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Is democracy an effective tool for reducing poverty, child mortality and child deprivation in low-income countries?

Björn Halleröd

Hans Ekbrand

UNIVERSITY OF GOTHENBURG
DEPT OF POLITICAL SCIENCE

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# Is democracy an effective tool for reducing poverty, child mortality and child deprivation in low-income countries?*

Björn Halleröd & Hans Ekbrand

Department of Sociology and Work Science

University of Gothenburg, Sweden

# Abstract

Is democracy related to lower poverty rates and better living conditions for children in developing countries? Multiple sources have confirmed that living conditions in low- and middle-income countries have improved significantly during the past decade. This development coincides with a period of economic growth and, until recently, a trend towards increasing democratization of many of the world's political systems. In the present paper, we use data from 51 low- and lower-middle-income countries covering the period 1995-2019 to analyse: poverty ($1.90/day), child mortality as well as the degree to which children are malnourished, deprived of immunization, and lack education. The central aim is to test whether democracy contributes to the decrease in poverty and improvement of children's living conditions. We also test whether the impact of democratization is conditional on political ideology, GDP, and corruption, i.e., whether democratization only is beneficial if combined with policies influenced by socialistic ideology, economic growth, or low corruption. Using data on living conditions from the World Bank, Demographic and Health Surveys (DHS), V-Dem project on democratization, and Global Leader Ideology database, we draw the following conclusions: Democratization does contribute to the decrease in poverty, child mortality, malnutrition and lack of immunization among children. However, the impact of democracy is conditioned on previous experience of leftist governments; democracy only improves living conditions in countries with a history of leftist governments. Least beneficial are leftist autocracies. We also conclude that democracy counterbalances the detrimental effects of corruption on children's school attendance.

Keywords: Democracy, poverty, child mortality, malnutrition, immunization, education

# 1  Introduction

Is democracy an efficient tool for lifting people out of poverty and improving living conditions for the poorest children? The World Bank (2020) estimated a decline in the global number of income poor at the $1.90-a-day poverty line from 1.9 billon in 1990 to fewer than 700 million in 2017, which equals a decline from around 37 per cent to about 10 per cent of the global population. Using the Multidimensional Poverty Index (MPI), based on ten indicators covering living conditions within the three domains of education, health, and living standard, Alkire, Roche, and Vaz (2017) confirmed the trend towards declining poverty rates and improved living conditions. The same overall positive development has been confirmed in studies based on the Human Development Index (HDI) and its sub-components (Permanyer & Smits, 2020). This positive development largely coincided with a period during which many countries experienced processes of democratization (Luhrmann, Grahn, Morgan, Pillai, & Lindberg, 2019). The question is: To what, if any, degree can these observed improvements be attributed to the benefits of democratic rule?

We will use panel data covering the period 1995-2019, estimating to what degree democratization correlates with income poverty, child mortality and severe child deprivation. Severe deprivation includes children's lack of access to: food, education, and immunization. We contribute to the existing literature in mainly three ways. First, we use a broad spectrum of outcomes reflecting important aspects of living conditions, thus enabling conclusions as to the consistency of the findings. Second, we concentrate on children's exposure to deprivation and mortality risk. The basic argument for this approach is that children are more vulnerable to and dependent on resources that the national state can enable or provide. Hence, if democracy plays an important role in people's living conditions, this should be visible when using children's circumstances as outcomes. Third, we systematically investigate whether or not the impact of democracy is conditional on leftist ideology, a country's GDP, and the occurrence of political corruption.

Before continuing, we wish to add a disclaimer: There is an obvious risk that the positive developments seen over the past decades will not continue. Since the beginning of the 2010s, democracy has been on the defence, challenged by the growth of autocratic regimes (Maerz, Luhrmann, Hellmeier, Grahn, & Lindberg, 2020; Nazifa Alizada et al., 2021). As it happens, the increase in autocratic regimes coincides with a slowing down of the decrease in global poverty (World_Bank, 2020). We also wish to emphasize that we are currently facing multiple threats that put recent gains in global living conditions at risk, the three most important being: The Covid-19 pandemic and its long-term effects (Angrist et al., 2021; Brewer et al., 2021; Garcia-Prats et al.,

2021; McCoy et al., 2021; UNESCO, 2020; World_Bank, 2020), armed conflicts, not only the Russian war against Ukraine that is putting pressure on the global food supply, but also armed conflicts in countries with a hitherto positive development, for example, Ethiopia (Elgar et al., 2021; World_Bank, 2017), and, last but not least, the consequences of climate change (Hallegatte, 2016; Jafino, Hallegatte, & Rozenberg, 2021; World_Bank, 2017).

## 2   Background

Improvement in children's living conditions and the general fight against poverty are highly dependent on what the domestic state is willing and able to do (Page & Pande, 2018). Democracy, through competition for votes, is assumed to induce politicians to implement policies of direct redistribution or provide public services that leads to economic redistribution, both of which favour the poor (Bellinger, 2019; Gerring, Kingstone, Lange, & Sinha, 2011; Ramos, Flores, & Ross, 2020; Sen, 1981, 1999). A functioning democracy also means broader participation in the political process and that a government's actions are scrutinized by the opposition, both within the political system, e.g., parliamentarian debates and procedures, and in the public debate (Noble, 2019). The close relationship between democracy and freedom of speech and the press also means that a democratic government, compared to non-democratic governments, has better access to information about people's living conditions and other important economic as well as non-economic conditions (Gao & Zang, 2021; Knutsen, 2021; Ramos et al., 2020). Hence, even though a non-democratic government is ideologically committed to taking action against poverty, it might be less able to do so if there is an information deficit. However, results concerning the impact of democracy on poverty reduction and improved living conditions for the poor are far from conclusive.

### 2.1   Poverty

Recent studies (Gao & Zang, 2021; Ha & Cain, 2017) have shown a positive correlation between democracy and poverty reduction. Gao and Zang (2021, p. 18) additionally concluded that democracy reduces poverty by entitling residents with more political rights and freedom of speech, cultivating a larger middle class, and sustaining more stable politics. Partly in the same vein, Saha (2011), analysing multidimensional poverty in Sub-Saharan Africa (SSA), found that competitive parliamentarism is an important factor for pro-poverty growth, i.e., economic growth that also

benefits the poor. Analysing the poverty gap[1] in 104 low-and middle-income countries during the period 1981-2005, Ha and Cain (2017) found that democracy itself did not have any impact on the poverty gap, while the combination of democracy and left-leaning governments significantly decreased the poverty gap. The result also showed that undemocratic regimes that ideologically adhered to the political left were associated with an increase in the poverty gap. Fambeu (2021), in contrast, found that democracy was linked to an increase in poverty, defined as income below the $1.90/day threshold, in non-oil producing SSA countries during the period 2005-2016, while there was no effect in oil-producing countries.

But it is not only the case that different studies come to different conclusions regarding the effect of democracy on poverty, even the direction of causality is questioned. Wietzke (2019) found support for the hypothesis that poverty reduction leads to democratization; as people are lifted out of poverty, they demand democracy. That, in turn, leads to the question of whether democratization leads to enhanced economic growth or whether it is the other way around, that is, that economic growth creates the preconditions for democratization. The issue has been widely researched, and the results are again inconclusive. However, some more recent results point to the former relationship, i.e., that, in a longer perspective, democracy is good for economic growth (Knutsen, 2021; Papaioannou & Siourounis, 2008). The concern of the present paper is not to try to settle the democracy-growth causality issue. It is, however, important to establish whether there is an interaction between economic growth and democratization that, in turn, affects poverty and children's living conditions.

## 2.2 Child mortality

The vast country differences in child mortality reflect the fact that child mortality is most often caused by illnesses that are easy to prevent once the necessary resources, basic health care, immunization, clean water and sanitation are available and efficiently allocated. The fact that child mortality is preventable also means that political measures should be an effective tool for reducing child mortality, and, for the reasons outlined above, we expect that democracies are more motivated to take the necessary decisions (Paulson et al., 2021; Ramos et al., 2020; Wigley & Akkoyunlu-Wigley, 2017).

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[1] Based on the World Bank's $1.90 income poverty line, the poverty gap is estimated as the total shortfall in income between all poor people and the poverty line divided by the size of the nation's population. Hence, on the country level, the poverty gap depends on both the extent and depth of income poverty.

Several relatively recent studies have shown that, in the longer term, democracies outperform autocracies in reducing child mortality, while findings on the short-term effects of democracy are less conclusive (M. Barnish, Tornes, & Nelson-Horne, 2018; Bellinger, 2019; Gerring, Thacker, & Alfaro, 2012; McGuire, 2013; Mejia, 2022; Noble, 2019; Ramos et al., 2020; Welander, Lyttkens, & Nilsson, 2015; Wigley & Akkoyunlu-Wigley, 2017), reflecting the fact that transitions from autocracy to democracy are often associated with social and economic turmoil (Knutsen, 2021).

However, the long-term effects also vary across countries, and although in many cases democratization seems to decrease child mortality, there are a substantial number of countries for which the impact is close to zero and a few where the transition to democracy is associated with a long-term increase in child mortality (Ramos et al., 2020). Regional differences and corruption (Ramos et al., 2020), intra-state ethnic and linguistic fractionalization (Powell-Jackson, Basu, Balabanova, McKee, & Stuckler, 2011), and the conceptualization and measurement of democracy (Gerring et al., 2021) are pointed out as possible explanations for country differences and as causes of reverse effects, i.e., that, in some cases, democratization is associated with an increase in child mortality. There are indications that political ideology is a factor of importance and that a country having a history of left-of-centre political governments is associated with low child mortality (M. Barnish et al., 2018; M. S. Barnish et al., 2021; Moon & Dixon, 1985). Regarding child mortality, Ha and Cain (2017) could also confirm an interaction between ideology and democracy, i.e., that democracies with a leftist government performed best.

## 2.3 Child deprivation

A systematic set of indictors of severe child deprivation based on survey data was first developed for the first global estimates of child poverty (Gordon, Nandy, Pantazis, Pemberton, & Townsend, 2003) and is increasingly used in analysis of children's living conditions (Daoud & Nandy, 2019; Deeming & Gubhaju, 2015; Ekbrand & Halleröd, 2018; Halleröd, Rothstein, Adel, & Nandy, 2013; Musiwa, 2019, 2021; Qi & Wu, 2014). However, systematic cross-country analyses focusing on countries' institutional differences in relation to child deprivation are much less common than analyses of poverty and child mortality (M. Barnish et al., 2018). In a comparative cross-sectional multilevel analysis of seven indicators of severe child deprivation in 68 low- and middle-income countries, Halleröd et al. (2013) concluded that, after controlling for quality of government, democracy did not correlate with any of the indicators. They also could not detect any interactions between democracy and quality of government. These results were confirmed by Burroway (2016), who analysed the occurrence of child diarrhoea and child malnutrition as outcomes using DHS data. The strength of these studies is that they combine individual-level survey data from large

programmes, such as DHS and MICS, with country-level data. The weakness is that they are based on cross-sectional data, comparing data between countries, and do not analyse within-country developments.

## 2.4 Why democracies might fail in improving children's living conditions

In any given democracy, the median voter typically has an income that is clearly below that of the rich, but that does not automatically mean that the majority of voters are poor. In countries where a fairly well-off middle class has developed, the median voter tends to have an income well above a very strict poverty line such as the $1.90/day measure. Democracy is, in these cases, transferring power to the middle class, and the middle class is not necessarily interested in tax-financed programmes that target the poor (Ross, 2006). This is well known from comparative welfare studies of the richest countries (Esping-Andersen, 1991; Korpi & Palme, 1998). Thus, the voice of the people does not inevitably make democracies better than autocracies in improving living conditions for the poor (Ross, 2006; Wigley & Akkoyunlu-Wigley, 2017). A government's willingness to improve conditions for the poor could also be affected by ideological standpoints (M. Barnish et al., 2018; M. S. Barnish et al., 2021; Fambeu, 2021; Ha & Cain, 2017; Moon & Dixon, 1985). As discussed above, shifts from autocracy to democracy often are accompanied by political, social and economic turmoil. We can therefore expect that the impact of democracy will be long-term. In addition, we can expect that the functioning of a democratic government will depend on the country's democratic history, i.e., the accumulated institutional memory of democracy (Edgell, Wilson, Boese, & Grahn, 2020; Gerring, Bond, Barndt, & Moreno, 2005; Persson & Tabellini, 2009).

But even if a democratic state takes decisions aimed at improving living conditions, it is far from given that the state has the capacity to actually implement the chosen policies (Banerjee & Duflo, 2011; Dellepiane-Avellaneda, 2010; Rothstein, 2011). Aspects such as rule of law, property rights, political stability, and lack of corruption are considered to be prerequisites of robust economic growth and hence pivotal in generating the resources necessary to improve living conditions (Dellepiane-Avellaneda, 2010; Leftwich & Sen, 2011; Voigt, 2012). Several studies have shown that quality of government variables are positively correlated with both economic growth and standard measures of human well-being (Dellepiane-Avellaneda, 2010; Halleröd et al., 2013; Przeworski, Alvarez, Cheibub, & Limongi, 2000; Rothstein, 2011; Sen, 2011). The conclusion to be drawn here is that even though democracy can be seen as a good thing in its own right, poverty will not be eradicated and children's living conditions will not be improved if the wider system of

governance is incapable of implementing policies in a trustworthy, predictable and impartial manner (Rothstein, 2011).

## 3 Hypotheses, data, and analytic strategy

Given the discussion above, we have formulated several hypotheses to guide our empirical analyses:

1. Democracy has a negative impact on (i.e., decreases) poverty, child mortality, and child deprivation.
2. The negative impact of democracy on poverty, child mortality, and child deprivation is conditional on the government's ideological beliefs.
   a. Democracy has a more beneficial impact if the current government adheres to a leftist ideology.
   b. Democracy has a more beneficial impact if a country has an extensive history of governments that adhered to a leftist ideology.
3. The negative impact of democracy on poverty, child mortality and child deprivation is conditional on the degree of political corruption. A high degree of corruption counterbalances the impact of democracy.
4. The negative impact of democratization on poverty, child mortality and child deprivation is conditional on GDP/per capita.
   a. The impact of democratization on poverty, child mortality, and child deprivation becomes increasingly negative as GDP/per capita increases, i.e., democracy mainly helps improve living conditions for poor people living in relatively rich countries.
   b. The impact of democratization on poverty, child mortality, and child deprivation becomes less negative as GDP/per capita increases, i.e., democracy mainly helps improve living conditions for poor people living in the poorest countries.

Hypothesis 4a builds on the assumption that democracy generally improves conditions for the poor as more resources are available, while 4b aligns with the idea that a growing middle class takes the focus away from the poor.

### 3.1 Dependent variables

We have chosen five, see Table 1, different outcome variables used in numerous of studies. In theory, these variables ought to be highly correlated with each other. The first measure is the World

Bank's estimation of **poverty**, that is, the per cent of the population that falls under the 1.90/day poverty line. The data cover all countries in our sample, but are not compiled for every year. We used the available data to estimate country-specific poverty time trends for the period 1995-2019. Imputation of missing data for $1.9 per year was accomplished using logistic random effects regression modelling, which fitted the existing data to a model with a fixed parameter for year and two random slope terms, one for the effect of year per country, and the other one for year per region, where region was defined as in the UN M49 standard division of countries into regions.[2] Predictions based on the resulting model were used instead of the original data points. The differences between predictions and observed values were small. We believe that the predicted values are at least as useful as the observed values, because the observed values have measurement errors, while the predicted values are based on both several measurements from both the country and countries in the same region (both at other points in time, and at the same point in time).

Income poverty is an indirect measure of poverty. It indicates whether people have the economic means to escape what Rowntree (1902, p. 115) called "obvious want and squalor". Our four remaining indicators – child mortality, and child malnutrition, lack of immunization, and lack of education – are direct indicators of poor living conditions (Halleröd, 1995). We do expect strong consistency between these indicators and income poverty. If that is the case, we can conclude that our indicators are measuring substantially similar phenomena, which in turn are affected by similar policy actions. Lack of consistency would cast serious doubt on the notion that income poverty is

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[2] Detailed description of the imputation procedure:

$$Ysi = \beta0 + S0s + (\beta1 + S1s)Xi + esi$$

$$(S_{0s}, S_{1s}) \sim N(0, \begin{matrix} \tau_{00}{}^2 & \rho\tau_{00}\tau_{11} \\ \rho\tau_{00}\tau_{11} & \tau_{11}{}^2 \end{matrix})$$

$$esi \sim N(0, \sigma^2)$$

β0 is the fixed intercept; $S0s$ is the random intercept for country $s$; β1 is the fixed slope; $S1s$ is the random slope for country $s$; $esi$ is the error term for country s, at measurement number $i$. $S0s$ and $S1s$ are drawn from a bivariate normal distribution with mean 0, where $\tau_{00}{}^2$ is the variance for $S_{0s}$ and $\tau_{11}{}^2$ is the variance for $S1s$ and their covariance is $(\rho\tau_{00}\tau_{11})^2$. The error term is assumed to have a normal distribution around zero with the variance $\sigma^2$.

a valid and meaningful measure of people's living conditions as well as the rational to validate anti-poverty policies on the basis of reduced income poverty, child mortality, or other single indicators.

**Table 1. Descriptive data**

| | Dependent variables | | | | |
|---|---|---|---|---|---|
| | Mean 1996 - 2019 | Std | Min | Max | Skewness |
| Poverty ($1.90/day) | 35.9 | 25.9 | 0.1 | 98.8 | 0.24 |
| Under five child mortality | 86.5 | 51.2 | 9.4 | 278.5 | 0.74 |
| Deprived of food | 17.9 | 9.7 | 1.1 | 60.2 | 0.60 |
| Deprived of education | 11.6 | 15.2 | 0.1 | 70.0 | 1.79 |
| Ln Dep. of education | 1.9 | 1.11 | 0.1 | 4.3 | 0.39 |
| Deprived of immunization | 9.5 | 9.1 | 0.1 | 71.5 | 2.69 |
| Ln Dep of immunization | 2.8 | 0.74 | 0.05 | 4.9 | 0.07 |
| | | | | | |
| | Independent variables | | | | |
| Democracy | 0 | 1.62 | -3.28 | 3.36 | |
| Ln GDP/pc | 0 | 0.84 | -1.89 | 2.07 | |
| Leftist government | 0.47 | 0.50 | 0.0 | 1.0 | |
| Left stock | 0 | 4.60 | -5.90 | 7.10 | |
| Corruption | 0 | 1.85 | -5.08 | 2.66 | |
| | | | | | |
| Number of countries | 51 | | | | |
| Number of observations | 1,275 | | | | |

**Child mortality:** We use annual data from the World Bank for the under-five mortality rate are calculated as the probability per 1,000 that a new-born baby will die before reaching the age of five. Child mortality is commonly used and described as a high-quality indicator of living conditions in low-income countries (e.g., Ramos et al., 2020; Ross, 2006). However, compiling data with global coverage is far from simple. Most countries, predominately poorer countries, lack fully functional vital registration systems, and survey data are often used to estimate child mortality. Moreover, because surveys are not conducted annually, estimations are used to fill in data for missing years (UNICEF, 2022).

Our child deprivation measures are derived from the Demographic and Health Surveys (DHS) (which is one of the sources used to estimate child mortality). We use all available waves collected between 1995 and 2019. Typically, data are collected every fifth year, but both the number of data collections and, hence, the interval between data collections vary across countries.

As is the case for our poverty measure, we estimated country-specific time trends and used the derived estimates to impute annual data. See footnote 2 above for a description.

**Child malnutrition:** Children five years or younger whose heights and weights for their age were more than 3 standard deviations below the median of the international reference, that is, children suffering from severe anthropometric failure.

**Deprived of education:** Children 7-17 years old who had never been to school and were not currently attending school, i.e., no professional education of any kind. As can be seen in Table 1, the distribution of this measure is highly skewed (1.79); we will therefore use the natural logarithm of the original scale (skewness 0.39)

**Deprived of Immunization:** Children five years or younger who had not been immunized against diseases. Also in this case, the distribution is highly skewed (2.69), and we will again use the natural logarithm of the original scale (skewness 0.07)

The three deprivation measures we use are included in the so-called Bristol approach, which means that we use measures that have been adopted by UNICEF and used in its Global Study on Child Poverty and Disparities in over 50 countries since 2008 (Gordon & Nandy, 2012; Gordon, Nandy, Pantazis, & Pemberton, 2010) and are included in the UN Expert Group on Poverty Statistics' Compendium of Best Practice in Poverty Measurement (Rio Group, 2006). The Bristol approach includes seven measures of child deprivation; we have included the measures that are based on individual observation. The remaining four are household measures: if the child's household lacks sanitation and access to safe water, if the child lives in a crowded home, and if the household lacks sources of information.

## 3.2   Independent variables

**Democracy**: We use the Varieties of Democracy (V-Dem)(Coppedge et al., 2021a; Coppedge et al., 2021b; Pemstein et al., 2021) measure v2x_polyarchy as an indicator of democratization. V2x_polyarchy aims to measure to what extent the ideal of electoral democracy is achieved, capturing Dahl's (1971) seven institutions of polyarchy: freedom of association, suffrage, clean elections, elected executive, freedom of expression and alternative sources of information (Coppedge et al., 2021b). A high value indicates that the democratic core value of making rulers responsive to citizens is achieved through electoral competition for the electorate's approval under circumstances when suffrage is extensive as well as that there is freedom of expression and an independent media capable of presenting alternative views on matters of political relevance.

**Leftist government**: We use data from The Global Leader Ideology (https://www.bastianherre.com/data) to distinguish between heads of government with a leftist,

centrist, rightist, or no economic ideology. Leftist ideology implies the belief that the state should intervene in the economy to increase social equality, rightist economic ideology emphasizes non-intervention and individual freedom, while centrist ideology falls in between these positions (Herre, Forthcoming). Relating to previous research, we focus on whether or not heads of government, and presumably government policies, are classified as leftist. For the sake of simplicity, we will refer to "left or leftist government" in the text. Because of policy path dependency, we assume that the leftist impact on poverty and children's living conditions is not only dependent on the current government's economic ideology, but also on past experiences. We therefore complement the original measure with a construct that is based on the number of years with a leftist head of government. We call this measure **left stock**. For each observation year, we count the weighted number of years with a leftist head of government during the past 25 years $t_{-2}$. Taking 2019 as an example, we add up the number of years a country had a leftist government during the period 1993-2017. A leftist government in 1993 is given the weight 0.04 and the weight is thereafter increased by 0.04 each year, which means that a leftist government in 2017 is weighted as 1. Since our other independent variables are lagged by one year, leftist government captures the ideology of the government at $t_{-1}$, while left stock captures leftist track record during $t_{-2} - t_{-27}$.

**Corruption**: Our indicator of pervasiveness of political corruption, 2vx_corr, is also from the V-Dem project and summarizes six distinct types of corruption, covering corruption within the executive, legislative, and judicial domains (Coppedge et al., 2021b, pp. 296 - 297).

**GDP/pc**: For Gross Domestic Product per capita, we use the natural logarithm of data provided by the Madison project (Bolt & Van Zanden, 2020).

For all independent variables, except left stock, data will be lagged by one year. V-Dem's democracy and corruption measures are originally measured on a 0-1 scale. We have inflated the original scale by a factor of 10 to ensure that all independent variables have scales that fall within the same broader realm. To facilitate interpretations of interaction effects, all independent variables, except the dummy for leftist government, are centred to their means, i.e., the means are set to zero.

It has been argued that a measure of a country's historical experience of democracy is a better indicator than current democratic status when analysing outcomes like child mortality and other indicators of living conditions (Bellinger, 2019; Gerring et al., 2021; Gerring et al., 2012). The argument behind this is that reforms initiated by democratic regimes have long-standing effects, plus the fact that well-established democracies, compared with newly established ones, function in a less disruptive manner, both concerning decision-making and transfer of power. Within the V-Dem project, a measure of democratic stock has been developed (Edgell et al., 2020).

However, among the countries included here (see below), the correlation between our democracy measure and the measure of democratic stock is very high (Pearson's 0.80). Hence, both measures are to a high degree measuring the same phenomenon, and therefore we abstain from including democratic stock in the analyses.

## 3.3   Countries

We restrict our data to the 51 countries, listed in Table 2, that are covered by the DHS surveys and for which we have data on all independent as well as dependent variables. Hence, the selection of countries will be identical in all analyses. Comparing our sample with The World Bank's classification of countries into low-, lower-middle, upper-middle, and high-income countries, we can conclude that all our countries, except Gabon, in the late 1980s – early 1990s were classified as low-income or lower-middle-/middle-income countries. Gabon was classified as an upper-middle-income country.  The majority, 32 of 51 countries, are located in SSA, 7 are found in South America or the Caribbean, 4 in Asia around the Indian sub-continent, 3 in the MENA region, and 3 are previous Soviet republics. In addition, Albania and Turkey are also included in the sample. The basic country mean statistics for the whole period 1995-2019 are presented in Table 2.

**Table 2. Included countries, mean values 1995-2019 for dependent and independent variables, and LMIC- classification in the early 1990s.**

| Country | Poverty | Child mortality | Malnutrition | Immunization | Education | Democracy | Left gov. | Left stock | Corruption | GDP/pc | LMIC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Albania | 1.0 | 18.7 | 21.5 | 13.0 | 0.6 | 4.9 | 0.6 | 2.1 | 0.6 | 8.8 | ML |
| Armenia | 6.5 | 23.0 | 9.6 | 6.9 | 0.2 | 3.9 | 0.0 | -5.9 | 0.8 | 8.9 | ML |
| Bangladesh | 23.6 | 63.2 | 20.5 | 5.9 | 5.3 | 4.2 | 0.6 | -1.4 | 1.5 | 7.6 | L |
| Benin | 51.7 | 120.0 | 28.8 | 9.9 | 19.0 | 6.5 | 0.4 | 1.9 | -1.1 | 7.6 | L |
| Bolivia | 13.7 | 54.3 | 8.4 | 5.5 | 0.6 | 7.1 | 0.5 | -0.8 | 0.0 | 8.5 | ML |
| Burkina Faso | 57.4 | 141.2 | 23.7 | 7.2 | 42.8 | 5.6 | 1.0 | 6.5 | -2.7 | 7.2 | L |
| Burundi | 77.1 | 112.9 | 21.6 | 1.8 | 8.0 | 2.5 | 0.9 | 4.1 | 0.3 | 6.6 | L |
| Cameroon | 31.1 | 117.5 | 15.8 | 7.3 | 3.0 | 3.2 | 0.0 | -5.9 | 2.3 | 7.7 | ML |
| Chad | 49.1 | 159.0 | 31.0 | 38.1 | 36.1 | 2.7 | 0.8 | 4.8 | 2.6 | 7.1 | L |
| Colombia | 10.0 | 20.6 | 3.8 | 3.3 | 1.6 | 5.9 | 0.0 | -5.9 | -2.1 | 9.2 | ML |
| Comoros | 16.4 | 88.3 | 19.8 | 12.6 | 9.0 | 4.6 | 0.7 | -0.2 | 0.4 | 7.2 | L |
| D.R. Congo | 83.5 | 129.2 | 28.2 | 16.9 | 11.0 | 2.5 | 0.9 | 1.9 | 2.4 | 6.4 | L |
| Dom. Rep. | 3.8 | 36.5 | 3.5 | 6.7 | 1.1 | 5.9 | 0.0 | -4.6 | 1.3 | 9.1 | ML |
| Egypt | 3.6 | 35.9 | 14.1 | 1.8 | 2.3 | 2.1 | 0.8 | 6.5 | 1.1 | 9.0 | ML |
| Ethiopia | 41.9 | 102.7 | 26.8 | 20.0 | 28.6 | 2.4 | 1.0 | 7.0 | -1.4 | 6.9 | L |
| Gabon | 7.9 | 67.9 | 11.7 | 9.4 | 1.8 | 3.6 | 0.0 | -5.9 | 1.6 | 9.5 | UM |
| Ghana | 21.5 | 78.4 | 11.7 | 5.3 | 6.3 | 6.8 | 0.6 | 3.5 | -0.5 | 7.9 | L |
| Guatemala | 10.2 | 40.9 | 18.4 | 7.3 | 4.3 | 5.5 | 0.2 | -4.7 | 0.7 | 8.7 | ML |
| Guinea | 50.2 | 136.2 | 19.6 | 16.2 | 38.0 | 3.1 | 0.0 | -4.8 | 1.9 | 7.1 | L |
| Haiti | 26.6 | 93.3 | 10.6 | 13.1 | 12.6 | 4.1 | 0.6 | 0.2 | 1.5 | 7.3 | L |
| Honduras | 20.8 | 29.2 | 10.5 | 3.7 | 2.8 | 5.0 | 0.3 | -0.7 | 1.4 | 8.3 | ML |
| India | 32.6 | 69.2 | 33.3 | 13.2 | 6.0 | 7.0 | 0.4 | 0.7 | -2.9 | 8.2 | L |
| Ivory Coast | 28.0 | 117.5 | 12.0 | 10.0 | 23.9 | 4.2 | 0.2 | -4.2 | -0.9 | 7.8 | ML |
| Jordan | 0.5 | 22.5 | 12.1 | 5.4 | 0.4 | 2.4 | 0.0 | -5.9 | -2.2 | 9.2 | ML |
| Kenya | 37.6 | 73.3 | 13.8 | 6.0 | 3.7 | 4.2 | 0.2 | -4.5 | 0.7 | 7.7 | L |
| Kyrgyzstan | 18.3 | 37.0 | 8.1 | 1.3 | 0.3 | 3.5 | 0.5 | -0.4 | 1.7 | 8.2 | ML |
| Lesotho | 43.2 | 100.8 | 18.1 | 4.7 | 2.0 | 5.1 | 1.0 | 2.9 | -1.9 | 7.7 | L |
| Liberia | 66.6 | 137.4 | 13.1 | 6.6 | 39.6 | 4.6 | 0.2 | -0.7 | 1.5 | 6.7 | L |
| Madagascar | 74.0 | 83.1 | 27.6 | 14.9 | 7.1 | 4.5 | 0.3 | 1.3 | 1.2 | 7.2 | L |
| Malawi | 68.9 | 111.8 | 25.2 | 5.1 | 2.7 | 5.0 | 0.0 | -1.2 | -0.6 | 6.9 | L |
| Mali | 50.8 | 149.1 | 24.3 | 17.9 | 44.6 | 5.5 | 0.7 | 0.8 | 1.3 | 7.2 | L |
| Morocco | 3.1 | 38.2 | 13.1 | 5.3 | 5.4 | 2.6 | 0.3 | -2.7 | -1.3 | 8.7 | ML |
| Mozambique | 71.5 | 129.7 | 22.5 | 11.3 | 6.9 | 4.6 | 1.0 | 7.1 | -1.9 | 7.0 | L |
| Namibia | 27.5 | 60.7 | 12.5 | 3.5 | 3.1 | 6.6 | 1.0 | 7.1 | -5.1 | 8.9 | ML |
| Nepal | 31.9 | 59.8 | 21.9 | 5.8 | 6.1 | 4.2 | 0.4 | -3.7 | 0.8 | 7.6 | L |
| Nicaragua | 11.2 | 29.8 | 7.7 | 10.6 | 9.5 | 5.2 | 0.5 | -1.1 | 0.7 | 8.2 | ML |
| Niger | 62.8 | 161.1 | 25.3 | 18.0 | 47.8 | 5.2 | 0.3 | -4.3 | -0.7 | 6.7 | L |
| Nigeria | 52.3 | 154.0 | 26.4 | 20.5 | 9.5 | 4.2 | 0.3 | -4.3 | 2.1 | 8.1 | L |
| Pakistan | 15.7 | 93.4 | 36.1 | 9.0 | 16.3 | 3.9 | 0.3 | -1.6 | 1.2 | 8.3 | L |
| R. Congo | 49.9 | 80.0 | 16.4 | 6.1 | 2.7 | 2.7 | 1.0 | 5.7 | 1.2 | 8.5 | ML |
| Rwanda | 67.1 | 109.6 | 21.4 | 3.9 | 6.4 | 1.7 | 0.2 | -0.3 | -1.2 | 7.1 | L |
| Senegal | 40.8 | 88.3 | 13.1 | 7.1 | 30.3 | 6.8 | 0.3 | 2.3 | -3.4 | 7.7 | ML |
| Sierra Leone | 63.6 | 181.7 | 24.1 | 24.9 | 25.6 | 4.3 | 0.9 | 5.1 | 0.9 | 7.2 | L |
| Tajikistan | 20.8 | 59.8 | 11.0 | 1.4 | 1.1 | 2.1 | 1.0 | 7.0 | 2.0 | 7.8 | ML |
| Tanzania | 61.6 | 92.8 | 17.5 | 4.2 | 6.1 | 4.8 | 1.0 | 7.1 | -1.6 | 7.4 | L |
| The Gambia | 37.0 | 87.5 | 28.7 | 5.2 | 33.7 | 2.7 | 0.0 | -1.2 | -1.2 | 7.4 | L |
| Togo | 56.3 | 97.8 | 13.2 | 7.8 | 6.7 | 3.8 | 0.6 | 3.9 | 1.1 | 7.1 | L |
| Turkey | 1.5 | 26.3 | 5.0 | 6.8 | 0.9 | 5.0 | 0.1 | -4.4 | -1.8 | 9.6 | ML |
| Uganda | 50.9 | 100.7 | 16.2 | 8.8 | 2.0 | 3.2 | 0.0 | -4.7 | 0.8 | 7.3 | L |
| Zambia | 57.9 | 106.7 | 20.1 | 10.0 | 3.8 | 4.9 | 0.3 | -1.6 | -3.3 | 7.7 | L |
| Zimbabwe | 17.9 | 82.7 | 14.6 | 19.4 | 0.9 | 2.8 | 1.0 | 6.6 | 0.3 | 7.5 | ML |

## 3.4 Method and analytical point of departure

Figure 1 shows the overall development for the period 1995-2019 of our dependent (left graph) and independent (right graph) variables in our 51 countries. We clearly see the long-term trend towards decreasing poverty, child mortality[3] and child deprivation. We also see that this trend initially coincides with a democratization process that started in the 1990s and continued for almost 15 years, levelling off, until approximately 2015 when the trend started to reverse. It also coincides with a long period of economic growth that started in the mid-1990s and continued throughout the observed period. The development of corruption seems less correlated with time, starting with an increase, a plateau and ending with a decrease. The overall trend for leftist governments hovers around 50 per cent, while the measure for left stock is u-shaped.

**Figure 1. Development over time for: dependent variables (poverty, child mortality, food-malnutrition, education, and immunization deprivation) and independent variables (democracy, GDP/pc, socialist government, and corruption)**



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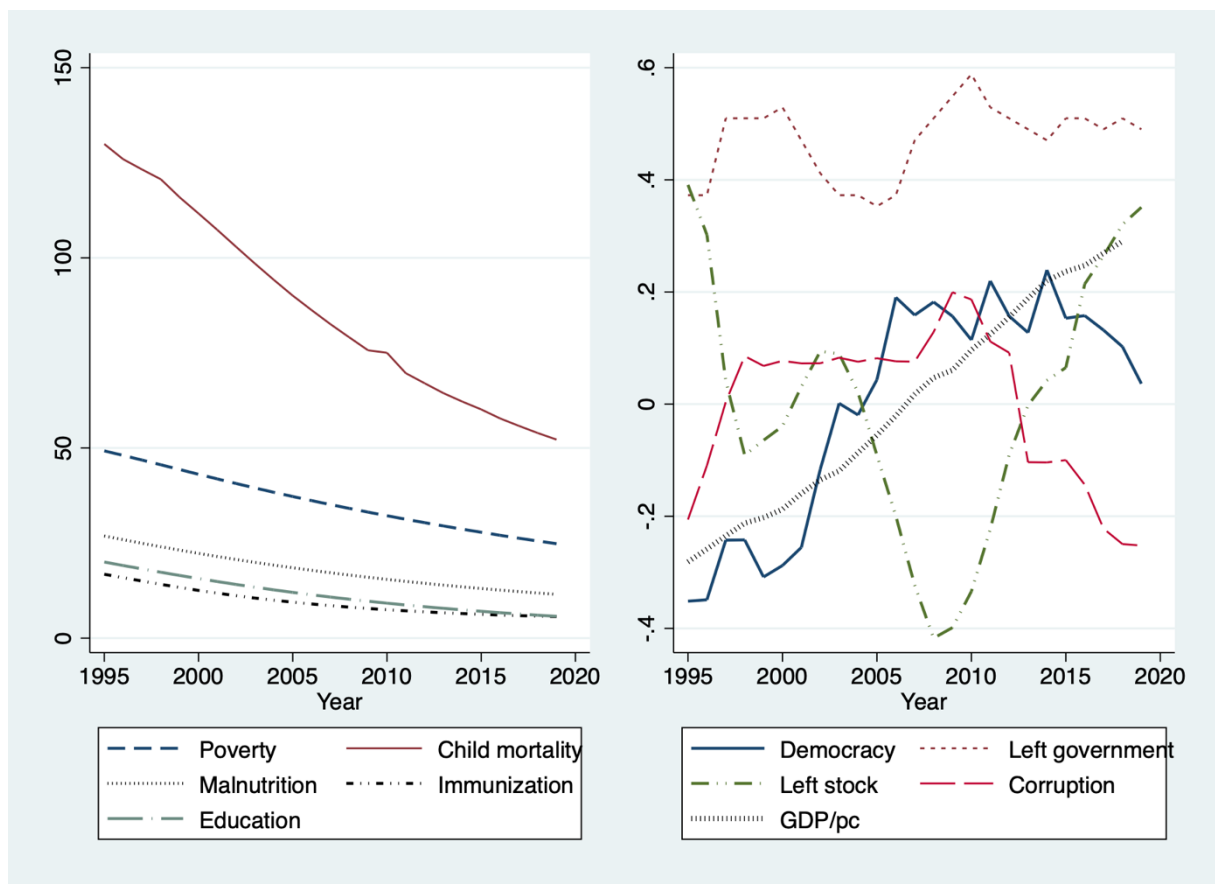
[3] The bump in the curve is caused by the Haitian earthquake in 2010.

We use STATA 17 and the xtreg function complemented with OLS regression[4] to obtain within-country OLS estimates. To determine the preferred model for analysing the data, we conducted Hausman tests for each one of the dependent variables based on a model that included all independent variables. In all tests, the null hypotheses were rejected, and therefore we will, in all regression analyses, use a fixed-effect model controlling for unobserved between-country heterogeneity so as to avoid inconsistent estimates.

It is possible that the time trends shown in Figure 1, left graph, are driven to a certain degree by a exogenous and general development, i.e., not by country-specific changes such as development of technologies, demographic patterns, health care practices, and in a broader sense knowledge. If time trend is left out of the equation, there is a risk of inflated estimates. To check the impact of time trend, we ran a series of regression analyses that compared bivariate fixed-effect estimates for all dependent and independent variables with estimates that also included the time trend (year as dummies). For democracy and, even more so, GDP/pc, the estimates decrease substantially when time is added to the equation. For left government, left stock, and corruption, the impact of time trend is, as expected, less clear. Based on these results, we have decided to include year dummies in the equations. Hence, our initial model is a fixed-effect model accounting for unobserved differences between countries and year dummies to control for the general time trend. All in all, this means that the estimates we obtain will be conservative.

Our dependent variables all capture more or less extreme human conditions: extremely low income, children not surviving and what is described as severe child deprivation. Given that, the linear assumption can be questioned. For GDP/pc, we already made a non-linear assumption when using the logarithm of the actual GDP/pc value. We therefore tested the logarithmic function for the other variables and in addition to that a quadratic function for all independent variables. Comparing BIC value for the different models, t-test and confidence interval for each variable, we concluded that the linear function was preferable for all independent variables except GDP/pc, for which a quadratic function, in addition to the logarithmic function, was selected. In Table 3, row 1 and 2, BIC, and within $R^2$ are compared between models with and without the quadratic function of GDP/pc. Given these tests, our basic model includes the quadratic function of GDP/pc and is specified in the following manner:

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[4] OLS regression is used to obtain predictions that include country-specific fixed effects, replacing FE (see equations below) with dummy estimates for countries.

$$Y_{it} = \beta_0 + \beta_1 Demo_{it-1} + \beta_2 Leftgov_{it-1} + \beta_3 Leftstock_{it-2-27} + \beta_4 Corrupt_{it-1} + \beta_5 GDP/pc_{it-1}$$
$$+ \beta_6 GDP/pc^2_{it-1} + i.Year + FE + u_{it}$$

Where $i$ is the country, $t$ time measured as years 1995-2019, $\beta$ the estimated vectors, *i.Year* dummies for year 1995-2019, *FE* the fixed country effects, and $u_{it}$ the error term. In our hypothesis, we expect that there are interactions between democracy and the other independent variables. We therefore ran separate models for all pairwise interactions that included democracy and selected a preferred model for each of the outcome variables. We compared BIC, the within-country $R^2$ value, and t-test looking for the most parsimonious model that best represented the data. We sat up strict criteria for inclusion of interactions, promoting robust models and estimates with narrow confidence intervals. Interactions are included only if the t-test was below 0.0001, BIC lower than the basic model and if $R^2$ values were improved. Row 3 in Table 3 shows results for a model without the quadratic function of GDP/pc, but with an interaction between democracy and GDP/pc. Although these models perform worse compared with the base model (row 2), in three out of five models the interaction is significant. However, once we include the quadratic function of GDP/pc, none of these interactions fulfil our criteria for inclusion, and we conclude that the initial interaction between democracy and GDP/pc was spurious and caused by a misspecification of GDP/pc.

What we do see is that for poverty, child mortality, malnutrition and lack of immunization, the impact of democracy is conditional on the country's accumulated stock of left government. Given this, the models in our analyses include an interaction between democracy and left stock and are, hence, specified as follows:

$Poverty \mid Child\ mortality \mid Malnutrition \mid Immunization_{it}$
$$= \beta_0 + \beta_1 Demo_{it-1} + \beta_2 Leftgov_{it-1} + \beta_3 Leftstock_{it-1} + \beta_4 Demo_{it-1}\ x\ Leftstock_{it-2}$$
$$+ \beta_5 Corrupt_{it-1} + \beta_6 GDP/pc_{it-1} + \beta_7 GDP/pc^2_{it-1} + i.Year + FE + u_{it}$$

For education, the interaction for democracy and left stock did not meet our criteria, while the interaction for democracy and corruption did, which gives the following model:

$Education_{it} = \beta_0 + \beta_1 Demo_{it-1} + \beta_2 Leftgov_{it-1} + \beta_3 Leftstock_{it-2-27} + +\beta_4 Corrupt_{it-1}$
$$+ \beta_5 Demo\ x\ Corrupt_{it-1}\ x\ Leftstock_{it-2-27} + \beta_6 GDP/pc_{it-1} + \beta_7 GDP/pc^2_{it-1} + i.Year$$
$$+ FE + u_{it}$$

| Row | | Interactions | Poverty | | Child mortality | | Malnutrition | | Immunization | | Education | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | BIC | $R^2$ | BIC | $R^2$ | BIC | $R^2$ | BIC | $R^2$ | BIC | $R^2$ |
| 1 | | None | 9196 | 0.48 | 9864 | 0.75 | 6452 | 0.66 | 971 | 0.43 | 151 | 0.66 |
| 2 | GDP/pc² | None | 7999 | 0.56 | 9398 | 0.83 | 6448 | 0.66 | 935 | 0.45 | -42 | 0.71 |
| 3 | | Demo x GDP/pc | 8129 | 0.51* | 9776 | 0.77* | 6457 | 066 | 977 | 0.43 | 133 | 0.67* |
| 4 | GDP/pc² | Demo x GDP/pc | 7989 | 0.57 | 9397 | 0.84 | 6448 | 0.67 | 933 | 0.46 | -36 | 0.72 |
| 5 | GDP/pc² | Demo x Left gov. | 8006 | 0.56 | 9405 | 0.83 | 6450 | 0.66 | 918 | 0.46*** | -35 | 0.71 |
| 6 | GDP/pc² | Demo x Left stock | **7974** | **0.57*** | **9378** | **0.84*** | **6380** | **0.68*** | **892** | **0.47*** | -44 | 0.72 |
| 7 | GDP/pc² | Demo x Corruption | 8005 | 0.56 | 9396 | 0.84 | 6455 | 0.66 | 935 | 0.45 | **-52** | **0.72*** |
| 8 | GDP/pc² | Demo x Left gov. x Demo x Left stock | | | | | | | 900 | 0.47# | | |

# 4   Results

Table 4 summarize the results for the main models. If we put lack of education aside for the moment, we see that democracy has a negative impact on poverty, child mortality and immunization, while the estimate for malnutrition is zero. Because there is an interaction between democracy and left stock, these estimates represent the marginal effect of democracy when left stock is set to zero, i.e., at the mean value for left stock. Leftist government is estimated to have a negative impact on the first four outcomes, although not significant for poverty. The estimate for left stock is close to zero for poverty, but positive and significant for the other three; the more experience of left policies, the more child mortality, malnutrition and lack of immunization. However, these estimates refer to a situation in which the democracy score equals to its mean, which is zero.

The interactions between democracy and left stock are negative, hence, the combination of democratic rule and experience of leftist governments lowers poverty and improves children's living conditions. The marginal effects of democracy conditional on left stock are shown in Figure 2. For poverty and immunization, the marginal effects are insignificant at low levels of left stock, but become negative as left stock increases. For child mortality and malnutrition, the marginal

effect of democracy is positive at low levels of left stock, thereafter gradually becoming negative as left stock increases. Interpreting the marginal effects, it is important to consider that time is included in the model. The positive marginal effect of democracy on malnutrition at low levels of left stock shows that malnutrition decreases slower than expected given the average time trend. Hence, democratic countries without previous experiences of left policies are not predicted to have an absolute increase in malnourished children, but they are predicted to do worse than expected in improving conditions given the general time trend. When left stock is relatively high, the opposite is true for all four outcomes; having a developed democracy in a country with recent historical experience of left governments improves conditions more than expected given the time trend.

**Table 4. Fixed-effect $t_{-1}$ lagged estimates of democracy, GDP/pc, leftist government, leftist stock, and corruption on poverty, child mortality, food-, education-, and immunization deprivation. Years 1995-2019, Countries 51, observations 1,174**

|  | Poverty | Child mortality | Malnutrition | Immunization | Education |
|---|---|---|---|---|---|
| Democracy | **-0.92** | **-1.22** | 0.00 | **-0.10** | -0.00 |
|  | -1.47 – 0.38 | -2.22 – -0.23 | -0.28 – 0.28 | -0.13 – 0.08 | -0.02 – 0.1 |
| Leftist gov. | -0.10 | **-3.29** | **-1.26** | -0.04 | 0.03 |
|  | 1.25 – 1.06 | -5.39 – -1.20 | -1.85 – -0.68 | -0.10 – 0.02 | -0.01 – 0.07 |
| Left stock | 0.08 | **2.14** | **0.29** | **0.02** | **-0.02** |
|  | -0.12 – 0.27 | 1.78 – 2.50 | 0.19 – 0.39 | 0.01 – 0.3 | -0.03 – -0.01 |
| Demo. x Left stock | **-0.26** | **-0.43** | **-0.20** | **-0.016** |  |
|  | -0.35 – -0.17 | -0.60 – -0.27 | -0.25 – -0.16 | -0.02 – -0.01 |  |
| Corruption | -0.18 | -0.47 | 0.29 | 0.01 | **0.03** |
|  | -0.87 – 0.52 | -1.73 – 0.79 | -0.06 – 0.64 | 0.02 – 0.04 | 0.004 – 0.049 |
| Demo. x Corr. |  |  |  |  | **-0.02** |
|  |  |  |  |  | -0.03 – -0.01 |
| Ln. GDP/pc | **-4.71** | **7.79** | -0.65 | -0.11 | **0.36** |
|  | -7.55 – -1.87 | 2.63 – 12.94 | -2.09 – 0.79 | -0.25 – 0.03 | 0.26 – 0.45 |
| Ln. GDP/pc$^2$ | **7.77** | **23.05** | **0.72** | **0.16** | **0.26** |
|  | 6.70 – 8.84 | 21.10 – 25.00 | 0.18 – 1.27 | 0.11 – 0.22 | 0.22 – 0.29 |
| Year 2019# | -20.64 | -86.93 | -15.82 | -0.81 | -1.32 |
| Intercept | 41.64 | 120.67 | 27.55 | 2.42 | 2.45 |
| xtreg: within $R^2$ | 0.57 | 0.84 | 0.68 | 0.47 | 0.72 |
| xtreg: *Rho* | 0.92 | 0.95 | 0.83 | 0.76 | 0.97 |
| OLS: $R^2$ | 0.94 | 0.95 | 0.88 | 0.79 | 0.97 |

#Years are measured with indicator variables (dummies), only the estimates for 2019 are shown. The estimate divided by 25 gives accurate estimations of yearly change,

**Figure 2. Marginal effect of democracy on poverty, child mortality, malnutrition, and immunization conditional on left stock.**
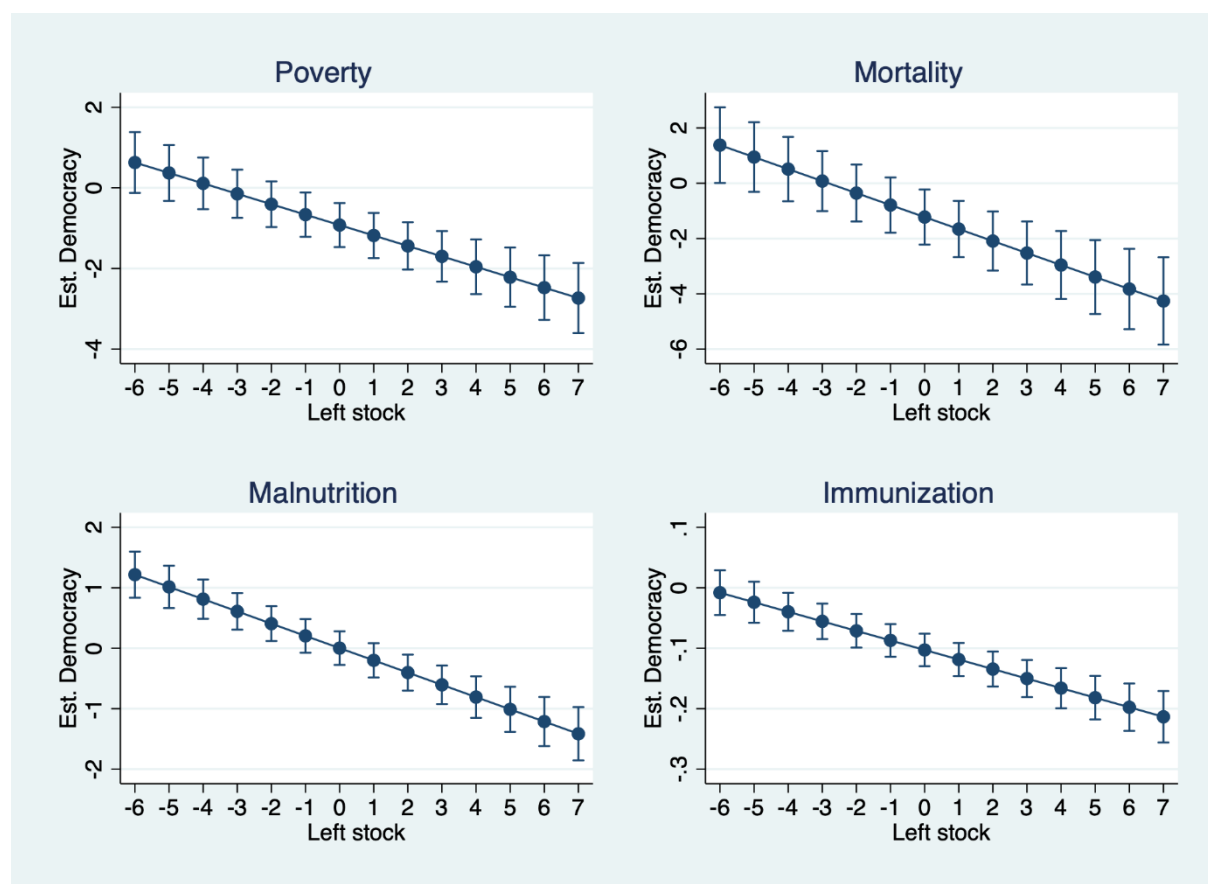


In Figure 3, we show the predicted outcome at different democracy scores conditioned on three different levels of left stock. Example A – high left stock – begins with the highest observed left stock and with the lowest observed democracy score. The variable measuring left government is set to zero, and values for GDP/pc and corruption are set to their means and kept constant. This is obviously unrealistic, but it does not affect the slope of the interaction effects. The country effect (FE) is set to the mean for all countries, while we include the annual estimate for *i.Year*, i.e., the general time trend, hence part of the slopes is actually the time trend. We then let the score for democracy increase step by step each year until it reaches its maximum value. In example B, left stock is set to its mean (0), and for C, left stock is set to the lowest observed value, otherwise B and C are identical to A. The "clean" time trend, all other variables being held constant, is shown by the small dotted line. The diagrams in Figure 3 visualize that a history with left government in combination with a low democracy score gives the highest estimated poverty, child mortality, malnutrition and lack of immunization. For countries with a high democracy score and a history of left government, the opposite is true for poverty and malnutrition; democratic countries with a

high left stock are predicted to perform best, while there are small differences when we look at mortality and immunization, i.e., developed democracies are predicted to do well. Figure 4 also shows that a hypothetical country with a high left stock that increases its democracy score improves living conditions faster than the time trend and, in particular, faster than countries without experience of leftist heads of government. For countries without experience of left government, democracy is not associated with improved conditions and lower poverty, which is shown by the narrowing distance between the dotted line and the dashed line as the democracy score increases.

**Figure 3. Predicted impact of democracy on poverty, mortality, malnutrition, and immunization conditional on left stock.**
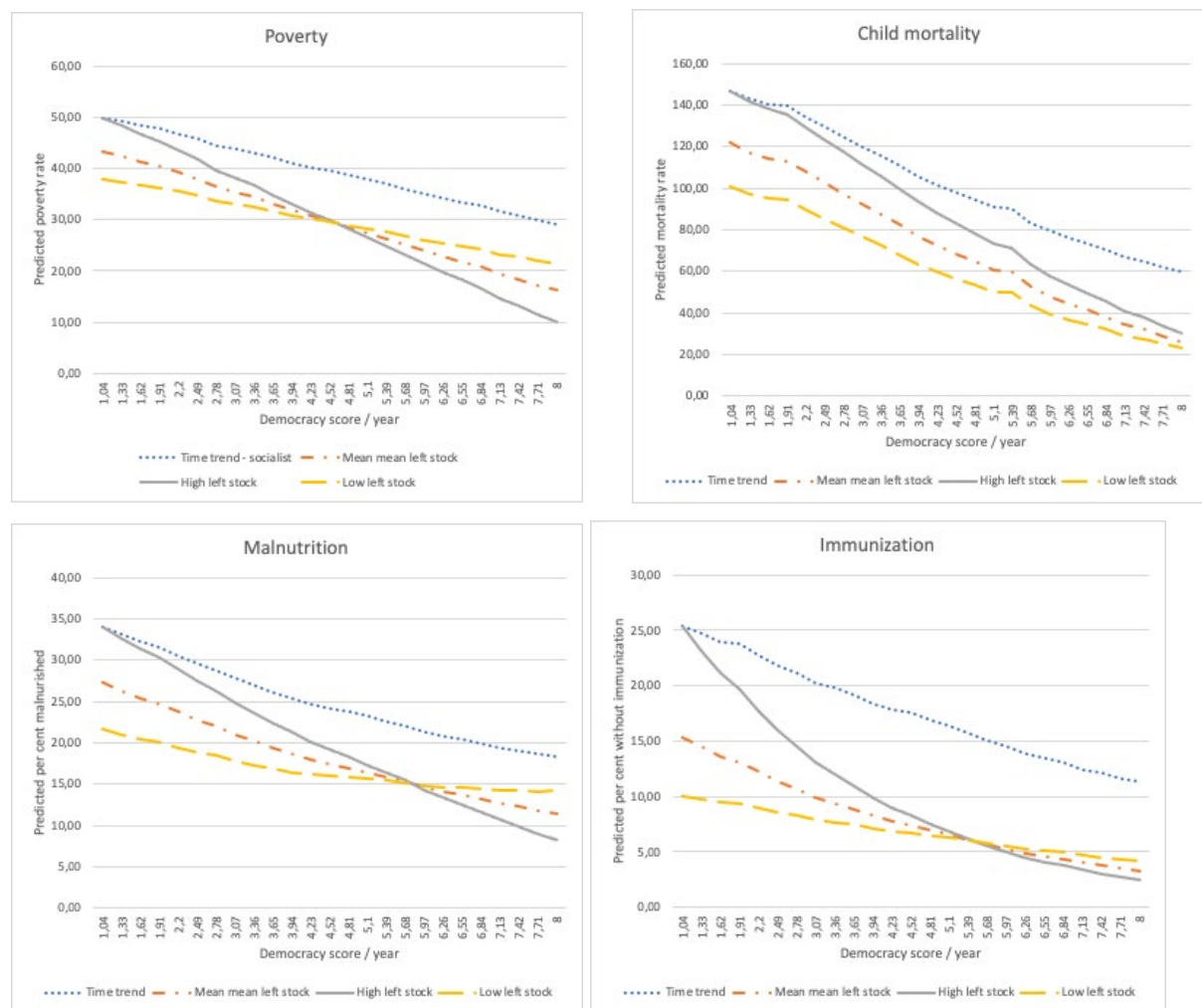


Estimates for GDP/pc are fairly inconsistent, while the estimates for GDP/pc$^2$ are consequently positive and significant. What this reflects is that the associations between GDP/pc and each of the five outcomes are curve linear. When GDP/pc is close to its overall mean, the marginal effect for GDP/pc is close to zero, slightly positive or slightly negative. As GDP/pc increases, poverty

from low, i.e., below zero, to high, mortality and child deprivation decrease, but the impact of increasing GDP/pc declines as GDP/pc increases and eventually takes on the opposite sign. It is important to keep in mind that these results represent the effect of GDP/pc net of country-fixed effects and control for the overall time trend.

In the first four analyses, discussed above, the impact of corruption seems irrelevant. However, for education, corruption does play a role – the greater the corruption, the more children are deprived of education. But because of the interaction between corruption and democracy, the estimate in Table 4 refers to a situation in which the democracy score is zero. It also means that the estimate for democracy refers to a situation where corruption is set to its mean (which is zero). The interaction between democracy and corruption is negative. Figure 4 shows the marginal effect of democracy on lack of education conditional on corruption. In a situation of low corruption, the estimate for democracy is positive, and if corruption is widespread, the estimate turns negative, meaning that democratization counterbalances the detrimental impact of corruption. Figure 5 shows predictions for lack of education at different democracy scores at three levels of corruption. What we see is that, at low levels of democracy, the levels of educational deprivation are almost twice as high in a highly corrupt country compared a country with a low degree of corruption. The higher the democracy score, the smaller the differences, and among the most democratic countries, corruption plays, at best, a marginal role in explaining differences in educational deprivation.

**Figure 4. Marginal effect of democracy on lack of educational conditional on corruption.**
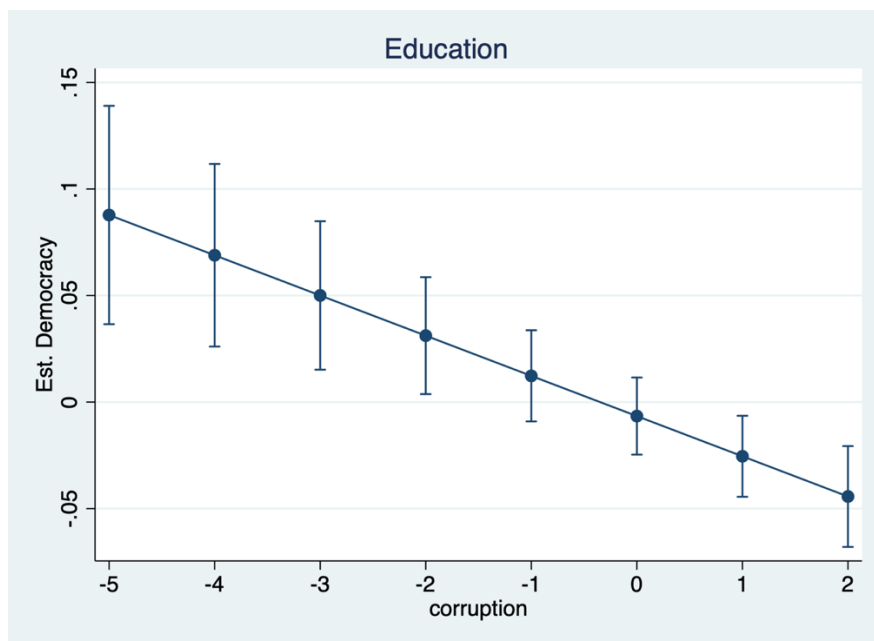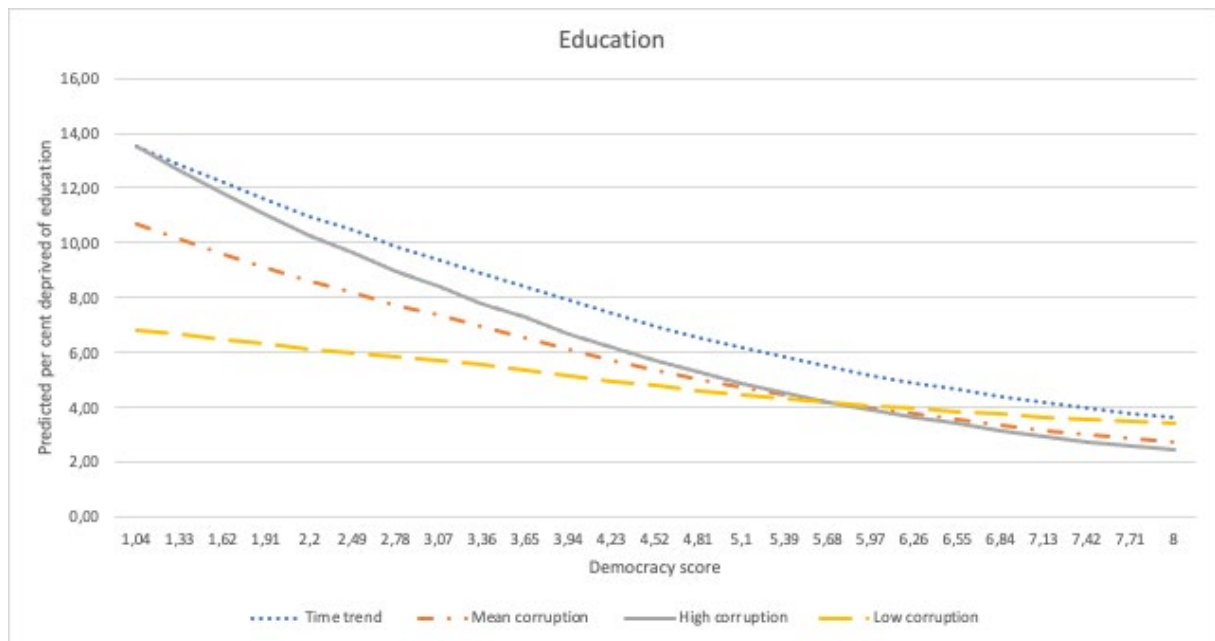
**Figure 5. Predicted impact of democracy on lack of education for children conditional on corruption**



# 5 Discussion

Overall, our analyses lend partial support to previous studies pointing out the positive benefits of democracy, decreasing poverty and improving children's living conditions (e.g., M. Barnish et al., 2018; Gao & Zang, 2021; Gerring et al., 2021; Saha, 2011; Sen, 1981, 1999; Wigley & Akkoyunlu-Wigley, 2017). But we also, under specific conditions, find support for the idea that democracy has no or even detrimental effects on poverty and children's living conditions (Fambeu, 2021; Ross, 2006). What we did see was that the impact of democracy is conditioned. In relation to our first hypothesis, that democracy decreases poverty, child mortality, and child deprivation, we can conclude that it depends on countries' recent experience of left governments, that is, governments pursuing the ideological belief that the state should intervene in the economy to increase social equality. It also means that our analyses lend support to our second hypothesis, and more specifically to Hypothesis 2b.

Lack of democracy and an extensive experience of leftist government seems to be the worst combination, with high degrees of poverty, child mortality, malnourished children, and children left without immunization. Democracy in combination with extensive experience of leftist governments is found at the other end of the continuum. Hence, democratization has the largest beneficial effects in countries with substantial experience of leftist governments. For countries with no or little experience of leftist governments, democracy does not improve conditions, or, as is the case for malnutrition and education, it worsens children's situation given what is to be

expected given the general time trend. In essence, our results support earlier findings presented by Ha and Cain (2017), who reported that democracy's impact on poverty and child mortality was conditional on having a politically left-leaning government. The added value of this analysis is that we show that this holds true for larger set of outcomes and that it is past experiences of leftist government that is important, not the current government. Hence, democracy needs a history of leftist policy agendas if it is to improve living conditions, while leftist regimes without democracy are more likely to fail in improving living conditions.

Our interpretation of these findings is that a democratic leftist government needs to pursue a policy that is congruent with a redistributive ideology that improves living conditions for the poorest sections of the population (e.g., Gerring et al., 2011; Page & Pande, 2018; Sen, 1981, 1999). In a functioning democracy, implemented policies usually cannot be overturned easily; there is a certain inertia in implemented policies. Any non-leftist government must also relate to the opposition, which is of special importance if the opposition is perceived as a realistic option by the voters, which it reasonably should be if it has previously been voted into power. This is of course also true of any democratic leftist government that needs to consider the risk of losing elections, which may lead to a more balanced long-term policy. For these reasons, having previous experience of a left government is reasonably more important for the more long-term impact of democracy than is whether or not the current government is driven by a leftist agenda.

We did expect that widespread political corruption would increase poverty and be detrimental to children's living conditions (e.g., Banerjee & Duflo, 2011; Dellepiane-Avellaneda, 2010; Halleröd et al., 2013; Przeworski et al., 2000; Rothstein, 2011). For four of the five outcomes, we could not confirm that corruption had any substantial impact at all. Neither did we find interactions with democracy, which means that our third hypothesis is rejected. For the fifth outcome, education, political corruption did have the expected effect, increasing the fraction of children deprived of education. We could also observe an interaction between corruption and democracy, but not the way we hypothesized. Instead of undermining the effect of democracy, it seems like democracy counterbalances the adverse effects of corruption. Hence, for children's school attendance, it is better to have a corrupt democracy than a corrupt autocracy.

Our fourth hypothesis states that the impact of democracy ought to be conditional on a country's GDP/pc. We also stated that this interaction could work both ways. It could be that democracy functions best at a high level of GDP/pc, that is, when there plausibly are more resources to redistribute according to democratic principles. But it could also be that democracy is most beneficial to the poor when scarce resources are to be distributed. It turned out that neither of these two propositions were true. There were no robust interactions between democracy and

GDP/pc. What we consistently could see was that increasing GDP/pc decreases poverty and improves children's living conditions, but that it does so to a decreasing and eventually reversed marginal effect. Hence, an increase in GDP/pc is most beneficial in the poorest countries. In our regression models, we estimate this curve linear association by adding a quadratic term of GDP/pc. If we exclude the quadratic term, we find an interaction between democracy and GDP/pc, confirming Hypothesis 4b. However, we consider this finding to be spurious, caused by model misspecification, i.e., not taking into account the non-linearity of GDP/pc.

One important feature of our study is that we use the same sample of countries and the same independent variables to analyse five different indicators. Even though the results differ slightly between the analyses, we wish to underline the coherence between analyses. We do not find any substantial contradictions between the analyses of different dependent variables. We therefore have confidence that our results are robust and that they also are likely to be confirmed if other indicators of poverty and living conditions are applied in analyses that cover the same sample of countries and approximately the same time span.

## 6  Weaknesses and strengths

Our analyses build on annual country data 1995-2019, but our dependent variables rely, to different extents, on point estimates extrapolated into time series. Hence, it is possible that we missed significant deviations from the time series, and also, because of that, missed important within-country covariations. Extrapolated time series also have repercussions for our ability to draw empirical conclusions regarding causality, as the time for the actual observations varies across countries. Even though we rely on fixed-effects models controlling for the time trend, there is, as always, a risk that we have omitted crucial time variant independent variables. At the same time, we want to underline that inclusion of additional variables, in particular when causality issues are not apparently clear, could lead to over-specification that, in turn, will conceal rather than reveal the impact of our key variables. We have used a consistent sample of countries and time period in all analyses, hence observed differences between different regression models are not attributable to the inclusion or exclusion of particular countries. This of course means that we do not know to what degree the results are transferable to other countries, countries that by necessity are substantially different from the ones included our sample. It could also be questioned how time dependent the results are, covering a historical period that encompasses the post-cold war period of democratization, globalization and economic growth. These issues, country sample and time period, are not a concern only for the present study, but for the majority of country comparative analyses, which we believe need to be addressed more systematically as the field continues to

evolve. Given this limitation, we see it as a strength that we use five different outcomes and that our results are reasonably consistent over these outcomes.

# 7 Conclusion

Is democracy an effective tool for reducing poverty, child mortality and child deprivation in low-income countries? Our answer to the question is: It depends. It depends on the country's political history. In countries with a relatively extensive experience of leftist governments, democracy is associated with lower poverty rates and better living conditions for children. In countries with no or very little experience of leftist governments, the impact of democracy is close to zero or, in some cases, even unfavourable. What seems least favourable is undemocratic leftist government, hence, leftist policies need democracy if they are to benefit the poor. We also see that, for education, children's school attendance, corruption is detrimental, but that this effect is counterbalanced by democracy. Children are more likely to go to school in a corrupt democracy than in a corrupt autocracy.

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