness Check Using the SVM DI as Alternative Democracy Measure in GMM Estimations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Democracy	3.270 (3.896)	-0.117 (4.083)	-5.631 (3.808)	0.877 (3.701)	-1.256 (4.031)	-5.908 (4.098)	0.655 (4.044)	-2.339 (4.140)	-5.832 (4.236)	-3.927 (4.000)	-8.577 (4.587)	-10.700* (5.399)	-2.580 (3.990)	-73.418 (72.809)	-165.566 (107.266)
Democracy first lag										6.811 (4.171)	3.860 (3.443)	2.261 (3.983)			
Democracy second lag										11.125 (6.138)	11.125 (7.438)	13.287 (7.438)			
Democracy third lag										-5.036 (5.574)	-5.036 (6.785)	-10.441 (6.785)			
Democracy fourth lag										4.468 (4.036)	4.468 (4.341)	10.185* (4.341)			
Poverty first lag	0.837*** (0.030)	0.821*** (0.060)	0.832*** (0.064)	0.816*** (0.028)	0.805*** (0.061)	0.812*** (0.062)	0.803*** (0.030)	0.797*** (0.063)	0.806*** (0.016)	0.803*** (0.030)	0.788*** (0.065)	0.805*** (0.061)	0.844** (0.272)	0.462 (0.987)	0.321 (0.737)
Poverty second lag											0.098 (0.091)	0.016 (0.066)		0.060 (1.686)	0.245 (1.349)
Poverty third lag											-0.039 (0.081)	-0.030 (0.076)		1.869 (1.258)	0.168 (1.286)
Poverty fourth lag											0.008 (0.051)	0.046 (0.074)		-1.210* (1.258)	0.248 (1.107)
GDP first lag				-0.300** (0.092)	-0.418* (0.172)	-0.726*** (0.215)	-0.330*** (0.097)	-0.449* (0.182)	-0.761** (0.237)	-0.328*** (0.096)	-0.481** (0.184)	-0.724** (0.233)	-0.791 (0.494)	-1.363 (1.269)	-0.359 (1.186)
GDP second lag											-0.035 (0.175)	-0.091 (0.258)		3.077 (2.559)	2.789 (2.342)
GDP third lag											0.358 (0.192)	0.771** (0.271)		-2.122 (2.529)	-3.422 (2.485)
GDP fourth lag											-0.049 (0.155)	-0.303 (0.265)		0.327 (1.143)	1.979 (2.380)
Gini first lag							0.216 (0.152)	0.301 (0.154)	0.156 (0.246)	0.234 (0.153)	0.674 (0.406)	0.170 (0.531)	-1.580 (1.060)	-2.329 (2.935)	-2.849 (2.771)
Gini second lag											-1.052 (0.551)	-0.215 (0.651)		4.650 (5.700)	6.308 (4.827)
Gini third lag											0.741 (0.446)	0.227 (0.603)		-1.400 (4.716)	-3.596 (4.143)
Gini fourth lag											-0.263 (0.282)	0.103 (0.473)		-0.899 (2.229)	1.000 (3.673)
AR2 test p-value															
Observations	0.40	0.40	0.75	0.40	0.43	0.77	0.41	0.44	0.67	0.39	0.43	0.69	0.43	0.33	0.47
Countries in sample	2095	1673	1205	2087	1668	1204	2058	1642	1181	2058	1642	1181	2058	1642	1181
	137	125	101	136	124	101	135	123	100	135	123	100	135	123	100
p-value poverty lags 5 to 8			[0.915]			[0.883]			[0.877]			[0.811]			[0.074]
p-value poverty lags 5 to 8						[0.530]			[0.418]			[0.481]			[0.555]
p-value poverty lags 5 to 8									[0.773]			[0.693]			[0.564]

Note: This table presents the results of the effect of democracy on the poverty headcount ratio. The reported coefficient on democracy is multiplied by 100. In all specifications we control for a full set of country and year fixed effects. Columns 3, 6, 8, 12 and 15 include 8 lags of poverty as controls but we report only the p-value of a joint significance test for lags 5 to 8 in the lower part of the table. Columns 10-12 include additional interaction terms between democracy and one lag (column 10), 4 lags (column 11) and 8 lags (column 12) of poverty GDP and inequality but coefficients are not shown. Standard errors are robust against heteroscedasticity and serial correlation at the country level are reported in parenthesis. \*\*\* p<0.01, \*\*p<0.05, \*p>0.1.

Table A12: Countries in the Baseline Sample

Country			
Albania	Djibouti	Latvia	Russian Federation
Algeria	Dominican Republic	Lesotho	Rwanda
Angola	Ecuador	Liberia	Samoa
Argentina	Egypt, Arab Rep.	Lithuania	Sao Tome and Principe
Armenia	El Salvador	Madagascar	Senegal
Australia	Estonia	Malawi	Serbia
Austria	Eswatini	Malaysia	Seychelles
Azerbaijan	Ethiopia	Maldives	Sierra Leone
Bangladesh	Fiji	Mali	Slovak Republic
Belarus	Gabon	Malta	Slovenia
Belgium	Gambia, The	Mauritania	Solomon Islands
Belize	Georgia	Mauritius	South Africa
Benin	Germany	Mexico	Spain
Bhutan	Ghana	Micronesia, Fed. Sts.	Sri Lanka
Bolivia	Greece	Moldova	St. Lucia
Bosnia and Herzegovina	Guatemala	Mongolia	Sweden
Botswana	Guinea	Montenegro	Tajikistan
Brazil	Guinea-Bissau	Morocco	Tanzania
Bulgaria	Haiti	Mozambique	Thailand
Burkina Faso	Honduras	Namibia	Timor-Leste
Burundi	Hungary	Nepal	Togo
Cabo Verde	Iceland	Netherlands	Tonga
Cameroon	India	Nicaragua	Tunisia
Canada	Indonesia	Niger	Turkey
Central African Rep.	Iran, Islamic Rep.	Nigeria	Uganda
Chad	Iraq	North Macedonia	Ukraine
Chile	Ireland	Norway	United Kingdom
China	Israel	Pakistan	United States
Colombia	Italy	Panama	Uruguay
Comoros	Jamaica	Papua New Guinea	Uzbekistan
Congo, Dem. Rep.	Jordan	Paraguay	Venezuela, RB
Congo, Rep.	Kazakhstan	Peru	Vietnam
Costa Rica	Kenya	Philippines	West Bank and Gaza
Cote d'Ivoire	Korea, Rep.	Poland	Yemen, Rep.
Croatia	Kosovo	Portugal	Zambia
Czech Republic	Kyrgyz Republic	Romania	
Denmark	Lao PDR		

**Note:** The tables shows the countries contained in regression in column 1 of Table 2.

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Friedrich Schiller University Jena

Faculty of Economics and Business Administration

Carl-Zeiss-Str. 3

D-07743 Jena, Germany

Email: [office.jerp@uni-jena.de](mailto:office.jerp@uni-jena.de)

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