

# Which freedoms benefit the poor? A two-horse race between economic and political freedoms on health-adjusted life expectancy and child mortality, 1990–2020

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## Abstract

We examine theoretically and empirically whether democratic rights might be superior to economic rights in a two-horse race, utilizing indicators of poverty reduction, such as health-adjusted life expectancy (HALE) and child mortality as outcomes. The results show robustly that economic freedoms associate positively with HALE and negatively with child mortality, while the effect of democracy is more mixed. Studies reporting a negative effect of political freedoms on child mortality without accounting for economic freedoms, thus, are potentially mis-specified. These results are robust to a barrage of tests, alternative data, estimating method and formal tests of omitted variables bias.

## KEYWORDS

child mortality, democracy, economic freedom, population health, poverty

## 1 | INTRODUCTION

The eradication of poverty in ‘all its forms everywhere’ is the United Nations’ primary sustainable development goal (United Nations, 2022).<sup>1</sup> Problems associated with poverty, such as disease and conflict, spillover borders, breeding more poverty and misery (OECD and World Health Organization, 2003, 38). Many argue that poverty persists because people have little or no access to healthcare and social protection, suggesting that addressing the problem

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of access to health is an essential component of poverty reduction (Sen, 1998). Those who think poverty, often measured in terms of maternal and child health, is best affected by democracy are generally suspicious of free markets because market dynamics and neoliberal policies are expected to increase income inequality, threatening welfare policies and social protections (Labonté, 2022; Piketty, 2021; Przeworski, 2012). These observers believe that more government is needed to smooth the vagaries of free market forces. Contrarily, public choice scholars, among others, emphasize government failure, arguing that competitive markets produce economic efficiency and higher welfare, incentivizing individuals, firms and communities to invest in productivity-enhancing goods. For them, governments and bureaucracies are likely to be captured by special interests and be ineffective and wasteful, and that the pursuit of equality will destroy aggregate welfare (Buchanan et al., 1980; Friedman, 1962; Otteson, 2021). Moreover, as these scholars see it, the problem for society is not the issue of relative poverty but the problem of absolute poverty, which prevents society from achieving better social outcomes. Today, the idea that inclusive institutions facilitate development is widely accepted (Acemoglu & Robinson, 2012), and many influential scholars and agencies argue that access of the poor to rights is a major source of development because such rights increase the chance of responsive government (Deacon, 2003; Easterly, 2006; Olson, 1993; OECD and World Health Organization, 2003, p. 14; Sen, 1998, 1999). It stands to reason, thus, that promoting democratic rights are not just intrinsically good and moral but also instrumentally valuable for reducing poverty and increasing human capital (Barnish et al., 2021; Navarro et al., 2006; Sen, 1999). Currently, promoting democracy is the universally accepted policy mantra. Despite the expectations, however, the empirical evidence linking democracy to poverty reduction remains rather pessimistic (Dörffel & Freytag, 2023; Halleröd & Ekbrand, 2023; Ross, 2006).

Economic freedoms often refer to the liberties available to ordinary people to transact freely in market exchanges across borders, where their property rights are respected, and interference in economic life by governments are minimized to the provision of public goods and light regulation of markets. On the one hand, such freedoms exist when governments do not interfere in free exchange by imposing unusually high tariffs and taxes, or willfully create monopolies for favoured individuals and groups. Democratic freedoms, on the other hand, relate to freedoms associated with choosing individuals and groups and their political/policy programmes. These freedoms include at a minimum to choose leaders without coercion and necessitate access to other freedoms, such as access to information (free media), access to rights, such as freedom of thought, speech and religion. Indeed, while many of these freedoms go together, scholars are skeptical about the theoretical claims and empirical impacts of democracy and neoliberal capitalistic policies (Achen & Bartels, 2017; Collier, 2009; Mann, 2005; Przeworski & Limongi, 1997; Ross, 2006). What kind of policies poor countries need to adopt for reducing poverty, for example, remains a critical question in a highly unequal world.

For example, some point to the glaring example of China and India. In just the past few decades, China's market-driven economy has brought considerable economic gains, even if it has led to significant income inequalities (The World Bank, 2013, p. 4). Contrarily, despite over 70 years of democratic governance with ambitious social welfare programmes, a substantial proportion of India's population still lives in poverty, and India's economic growth and poverty reduction have been markedly slower than China's (Lakha & Taneja, 2009, p. 413). Likewise, in recent decades, Vietnam has massively increased income and human health under an autocratic regime, and countries, such as the Asian tiger economies (Singapore, Hong Kong, Taiwan and South Korea), which developed rapidly under autocratic regimes show the highest levels of population health despite high levels of inequality (GBD demographics collaborators, 2020). Regardless, autocracies in Africa, Latin America and Asia also failed their populations badly, while some democracies, such as Costa Rica, Botswana and Mauritius, to name a few, have managed to achieve relatively high levels of human development. Noticeably, however, many of these countries varied greatly according to how they followed sound economic policies that allowed market freedoms. Thus, this paper considers the relative impact of economic freedoms compared with political freedoms. Economic and political freedoms are not mutually exclusive, but which of these policy packages might poorer countries emphasize and preface for achieving more rapid human capital gains? The question is not just *academic*, but it carries many implications for poverty reduction and for the sustainability of democratic rights themselves because poverty ultimately undermines democracy

(Przeworski & Limongi, 1997; Wietzke, 2019). As many suggest, the rise of China presents an alternative model for poor people, particularly in democracies, where populist leaders with autocratic tendencies are beginning to gain support. Policies that reduce poverty and enhance the prospects of development, thus, is an urgent priority.

Using the Global Burden of Disease (GBD) project's (GBD 2019 demographics collaborators, 2020) HALE and the under-five mortality rate as indicators of a society's population health standards, which in turn proxies the extent of poverty, this study finds that economic freedoms rather than democratic rights and processes associate most robustly with better health outcomes. The pro-poor policy indicator measured as the under-five mortality rate is positively predicted by electoral democracy, while economic freedom robustly predicts lower child mortality and higher HALE. Our results suggest that, in a two-horse race, economic freedom is the clear winner. A disaggregated test of the five areas making up the economic freedom index shows that apart from small government size, which is statistically insignificant, each of the other four areas, namely property rights protection, access to sound money, freedom to trade, and low regulation of business, independently predict lower under-five mortality rates. Surprisingly, our results show a positive correlation between levels of democracy and higher child mortality, although the substantive effects are small, results also reported by others using very different data and methods (Ramos et al., 2020; Ross, 2006). The basic results are robust to a variety of tests, including alternative measures of democracy and several alternative model specifications, plus estimating method. The rest of this paper discusses relevant theory and previous empirical findings, develops testable hypotheses, presents the data and methods, discusses results and concludes.

## 2 | THEORETICAL FRAMEWORK

### 2.1 | The market mechanism

Debate over the appropriate balance between private and public resource allocation for reducing poverty and human suffering remains enduring. Some scholars argue that the persistence of poverty is linked to insufficient government allocation of social empowerment programmes for the poor (Lakha & Taneja, 2009, 413; Sen, 1999). These scholars argue that political rights and liberties, where rulers are subject to the wishes of the popular vote, increase governmental efforts aimed at poverty reduction through the effective and fair implementation of policies and allocation of resources (Deacon, 2003; Olson, 1993). Many argue that the democratic form of government should accelerate poverty alleviation, among other things, due to higher economic growth (Acemoglu & Robinson, 2012). Others argue that poverty reduction is best attained by increasing economic growth through market-friendly policies, or economic freedoms, which directly reduce a host of societal ills, particularly poverty (Friedman, 1962; Hayek, 1944). Empirical evidence suggests that free markets empower ordinary people to invest in human capital due to higher returns to productivity (de Soysa & Vadlamannati, 2020; Feldman, 2017; Lawson, 2022; Weede, 2004). These scholars argue that economic freedom and limited state intervention are more effective in promoting population health and reducing poverty due to private decisions and the desire of industry and commerce for productive labour. As they see it, state plans are likely to be inefficient and misplaced due to rent seeking and political patronage (Easterly, 2006; Friedman & Friedman, 2002). Easterly (2006) puts it succinctly—'the rich have markets, the poor have bureaucrats'. These two broadly opposed perspectives form the backdrop of this investigation, which is to empirically identify the independent effects of the more 'political' mechanisms driving poverty reduction over the more 'market' mechanisms so that more effective policy might be formulated for reducing poverty, which ultimately leads to healthier democracy.

A great deal of empirical work focusing on the effectiveness of free markets for generating economic growth find that economic freedoms, particularly freedoms involving the protections of property rights, free trade and less government interference in markets, produce higher growth rates and investment (Berggren, 2003; Lawson, 2022). Indirectly, thus, economic freedoms should reduce poverty because of increased wealth. Higher economic growth,

however, could be immiserating because of the maldistribution of wealth, particularly if growth and inequality lead to the development of 'extractive' institutions and a parasitic elite (Acemoglu & Robinson, 2002). It is often argued that increasing income inequality is only limited to the early phase of industrialization before it later declines at mature stages of development, the so called 'Kuznets curve' (Kuznets, 1966). The subsequent decline in the level of inequality is defended by many of the followers of Adam Smith's standard economic theory, such as Milton Friedman. They argue that the increasing availability of capital creates equality of opportunity and strengthens market competition (Friedman & Friedman, 2002, 107). Competition between capital for labour, thus, will eventually lead to the natural elimination of the causes of inequality. Likewise, the Schumpeterian hypothesis on technological change claims that inequality will decrease as technological change and economic growth increase demand for skilled labour and raise wages (Antonelli & Gehring, 2017, pp. 87 and 88). The Schumpeterian hypothesis applies to the right side of the so-called Kuznets curve effect, meaning that it particularly concerns countries that have already undergone a significant industrial transformation and are at mature stages of development. If these arguments are correct, we would expect that developing countries would be the ones who suffer the most from widening economic freedom and benefit most from greater democratic rights that one expects will promote investment in poverty alleviation and human capital. Thus, any study assessing the importance of economic freedoms versus democratic governance on poverty reductions and improvements in population health must account for the independent effect of the level of wealth. Poverty measured in terms of human health can also be directly affected due to market-based factors and private incentives for investment in health.

Many studies that have examined the direct relationship between economic freedoms and health find that economic freedom has a positive relationship with better health (Bergh & Nilsson, 2010; de Soysa & Vadlamannati, 2020; Gehring, 2013; Razvi & Chakraborty, 2016; Stroup, 2007). Several potential mechanisms are at play. First, with more economic freedom, individuals can '(1) exploit a greater selection of beneficial consumer choices that enable them to live longer, healthier lives and, (2) attain higher levels of human capital that empower them to exploit a greater set of potentially profitable productive activities' (Stroup, 2007, p. 54). Interestingly, Gehring's study (2013, p. 87) finds that developing countries benefit more (than developed countries) from higher economic freedom when measuring subjective well-being, especially because of reductions in the regulatory burden. Careful empirical studies addressing the question of economic freedom and poverty reduction across Indian communities confirm that higher economic freedoms promote faster poverty reduction and improved both maternal and child mortality conditions (Razvi & Chakraborty, 2016).

Despite such findings, economic freedoms are often directly blamed for higher inequality because these so-called neoliberal policy packages typically prefer less government spending and lower taxes, hamstringing states from providing effective health (Schrecker & Bamba, 2015; Wilkinson & Pickett, 2009). Navarro et al. (2006) finds that, among the countries in the Organization for Economic Co-operation and Development (OECD), policies aimed at reducing social inequalities have beneficial effects on infant mortality and life expectancy—in other words, reducing inequalities reduces poverty and increases human capital. Since the essence of human capital is based in human health (physical and psychosocial) overall health in these terms translates into productivity gains. Amartya Sen argues that investing in human capital gives poor people access to voice, empowerment and resources (capabilities) that enable them to live longer, more fulfilling lives, contributing to economic growth (Sen, 1999). The investment in human capital, thus, allows poor countries to catch up with the rich, where convergence occurs because of endogenous technological change driven by the accumulation of human capital (Barro, 1998; Romer, 1993). If as some report, economic freedom has direct effects on access to health and reduces child mortality, independently of level of development (per capita GDP), then these effects might be usefully contrasted with those of political freedoms and inclusive democratic institutions. Since neoclassical economists also argue that governments should only provide public goods and administer justice (Friedman & Friedman, 2002, pp. 85 and 86), knowing the extent of economic freedoms versus democratic rights allow us to gauge the balance between the work of free markets and that of 'political freedom' independently of each other.<sup>2</sup>

## 2.2 | The bureaucrat mechanism

The 'folk theory' of democracy suggests that the one-person-one-vote mechanism subjects elected officials to carrying out the wishes of a public. Voters vote prospectively, that is, pick the candidates that best represent their interests, or they vote retrospectively, which is to punish candidates that do not deliver on promises. Thus, many political economy models suggest that democracies are better equipped at redistributing income and producing public goods compared with non-democracies (Gerring et al., 2012). As a result, scholars argue that democracies have a more significant impact on improving the welfare of the poor (Sen, 1999). The mechanism assumed to be responsible for this is the electoral process, which brings a higher number of individuals with below-average incomes to the polls, enabling them to voice their needs and concerns (Ross, 2006, 862). Sen summarizes this mechanism by saying that 'famine disasters do not take place in functioning democracies because those in power must be accountable to the population and look after its basic needs' (Sen, 1999, 508). Just as economic freedoms can produce concrete social benefits through the market, a representative democracy with a greater range of beneficial public policy choices might do even better (Stroup, 2007, 55). Stroup emphasizes that a broader range of public policies can result in (1) longer and healthier lives, (2) higher levels of human capital and (3) higher levels of public goods provision for a safer, more productive living environment for all in society.

As some note, however, the 'folk theory' of democracy does not work in practice (Achen & Bartels, 2017). First, the preferences of voters are hard to aggregate in ways that might lead to targeted policymaking that effectively deliver what people want. The issue of whether people vote rationally is also disputed given the complexities involved in technical issues, such as the proper provision of health care and other health-enhancing public goods (Caplan, 2008). Often, such issues require highly technical knowledge that the average voter has little time or the acumen to understand. For example, are poor rural people's lives better served by a new road for getting to hospitals or by direct cash transfers to households? Cash transfers will work only if most people decide to consume better health. Consider also that finding employment because of a new factory is a 'cash transfer' of a different sort, one that may require individuals to better themselves due to opportunities offered by working in a factory and chasing higher salaries. Also, a factory opening in a rural area where most poor suffer the debilities of poverty may also bring with it a road and access to a clinic, both of which jointly, and independently lead to the improvement of population health. What might be popular, thus, might not always result in effective policy that produces better health.

It is also important to note that in no regimes are all government offices filled by elections and that the individuals elected to hold office are not legally obligated to respond to any authority that did not arise from the same electoral process (Przeworski et al., 2000, p. 15). This has led many, particularly in the public choice tradition to argue for less government intervention because the complexity of policymaking and the privileged positions of office holders seeking their own self-interested objectives will result in worse policy (Gehring, 2013, p. 76). Public choice theory claims that individuals in public offices are driven by the same self-interest that motivates actors in the free market (Larkin, 2016). Yet, politicians seek to achieve or maintain power, just as producers, consumers and voters aim to maximize their own welfare. Since democratic leadership is temporary (Przeworski et al., 2000, p. 18), the possibility of re-election depends on individuals considering the question: 'What have you done for me?' With individuals driven by self-interest, a society with inequalities should result in policies aimed at reducing these inequalities. This is consistent with the median voter theorem, which states that the median voter preferences should be reflected in policy (Ross, 2006, p. 862). Should we expect median voter preferences to result in better outcomes for the poor?

If the median voter has a lower income than the average income, he or she would rationally support a higher tax rate on the wealthy, based on his or her own circumstances. However, we do not see this extreme redistribution, whether in developed countries or in developing ones (Bourguignon, 2018; Kalinina, 2018). One plausible reason for this is the impact of work incentives (Lopez-Velasco, 2020).

Democracy and economic freedom can be seen as contradictory rather than complementary in situations where the median voter earns less than the mean income, that is, in situations with high inequality. This is based on the neoclassical economic perspective, which sees income redistribution as discouraging hard work and

innovation (Friedman & Friedman, 2002, p. 166). If taxes are too high, people may choose to stop working and investing. When the wealthy people withhold their investments or exit, there will be a 'smaller pie' to share (Roemer, 2006). However, the Meltzer-Richard model, which considers the impact of work incentives, predicts that the greater the inequality in income, the more redistribution the median voter will vote for (Lopez-Velasco, 2020). In addition, it is argued that governments channel benefits to the constituencies they wish to favour (Ross, 2006, p. 870) due to patronage. As a result, the selective provision of public goods eliminates the median voter outcome. This is crucial because as Ross (2006) suggests, 'public goods and transfers can only reduce infant and child mortality rates when they are received by households that are income-constrained and would not otherwise be able to afford the goods and services that ensure child survival' (Ross, 2006, p. 870). The competing uses of government spending and redistribution, thus, may not generate child health outcomes among the poorest despite various forms of redistributive policies. Indeed, much redistribution may come in the form of consumption that may or may not target health improvement or poverty reduction directly. According to many, democracy does not necessarily reduce inequalities because of policy capture by the rich (Przeworski, 2012). Several recent specialized empirical studies show no direct effects of democracy on poverty reduction measured in various ways, including child mortality rates (Dörffel & Freytag, 2023; Halleröd & Ekbrand, 2023; Ross, 2006). Indeed, as some argue, relying on bureaucratic mechanisms are likely to fail the poor compared with freedoms and rights to transact through market mechanisms because of inefficiencies in provision associated with the former and the incentives associated with the latter (Easterly, 2006).

### 2.3 | The government capture mechanism

As previously mentioned, scholars favouring more neoliberal policies do not view democratic governance as incompatible with economic freedom (Friedman & Friedman, 2002, p. 8). Indeed, it is liberties that allow the development of a middle class and private property that may ultimately allow political liberties for all. According to Friedman and Friedman (2002), the relationship between democracy and economic freedom does not flow unidirectionally from democracy being the optimal expression of political freedom. Rather, for these economists, greater individual economic freedom is considered the 'indispensable means towards the achievement of political freedom'. As economic freedom means greater competition for firms (Friedman & Friedman, 2002, p. 30), it produces strong incentives for firms to lobby governments for increased public goods that enhance productivity. Neoliberal advocates have justified income inequality with 'marginal productivity theory' (Stiglitz, 2011). In short, the theory proposes that higher incomes lead to higher productivity and thereby contributes on aggregate to societal wellbeing—'a rising tide that lifts all boats'.

The political left rejects these claims on the basis that wealth is a major determinant of political power (Brynjolfsson & McAfee, 2011; Stiglitz, 2011). They claim, like Karl Marx, that the wealthy classes will capture government and reduce public goods and programmes aimed at the poor. Yet, it is unclear why capitalists would not prefer better labour productivity and higher investment in public goods. In the United States, there has been a growing concern about the disproportionate influence of the wealthy on the political process (Stiglitz, 2011). The 2010 decision allowing corporations and other organizations in the U.S. to spend unlimited amounts of money on political campaigns (Federal Election Commission, 2010) has been criticized for contributing to this problem (Stiglitz, 2011). According to a former minister in India, the issue of poverty in India can be attributed to the influence of 'elite interests' associated with Indian industries on government policies as opposed to the interests of the 'aam admi', or the common people (Lakha & Taneja, 2009, p. 410). As Acemoglu and Robinson (2002) have argued, inequality can lead to the formation of extractive institutions that immiserate the poor. Empirical evidence also suggest that democracies tend to protect property rights to a greater extent than non-democracies (Leblang, 1996, p. 6), suggesting that political liberties may have to precede economic ones. Of course, the issue might not be vertical inequality when it comes to most developing countries, but the problem of horizontal inequality, which is that political and economic

discrimination based on ethnic and other identity-group based factors may matter more than class-based inequalities (Stewart et al., 2005). The practice of democracy rather than free markets based on economic freedoms is far more likely to allow the practice of patronage and discrimination in poor country contexts—that is, electoral imperatives can lead to discrimination to far greater degrees than markets, which are more impartial. Moreover, as many scholars of the consequences of inequality argue, people are far more affected by perceived unfairness rather than inequalities of outcome, such as income and wealth. If inequalities of outcome exist with opportunities to advance, or non-discriminatory policies, then social frictions that derail better societal outcomes are likely to be less prevalent (Almás et al., 2010; Ariely & Uslaner, 2017; Hirschman & Rothschild, 1973).

### 3 | HYPOTHESES

The theoretical discussion above indicates that the complex relationships between economic freedom, democracy, and poverty reduction remain unclear, and the empirical evidence is mixed. This is particularly true for the democracy and poverty reduction connection (Halleröd & Ekbrand, 2023). Rather than political freedoms, proponents of economic freedom argue that poverty can be reduced by promoting economic growth to enable individuals to engage in productive activities that in turn empower them to make private decisions about investing in human capital. Empirical findings by Gehring (2013), Stroup (2007) and de Soysa and Vadlamannati (2020) support this view. Others have argued that increased economic freedoms will raise inequality that leads to various ways in which the poor will be worse off (Przeworski, 2012). They argue that political freedoms and the public actions affected by a more activist state will reduce inequalities and improve the lot of the poor (Sen, 1998; Stiglitz, 2011). Given that one of the world's most influential and powerful institutions, the United Nations, advocates that human development is more likely to take root if people are given a real say in their own governance (United Nations, 2021), it is imperative that greater empirical clarity be brought to bear on this issue. While previous research has tested economic freedom, and/or democracy, independently on child mortality and other indicators of poverty, we know of no study that has evaluated their independent effects in a comparative way on a large sample of countries over a lengthy period (Gehring, 2013; Razvi & Chakraborty, 2016).

Indeed, using just 51 developing countries, Halleröd and Ekbrand's (2023) insightful study reports that democracy reduces child mortality, but it does so only when moderated by 'leftist' governments and better institutions. Without getting into details about the definitions and measurement of 'leftist', which may in many cases capture how long a country has been democratic. We increase the sample size considerably to encompass almost the entire population and test the independent effects of economic freedoms in a two-horse race, testing the conditional effects of democracy and good governance measured as the control of corruption. The argument is that the electoral mechanism is weak at affecting outcomes, but what matters are impartial institutions that generate effective public policy (Rothstein, 2009). Given that poverty comes in many forms and affects people differently based on geographic and cultural factors, we follow others by proxying poverty with life expectancy and child mortality, which are indicators that are critical for judging human development. We test the following hypotheses.

- H1.** Economic freedom increases life expectancy and reduces under-five mortality independently of democracy.
- H2.** Democracy increases life expectancy and reduces under-five mortality independently of economic freedom.
- H3.** Democracy's effects on child mortality are moderated by good governance.



## 4 | DATA AND METHOD

### 4.1 | Data and variables

This study uses a time-series, cross-section (TSCS) dataset covering roughly 171 countries over the post-Cold War period (1990–2020). The dataset is unbalanced in that not all variables have the same coverage for each of the countries in the sample. We begin by justifying and describing our main dependent variables, the critical indicators of human wellbeing and poverty reduction. The data on the first dependent variable; HALE, is obtained from the Global Burden of Disease Study (GBD) of Institute for Health Metrics and Evaluation (GBD 2019 demographics collaborators, 2020). The variable uses the Health Utility Index (HUI) to measure the number of years an individual can expect to spend in good health, accounting for years lived in ‘less than full health’ due to disease, injury, and other risk factors (Wang et al., 2020). Consideration of morbidity is important because diseases, injuries, and risk factors can significantly impact life expectancy and the quality of years lived. We know of no previous studies of this nature that have examined HALE although some report a positive effect of higher flows of FDI on HALE but only for a sample of developing countries (Chiappini et al., 2020), and another study reports positive effects of democracy on HALE (Bollyky et al., 2019).

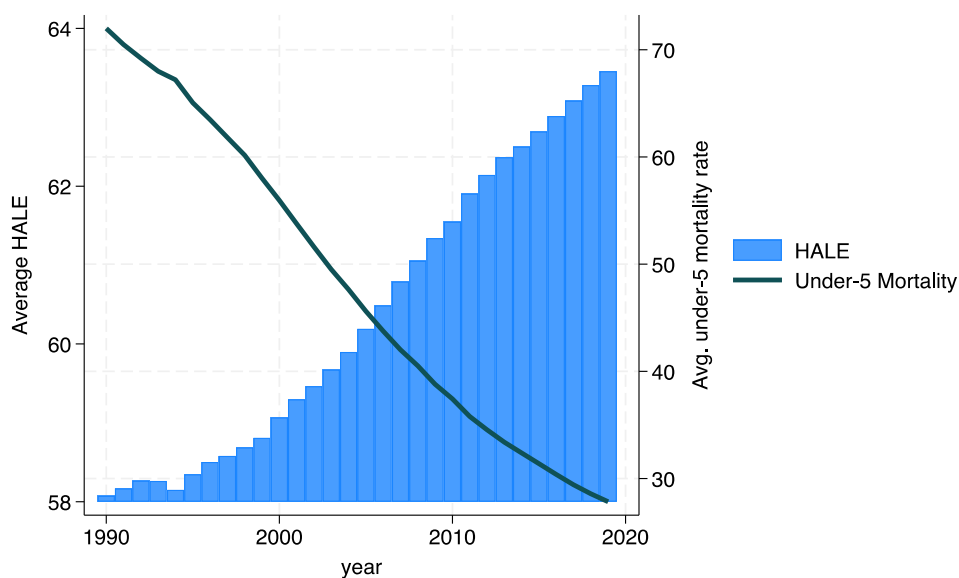
While HALE is an improvement on standard life expectancy because it also measures some aspect of the quality of life, it is also somewhat diluted because of the multiple disease and injury burden dimensions being measured. For example, the share of industrial and vehicular injuries and deaths are likely higher in more industrialized societies than in poor agrarian societies, where people die very early from highly preventable causes, such as lack of food, medicines and poor hygiene. The poorest societies are far more exposed to communicable diseases and comparatively less exposed to non-communicable diseases based in lifestyle factors. The causes of mortality due to poverty, thus, are best captured by child mortality rates, not least due to its simplicity in terms of measurement. The under-five mortality rate is a cleaner, less convoluted indicator of poverty because the survival of a child is closely linked to household and community-level conditions, such as access to education, health, and critical infrastructure. Other commonly used measures of well-being, such as poverty rates school enrollment rates and access to primary health care, tend to be less reliable and comparable due to variations in their definitions across countries and over time (Ross, 2006, p. 861). The death of a child under the age of five has the same tragic impact everywhere. Figure 1 displays the trends in average HALE and the average under-five mortality rate between 1990 and 2020. As seen there, the trend in life expectancy has moved in an upward direction over the past 30 years while child mortality rate has been reducing steadily.

Our two main independent variables are political freedoms measured in terms of electoral democracy and economic freedom. We begin with *electoral democracy* (v2x\_polyarchy) taken from the Varieties of Democracy (VDEM) data project (VDEM, 2023). The dataset includes the world's most comprehensive and detailed democracy ratings gathered from over 3700 experts from almost every country in the world. The democracy codings for each country are generated by several country-, regional- and subject-based experts, and the coding is subjected to rigorous reliability tests, such as the use of item response theory. A single value for each state is generated by minimizing the influence of coding bias (Sigman & Lindberg, 2019). The quality of this measure is also strengthened by the fact that other measures of democracy have drawn from V-Dem indicators (Skaaning, 2020, p. 82). Electoral democracy captures dimensions of democratic governance that are crucial for ensuring that rulers are accountable to citizens, including electoral competition under conditions of extensive suffrage, the freedom for political and civic society organizations to operate, clean and fair elections, the ability for citizens to freely express themselves and an independent media capable of presenting alternative views on matters of political relevance. The VDEM coders address the following basic question (VDEM, 2023, p. 44):

‘To what extent is the ideal of electoral democracy in its fullest sense achieved?’

The issue of current values of democracy mattering for health outcomes is controversial since health effects from democracy may take time to occur (Gerring et al., 2012; Halleröd & Ekbrand, 2023). Thus, some prefer to use





**FIGURE 1** Average trends in the health-adjusted life expectancy and under-five mortality rates, 1990–2020.

the stock of democracy, or the accumulated years as a democracy. Democratic exposure and current level of democracy is highly correlated ( $r = 0.80$ ). We follow others by using the lagged value of democracy but test the basic results with temporal exposure to democracy in robustness tests.

We use the Fraser Institute's Economic Freedom in the World as our main measure of economic freedom (Gwartney et al., 2022), but we also test VDEM's measure of 'state ownership of the economy' as an alternative, although they measure conceptually different things. The Economic Freedom Index provides a comprehensive measure of a country's institutions and policies consistent with providing economic freedom to citizens. The central element for economic freedom is stated as personal choice, protection of private property, and freedom of exchange (Gwartney et al., 2022, p xv). The index measures components in five major areas: (1) money and inflation, (2) government operations and regulations, (3) takings and discriminatory taxation and (4) international exchange (5) the protection of private property rights (Gwartney et al., 2022, p. 14). The EFW value for each country reaches from 1 (*lowest economic freedom*) to 10 (*highest economic freedom*). After testing the full index, we also test each of the five areas making up the index given criticisms about the value of examining mashup indicators (Ravallion, 2012).

Alternatively, government ownership of the economy relates to economic freedom from the point of view of a strong state that constrains private economic activity by owning productive assets. The VDEM coders address the following basic question (VDEM, 2023, p. 185):

'Does the state own or directly control important sectors of the economy?'

The coders address this question by assigning values based on the following coding scheme:

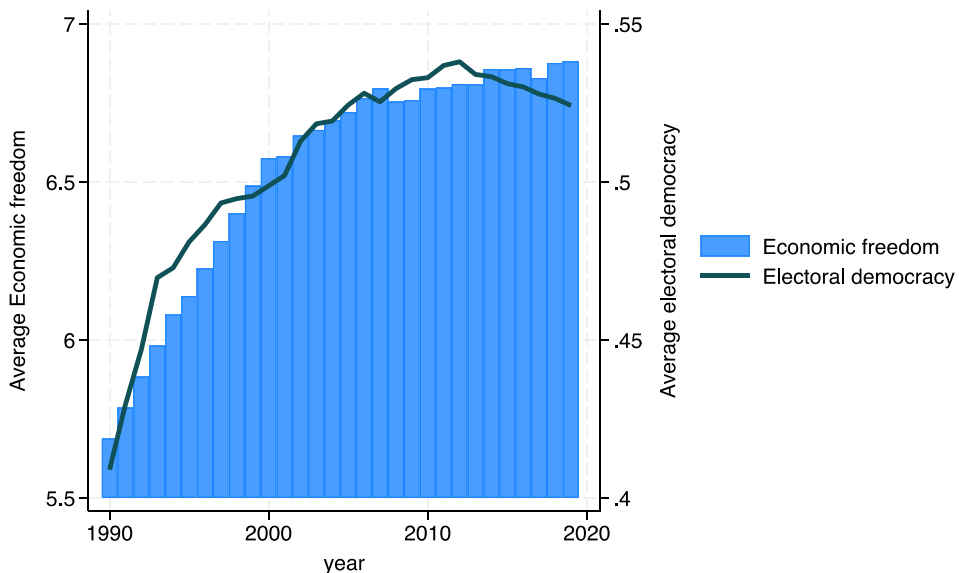
0: Virtually all valuable capital belongs to the state or is directly controlled by the state. Private property may be officially prohibited. 1: Most valuable capital either belongs to the state or is directly controlled by the state. 2: Many sectors of the economy either belong to the state or are directly controlled by the state, but others remain relatively free of direct state control. 3: Some valuable capital either belongs to the state or is directly controlled by the state, but most remains free of direct state control. 4: Very little valuable capital belongs to the state or is directly controlled by the state.

Larger values of this variable denote less government ownership. Therefore, we relabeled this measure 'private ownership of the economy'. Unsurprisingly, we obtain a positive but moderate correlation of  $r = 0.48$  between the

EFW and VDEM's private ownership measure. Finally, for testing the conditional effects of democracy with good governance on the poverty outcome, we use VDEM's political corruption measure, which assesses the extent to which a legislature, executive, judiciary, and public sector institutions are corrupt, exhibiting neo-patrimonial tendencies. We invert the measure so that it indicates good governance (control of corruption) rather than corruption. Figure 2 displays the average trends in economic freedom and electoral democracy between 1990 and 2020. As seen there, both forms of freedoms have trended steeply upwards since 1990 with economic freedoms flattening out beginning in the late 2000s and democracy beginning to dip from roughly 2010 onwards. Taking the trends in our main competing independent variables and the dependent variables, we see a great deal of correspondence in a simple bivariate representation, which justifies our two-horse race to ascertain which of the competing variables matters most and estimating the within country heterogeneity.

## 4.2 | Control variables

To avoid spurious relationships, we use a handful of controls. We keep the basic model manageable without overfitting, making interpretation of results more straightforward (Achen, 2005). Since our main contribution is the two-horse race between democracy and economic freedom, the simpler the model the more straightforward the interpretation. As discussed earlier, given the link between the level of development and both democracy and economic freedom, the level of development indicated by per capita GDP is a critical control. We use Gross Domestic Product (GDP) per capita in 2015 constant \$ values from the World Development Indicators (WDI) online database.<sup>3</sup> Next, we control for the dependence of an economy on natural resources. Countries rich in resources, such as oil, are supposedly far less democratic and have fewer economic freedoms due to narrowly concentrated economic power (de Soysa et al., 2022; Ross, 2012). Resource wealthy states may also neglect public goods, such as health and education (Cockx & Francken, 2014; de Soysa & Gizelis, 2013). We use total natural resource rents (% of GDP), which is the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents as a share of GDP. These data are also taken from the WDI. Next, we add two variables capturing the prevalence of political



**FIGURE 2** Average trends in the Economic Freedom Index and Electoral democracy, 1990–2020.

violence since violent conflict affects both of our main independent variables and simultaneously the dependent variable. We use an indicator of civil war ongoing as the incidence of a conflict between a state and a rebel group where at least 25 battle-related deaths in a single year have occurred plus a variable of exposure to conflict as a count of the number of years since the last civil war, or the year 1946 when the data begins. These variables are obtained from the Uppsala Conflict Data Project.<sup>4</sup> Each of the variables just described are logged to reduce skewness and are lagged by 1 year in our estimations except the dummy variable for conflict incidence and the peace exposure count variable.

### 4.3 | Identification strategy and estimating method

Our identification strategy is to estimate the direction and strength of the associations of our main  $X$  variables with  $Y$ . By comparing these effects, we can assess whether democracy or economic freedom associates most strongly with poverty reduction in terms of HALE and the child death rate. While we are unable to definitively demonstrate causality between our  $X$ s and  $Y$ , which would require other estimation strategies, we can compare the relative effects and infer the validity of the broad theories by the strength of the associations. A theory that strongly predicts a positive outcome should not be associated in a negative direction, and at a minimum should show some correspondence with statistical and real-world significance in terms of a strong substantive effect. Reverse causality is always a possibility and future research might employ instrumental variables analysis, or the matching approach, to test causality more thoroughly. Our two-horse race, however, is a comparison of the two theoretically interesting competing explanations, which arguably is best assessed side-by-side in terms of impacts, since theoretically at least, both democracy and economic freedoms should be caused in reverse by poverty similarly if indeed our results reflect reverse causality. Thus, we test robustness of our most interesting finding by assessing bias due to selection on observables with the use of formal tests for omitted variables bias in a non-instrumental framework setting (Cinelli & Hazlett, 2020).

Our dataset is an unbalanced cross-sectional, time-series dataset. Such a dataset contains complicated dependencies across and within units (Beck & Katz, 1995). We account for temporal dependence by estimating the Wooldridge test, which revealed that our data were first-order serially correlated. This means that we cannot conduct a simple linear regression without accounting for autocorrelation. Similarly, spatial autocorrelation is also a potential problem if indeed disease, poverty and policy environments cluster in space, which would violate assumptions of unit independence. Thus, we use OLS with the Driscoll–Kraay standard error estimator robust to heteroskedasticity, autocorrelation, and general forms of spatial dependence (Hoechle, 2007, 284). Next, we decide on random versus the fixed effects estimator by using the Hausman test, which suggested that we reject the null hypothesis that the coefficients are systematically different. We rely on the fixed effects estimator, which has the advantage of accounting for time-invariant unmeasured heterogeneity among the units, giving us the average of the within unit relationship between  $x$  and  $y$ . As some suggest, the fixed effects estimator with a time trend (one-way FE model) cleanly captures the relevant within unit and cross-sectional variance (Kropko & Kubinec, 2020). Further, multicollinearity is unlikely to be a problem given that the correlations of each of our independent variables did not reach critical levels (see Appendix A for intercorrelation matrix and summary statistics for each of the variables). We conduct a variety of standard postestimation robustness tests that pass muster.<sup>5</sup>

## 5 | RESULTS

Table 1 displays the results for fixed effects regressions of the comparisons between democratic governance, private ownership of the economy, and economic freedom (EFW) on HALE and the under-five mortality rate (U5MORT). In Column 1, we test private ownership of the economy, while in Column 2, we test the EFW index. As seen there,

democracy has no statistically significant effect, while private ownership of the economy has a statistically weak negative effect on HALE. The Hausman test suggests that we reject the null hypothesis of no systematic difference with the random effects specification. Indeed, in the random effects estimation, democracy has a positive and highly significant effect, results consistent with others (Bollyky et al., 2019). However, this result is likely biased due to unaccounted time-invariant factors in the error term that correlate with democracy. In Column 2, while democracy's effect on HALE remains statistically no different from 0, the effect of economic freedom is positive and statistically highly significant. Substantively, a within standard deviation increase in economic freedom increases HALE by roughly 20% of a within standard deviation of HALE, amounting to 0.51 years of extra healthy life expectancy. This is not 'small potatoes' given that the average within standard deviation of HALE is 2.49 years. The results suggest clearly that the independent effect of economic freedom matters for extending life expectancy compared with democracy.

In Columns 3 and 4, we test the same models as previously tested on our preferred measure of poverty, which is the under-five mortality rate. As seen in Column 3, democracy has a statistically weak positive effect on child death (higher poverty), results supporting others (Dörffel & Freytag, 2023; Ross, 2006). Private ownership of the economy has a negative effect, which fails to reach statistical significance. Again, the Hausman test suggests that the fixed effects estimator is consistent. In Column 4, however, when we test economic freedom and democracy on the under-five mortality rate, democracy is now positive and statistically highly significant. Substantively, a within standard deviation increase in democracy, holding the controls at their means, increases the child mortality rate by roughly 3% of a standard deviation of child mortality, amounting to 0.6 child deaths per 100,000 live births. While

**TABLE 1** The effects of democracy, private ownership and economic freedom on HALE and under-five mortality, 1990–2020.

Dependent variables	(1) HALE	(2) HALE	(3) U5MORT	(4) U5MORT
Electoral democracy	0.001 (0.01)	−0.001 (0.01)	0.10* (0.05)	0.11*** (0.04)
Private ownership of economy	−0.01* (0.00)		−0.03 (0.02)	
Economic Freedom Index		0.02*** (0.00)		−0.07*** (0.01)
GDP per capita (ln)	0.02*** (0.00)	0.00 (0.01)	−0.24*** (0.03)	−0.28*** (0.01)
Resource Rents/GDP (ln)	−0.00 (0.00)	0.00 (0.00)	−0.00 (0.00)	−0.01 (0.01)
Civil war ongoing	−0.02*** (0.00)	−0.02*** (0.00)	0.07*** (0.01)	0.06*** (0.01)
Peace exposure (count since 1946)	−0.00*** (0.00)	−0.00*** (0.00)	0.00** (0.00)	0.00 (0.00)
Constant	3.97*** (0.03)	3.93*** (0.05)	4.79*** (0.27)	6.01*** (0.11)
Observations	4698	3770	4698	3770
Number of countries	171	156	171	156

Note: Driscoll–Kraay standard errors in parentheses. Year trend estimated.

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , and \* $p < 0.1$ .

positive, the substantive impact is relatively small. However, in comparison, the independent effect of economic freedom is negative and statistically highly significant. Substantively, a within standard deviation increase in economic freedom reduces child mortality by 11% of a standard deviation of child mortality, amounting to a reduction in deaths of roughly 2.14 children per 100,000 live births. Again, regards the association with child death rates, economic freedom seems to win the two-horse with democracy rather easily.

Next, we consider the issue of whether democracy and economic freedom works differentially when considering HALE and the under-five mortality rate among developing and developed countries. Some report that HALE might be affected differentially depending on whether countries were developed rather than developing (Chiappini et al., 2020). As discussed earlier, HALE measures many aspects of population health including 369 forms of disease and injury, while the under-five mortality rate captures poverty more narrowly. Table 2 provides results for our models comparing democracy, private ownership, and economic freedom on HALE and child mortality separated between developing countries and developed industrialized democracies.<sup>6</sup> As seen across Columns 1 and 2, democracy's statistically significant positive effect on HALE is apparent only when testing among the developed countries, suggesting that democracy's effect on population health is sensitive to sample composition. The small negative effect of private ownership matters for the wider sample of developing countries only. In Columns 3 and 4, economic freedom matters positively for HALE among the developing countries, while democracy matters only among the industrialized countries. In Columns 4 and 5, when we test child mortality, however, democracy increases child deaths within the developing country only sample while economic freedom reduces it. Interestingly, economic freedom reduces child mortality also among the industrialized countries while democracy does not seem to matter. These results taken together suggest that democracy matters differentially when it comes to population health measured as HALE between the developing countries versus the developed, but economic freedom seems rather consistently to associate with higher life expectancy and lower child mortality, regardless of the sample of countries tested. Contrarily, democracy consistently associates with higher child mortality. From the perspective of the association with poverty, economic freedom is decidedly better than political freedom. Arguments about globalization and neo-liberal free market policies threatening a 'race to the bottom' cannot be gleaned by these associations.

The results of our main comparison are independent of each other and the control variables in our model. As expected, per capita income levels (GDP per capita) are quite consistently associated with better population health, whether measured as HALE or as the child mortality rate, independently of each of the variables in the model. Given the strong association between economic freedom and economic growth, there are significant indirect effects from economic freedom also through per capita income levels. In none of our tests is resource wealth statistically significant. Thus, our analyses do not show a 'natural resource curse' effect, which may in fact however still occur indirectly through the other variables, such as income. Having a civil war ongoing seems to consistently lower population health and increase child mortality while exposure to peace seems mostly to associate with worse population health. This unexpected latter result may be capturing instances of strong dictatorships that are worse on population health, but these dictatorships may last long without having civil conflict (North Korea, Congo under Mobutu, etc.). As some suggest, conflict may bring with it international engagement through aid for reconstruction that may lead to health improvements through immunization and improved health facilities.

Table 3 displays results for the disaggregated EFW index. As some have argued, the mashup indicator may give misleading results if the various areas that indicate economic freedom have countervailing effects on poverty reduction. For example, most of the effects we have seen so far might be driven by a single dimension, such as property rights protection.

In Column 1, we test the first area of the index on the child mortality rate. We hold democracy constant in each of the tests. The first area is limited government. As seen there, limited government has no statistically significant effect on its own on child mortality, independently of each of the controls. In Columns 2 to 5, however, each remaining area of the economic freedom index is independently negative on child death rates and statistically highly significant, suggesting that the EFW index, measuring free-market capitalism, mashed up and disaggregated into its component parts, associates negatively with an indicator of poverty measured as child death, independently of levels

**TABLE 2** The effects of democracy, private ownership and economic freedom on HALE and under-five mortality among developing and developed countries, 1990–2020.

Dependent vars.	(1) LDCs HALE	(2) DCs HALE	(3) LDCs HALE	(4) DCs HALE	(5) LDCs U5mort	(6) DCs U5mort
Electoral democracy	0.00 (0.01)	0.07*** (0.02)	−0.00 (0.01)	0.08*** (0.02)	0.09** (0.04)	0.10 (0.29)
Private ownership (VDEM)	−0.01* (0.00)	0.00 (0.00)				
Economic Freedom Index			0.02*** (0.00)	−0.00 (0.00)	−0.07*** (0.01)	−0.09*** (0.03)
GDP per capita (ln)	0.02*** (0.00)	0.00 (0.00)	0.00 (0.01)	0.00 (0.00)	−0.27*** (0.01)	−0.05 (0.06)
Resource Rents/GDP (ln)	−0.00 (0.00)	−0.00 (0.00)	0.00 (0.00)	−0.00 (0.00)	−0.01 (0.01)	0.03 (0.03)
Civil war ongoing	−0.02*** (0.00)	0.00 (0.00)	−0.02*** (0.00)	0.00 (0.00)	0.06*** (0.01)	−0.02 (0.02)
Peace exposure	−0.00*** (0.00)	0.00*** (0.00)	−0.00*** (0.00)	0.00*** (0.00)	0.00** (0.00)	−0.00*** (0.00)
Constant	3.99*** (0.04)	4.14*** (0.05)	0.00 (0.00)	4.15*** (0.05)	0.00 (0.00)	2.60*** (0.62)
Observations	4043	655	3115	655	3115	655
Number of countries	148	23	133	23	133	23

Note: Driscoll–Kraay standard errors in parentheses. Year trend estimated in all tests.

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , and \* $p < 0.1$ .

of per capita income and democracy. Notice that democracy remains positively associated with child death, but its impact seems weaker statistically, which means that democracy's true effect is best observed when the total EFW index is controlled and not just the partial effects of each area. Importantly, we run the basic model with government size parsed from the economic freedom index, that is, by adding the index to the specification in Column 1. The size of the coefficient now doubles and is statistically highly significant. These results taken together suggest strongly that market freedoms may matter more than political freedoms if reducing poverty and child death is a priority. The results, thus far, allow us to accept H1 and reject H2 because political liberties measured as electoral democracy, at best, has no association with higher mortality, and at worst, a positive and statistically significant effect when a sample of only developing countries is examined. Democracy shows a positive effect on higher levels of HALE only when a narrower sample of industrialized countries are estimated.

Next, we test H3, which is to examine the effect of democracy on the under-five mortality rate conditional on the absence of political corruption. We first estimate an additive model with the control of corruption appearing independently in the model given that the negative effect of economic freedom could be due to the lack of corruption although the positive effect of democracy is hard to justify in the same terms. In Column 1 of Table 4, control of corruption has no statistically significant association with the under-five mortality rate independently of the other variables in the model. Notice however that its addition in the model has no effect on the independent effects of democracy (positive and statistically significant) and economic freedom (negative and statistically significant). In Column 2, the interaction between democracy and the control of corruption is statistically significant and negative.

**TABLE 3** The effects of democracy and the five areas of economic freedom on under-five mortality among the developing countries, 1990–2020.

Dependent variable	(1) U5MORT	(2) U5MORT	(3) U5MORT	(4) U5MORT	(5) U5MORT
Electoral democracy	0.05 (0.04)	0.08* (0.04)	0.07* (0.04)	0.06 (0.04)	0.08* (0.04)
Low state involvement in economy	−0.00 (0.01)				
Protection rights protection		−0.03** (0.01)			
Access to sound money			−0.03*** (0.00)		
Freedom to trade across borders				−0.02*** (0.00)	
Light regulation of business					−0.05*** (0.00)
GDP per capita (ln)	−0.35*** (0.01)	−0.31*** (0.01)	−0.29*** (0.01)	−0.31*** (0.01)	−0.28*** (0.01)
Resource Rents/GDP (ln)	0.00 (0.01)	0.00 (0.01)	−0.01 (0.01)	0.00 (0.01)	−0.00 (0.01)
Civil war ongoing	0.06*** (0.01)	0.06*** (0.01)	0.06*** (0.01)	0.05*** (0.01)	0.06*** (0.01)
Peace exposure (count since 1946)	0.00** (0.00)	0.00** (0.00)	0.00** (0.00)	0.00 (0.00)	0.00* (0.00)
Constant	6.56*** (0.10)	0.00 (0.00)	0.00 (0.00)	6.33*** (0.09)	0.00 (0.00)
Observations	3105	3115	3115	2994	3115
Number of countries	133	133	133	133	133

Note: Driscoll–Kraay standard errors in parentheses. Year trend estimated.

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , and \* $p < 0.1$ .

The conditional effect is best assessed by graphing the marginal effects of the relationship at each point of the conditioning variable using the 95% confidence interval for gauging the significance of each effect (Brambor et al., 2006). We utilize the Interflex application in STATA for generating the margins plots, which allows us to assess non-linearities in the interaction effect where observations of the moderator variable are assessed at low, medium and high values in terms of the effects on the outcome (Hainmueller et al., 2019). A Wald statistic assesses the significance level of the joint terms.

As Figure 3 shows, the control of corruption conditions the positive effect of democracy on child mortality in a negative direction, reaching negative and significant values at the highest levels of the control of corruption. These results support others that suggest that democracy's effect on poverty reduction is likely when institutions are responsive to population needs, impartial and uncaptured by special interests (Halleröd & Ekbrand, 2023; Ross, 2006; Rothstein, 2009). In Column 3, we interact democracy with economic freedom. The conditional marginal effect are again negative, dropping rapidly from the low threshold to the medium threshold, flattening out between



**TABLE 4** The conditional effects of democracy and the control of corruption and economic freedom on child mortality, 1990–2020.

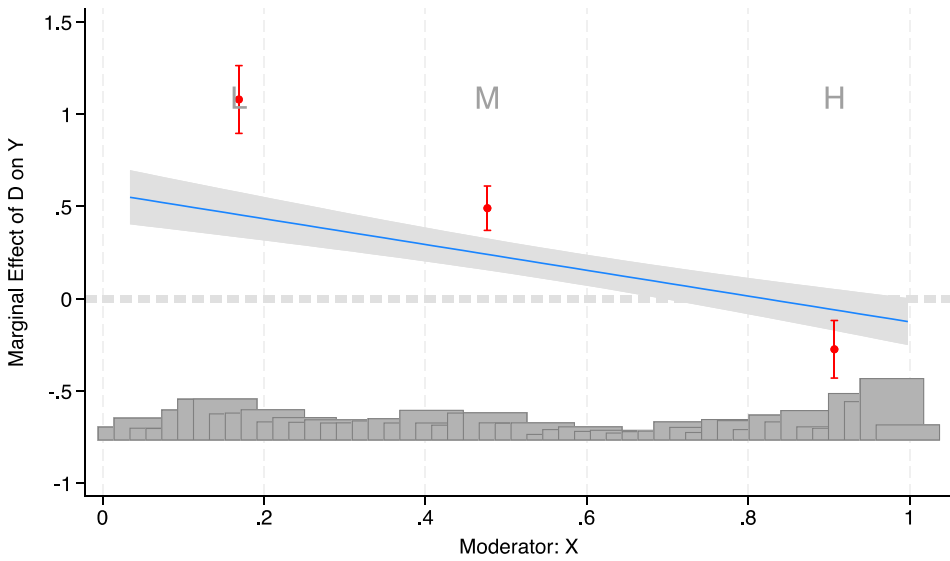
Dependent var = under-five mortality rate	(1) FE	(2) FE	(3) FE
Electoral democracy	0.13*** (0.03)	0.35*** (0.07)	0.13 (0.11)
Control of Political Corruption	−0.05 (0.04)	0.19*** (0.06)	
Electoral democracy*control of corruption		−0.58*** (0.12)	
Economic freedom index	−0.07*** (0.01)	−0.07*** (0.01)	−0.07*** (0.01)
GDP per capita (ln)	−0.28*** (0.01)	−0.29*** (0.02)	−0.28*** (0.01)
Natural resources/GDP (ln)	−0.01 (0.01)	−0.01 (0.01)	−0.01 (0.01)
Civil war ongoing	0.06*** (0.01)	0.07*** (0.01)	0.06*** (0.01)
Peace exposure	0.00* (0.00)	0.00** (0.00)	0.00 (0.00)
Electoral democracy*economic freedom index			−0.001 (0.02)
Constant	0.00 (0.00)	0.00 (0.00)	6.00*** (0.14)
Observations	3755	3755	3770
Number of countries	156	156	156

Note: Standard errors in parentheses. Year fixed effects estimated.

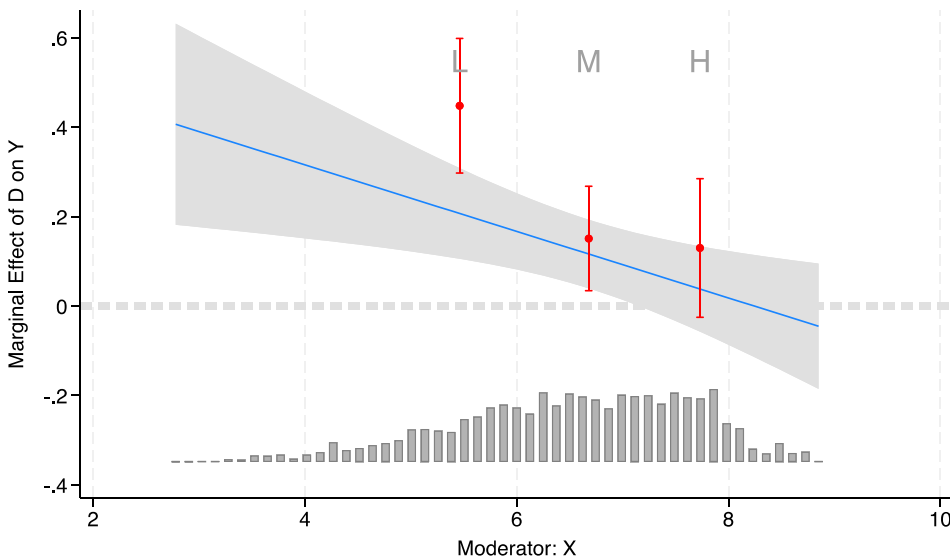
\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , and \* $p < 0.1$ .

the medium and high thresholds. The Wald test is statistically significant in both instances (see Figure 4; see Appendix A for marginal effects and levels of significance).

Economic freedom's independent effect remains negative and statistically significant at democracy equals 0, suggesting that while democracy's positive effect on child death might be conditioned in a negative direction by economic freedom, economic freedoms' effect on child death is quite independent of the nature of political freedoms. This result may support those that argue that dictators might also provide some public goods for earning revenue by opening up markets (Bueno de Mesquita & Smith, 2011) and spend on the poor in ways that it gains autocrats legitimacy (Gershewski, 2018). Indeed, if dictatorships rely on unskilled labour for earning revenue in export markets (e.g., in export processing zones), then it makes sense that they invest in increasing productivity by targeting the poorest segments of society. Moreover, the conditional effect of the control of corruption with economic freedom shows that economic freedom has an independent effect even when the control of corruption is equal to 0 (results not shown). These results taken together allow us to accept H3. It seems that access to private solutions for improving health and wellbeing is not just driven by having access to rights but to real solutions offered by free markets. Indeed, recent studies focused on Africa using causal methods report that economic freedom has a causal effect on education levels (Dia et al., 2023).



**FIGURE 3** The conditional relationship between democracy and the control of corruption on under-five mortality.



**FIGURE 4** The conditional relationship between democracy and the economic freedom on under-five mortality.

Our results generally support others that have used different measures of democracy and find similar results (Ramos et al., 2020; Ross, 2006). Highly correlated measures of democracy however might not be interchangeable (Casper & Tufis, 2003). Indeed, as some argue, different measures of democracy could have massive impacts on the outcomes due to conceptual and methodological differences (Skaaning, 2020). Moreover, others argue that what matters is not the current level of democracy but its accumulation (stock) over time, or the idea of democratic exposure since such things as poverty reduction and health improvements in a society may occur only gradually (Bollyky

et al., 2019; Gerring et al., 2012; Halleröd & Ekbrand, 2023). Despite these arguments, we also know that certain policy changes can have quick results, such as the massive health gains and poverty reductions achieved in places such as China and Vietnam in quick pace. Indeed, such an indicator as child mortality could fall rather rapidly due to technological or policy innovations. Therefore, we test several alternative measures of democracy, derived differently from both conceptual and methodological perspectives. First, we test VDEM's own liberal and egalitarian measures of democracy, which although highly correlated ( $r > 0.90$ ) with the narrower electoral democracy measure, capture a broader set of political freedoms and liberties. The liberal democracy measure includes civil rights and liberties across a variety of social groups and classes, including gender and sexual orientation. The egalitarian democracy measure includes rights and liberties as well as access to political and economic resources including equality of access to state power and resources.<sup>7</sup> If arguments about democracies providing equality and access to services within and across groups are true, then we would expect to see the liberal and egalitarian varieties of democracy to matter for reducing child death, particularly relative to economic freedoms. Additionally, we use a new measure of democracy based on a machine learning approach for aggregating an index based on Robert Dahl's conceptualization of democracy as the level of competition, participation and freedom of opinion (Gründler & Krieger, 2016). The machine learning approach adjusts for many potential problems associated with aggregation of indices, measurement issues, and researcher induced bias.<sup>8</sup> For democracy stock, or historical exposure, we create a count of the years a country has been an electoral democracy that reached the average polyarchy value of 0.5 or above since the year 1960.

Table 5 provides the results. As seen there, both liberal democracy and egalitarian democracy have positive and highly significant effects on child mortality whereas economic freedom's effect remains negative and stubbornly robust across the estimations. Substantively, raising egalitarian democracy by a within standard deviation increases the child death rate by roughly 2% of a within standard deviation of the under-five mortality rate of 19 deaths per 100,000 live births. While the effect is objectively quite small, for our uses of comparing economic freedom and democracy's overall effect in terms of the two-horse race, we have a clear winner. In Column 3, accumulated years under democracy is positive and statistically highly significant. Substantively, an additional year of democracy increases the child death rate by 1 additional death. In Column 4, the alternative measure of democracy derived from the machine learning method is also positive on child death and only just misses statistical significance at conventional levels ( $t = 1.4, p < 0.16$ ). Clearly, democracy measures conceptualized and measured alternatively also seem to yield very similar results. The main issue, however, is that the independent effect of economic freedom remains negative and robustly significant despite these alternative measurements of democracy. These results are also replicated when using HALE as the dependent variable (results not shown). Economic freedoms seem to associate with reduced poverty outcomes, not political freedoms, although the substantive effect of democratic harm on child mortality seems slight.

Next, we run a series of robustness tests to assess the sensitivity of economic freedom on the child mortality rate. First, it might be that economic freedom is really reflecting a demographic factor, such as the level of urbanization in a society. Perhaps it is cosmopolitan, modernization that has generated free market freedoms and better health. Adding the share of the population that is urban taken from the WDI data had no effect on the independent negative effect of economic freedom on population health. Interestingly, the urban share of the population has a statistically significant negative effect on child mortality independently of each of the controls. Second, we consider whether international aid may play a part in explaining why economically free societies associate with lower child death. If donors give more aid for poverty relief to more open economies, then economic freedom spuriously associates with less child mortality driven by aid. Neither total overseas development aid (ODA) received as a share of GDP nor ODA received per capita taken from the WDI dataset affects the independent negative effect of economic freedom on child mortality. Interestingly, both measures of ODA relate positively with child death. We think this is most likely due to reverse causation, where the poorest places, especially war affected countries, receive higher per capita aid flows. Thirdly, we test the basic model including a measure of 'equality of access to health' taken from VDEM (v2pehealth).<sup>9</sup> This expert-coded indicator captures the extent to which the poorest segments of a society have access to good quality health care compared with the richest segments of society. While the bivariate

**TABLE 5** The effects of alternative measures of democracy on child mortality, 1990–2020.

Dependent var = Under-five mortality	(1) FE	(2) FE	(3) FE	(4) FE
Liberal democracy	0.09*** (0.03)			
Egalitarian democracy		0.13*** (0.05)		
Democratic exposure (duration)			0.002*** (0.00)	
Machine learning democracy index				0.03 (0.02)
Economic Freedom Index	−0.07*** (0.01)	−0.07*** (0.01)	−0.07*** (0.01)	−0.07*** (0.01)
GDP per capita (ln)	−0.29*** (0.01)	−0.29*** (0.01)	−0.29*** (0.01)	−0.29*** (0.01)
Natural resources/GDP (ln)	−0.01 (0.01)	−0.01 (0.01)	−0.00 (0.01)	−0.01 (0.01)
Civil war ongoing	0.06*** (0.01)	0.06*** (0.01)	0.06*** (0.01)	0.06*** (0.01)
Peace exposure	0.00* (0.00)	0.00 (0.00)	−0.00 (0.00)	0.00* (0.00)
Constant	6.07*** (0.10)	6.02*** (0.11)	5.66*** (0.12)	6.10*** (0.11)
Observations	3758	3770	3770	3837
Number of countries	156	156	156	159

Note: Standard errors in parentheses. Year trend estimated.

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , and \* $p < 0.1$ .

correspondence between this variable and the outcome variable, child mortality, is extremely high ( $r = -0.81$ ), its effect on child mortality in the multivariate model is statistically indistinguishable from 0, and economic freedom's negative effect is unaffected by its inclusion.<sup>10</sup> Thus, the negative effect on child mortality of economic freedom trumps a direct measure of equality of access to health. This means that politically driven access to health has less bearing on actual child mortality rates than free market economic freedoms. Next, to assess whether the results from our two main variables are affected by 'bad controls' in the model, we drop each of the controls in stepwise fashion. The basic results uphold.

While the relative associations of our competing variables are our primary identification strategy for assessing propositions about their impacts on poverty reduction, we cannot be certain that they are causal. The effect of economic freedom might be endogenous, where some other variable  $z$  causes both economic freedom and lower child mortality. Having a truly exogenous factor to instrument for economic freedom would be ideal, but such instruments often fail the instrument exclusion criterion, which is that the instrument should not directly cause  $y$  except through  $x$ . Thus, we conduct a formal test for omitted variables bias in a non-instrumental variable framework offered by Cinelli and Hazlett (2020), whose simple and elegant method allows one to assess the degree to which the treatment's effect on the outcome is dependent on unobserved confounders. In other words, using information from the partial  $R^2$  values of the treatment, the test tells us the minimum strength unobserved confounders would have to be

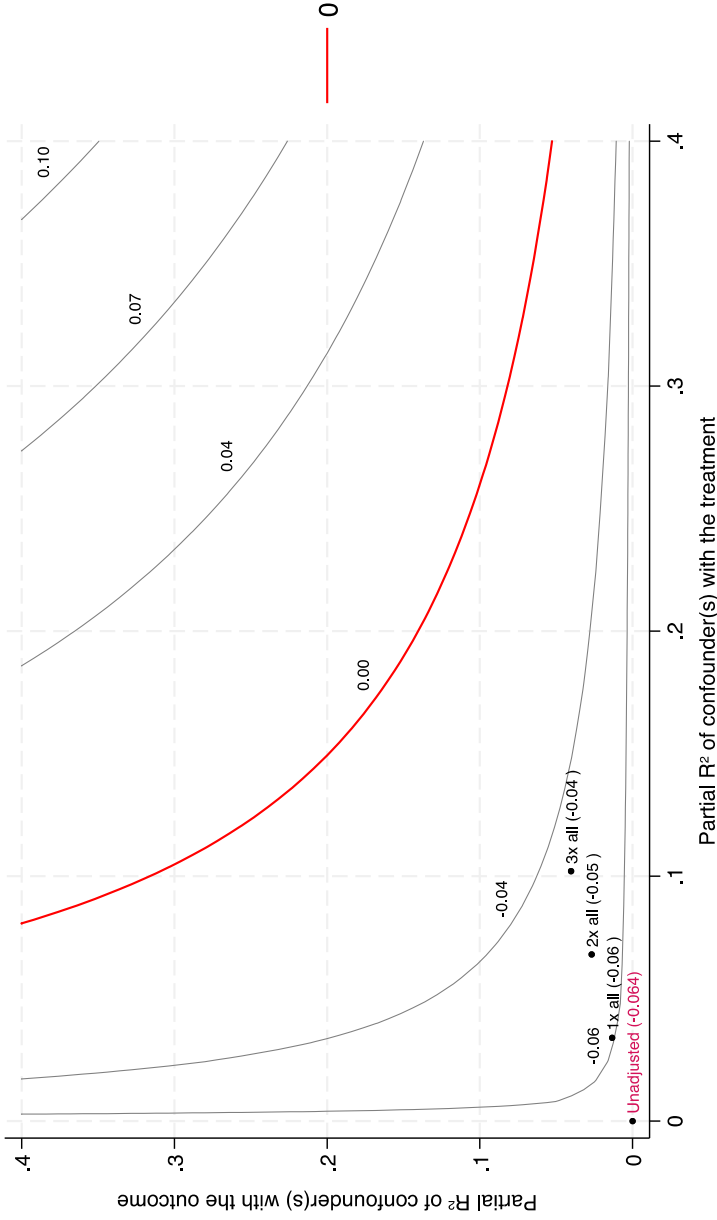


FIGURE 5 Cinelli and Hazlett contour plot for assessing robustness of the treatment's effect on the outcome to omitted variables bias.

with both the treatment and outcome to allow us to change our conclusion about the effect of the treatment on  $y$ . The result is best observed in a contour plots (see Figure 5). We run the basic model as shown in Table 1, using all the controls except GDP per capita as benchmark variables, and we specify year and country fixed effects to control for unmeasured heterogeneity.

The contour plot shows what the true treatment effect of economic freedom would be if there was an unobserved confounder of a given strength relative to all the benchmarked controls. Such unobserved factors then would be responsible for inflating the unadjusted estimate, which appears at the bottom left corner. As seen there, the unadjusted effect of  $-0.064$  of economic freedom on child mortality persists in strength up to 3 times the strength of the benchmark controls, suggesting that the association between economic freedom and child mortality is robust.

Finally, we conduct several different postestimation tests on our basic models and data. First, we formally assess the extent to which our models maybe biased due to multicollinearity. Entering fairly highly correlated measures, such as economic and political freedom and per capita wealth could be tricky. Variance inflation factor scores (VIF) for our basic models, however, were well below the critical value for individual variables (10) and the accumulated threshold for models (4). Secondly, we test for stationarity of our main variables, namely, child mortality, democracy, and economic freedom using the augmented Dickey-Fuller test. In each case, the null hypothesis of a unit root was rejected. Thus, our models do not suffer any bias from nonstationarity in our data series. Third, we test for influential observations, such as high residuals or leverage points that may unduly affect our results by computing the CooksD statistic. Dropping the CooksD values above the threshold of  $4/n$  (roughly 300 datapoints) had little effect on the basic finding, which is that democracy associates positively with child mortality and economic freedom associates negatively.

## 6 | CONCLUSION

All human freedoms are intrinsically valuable for living a worthy and fulfilling life (Sen, 1999). Some of them are also instrumentally valuable for achieving conditions that allow living a long and worthy life based on material conditions. While the question of whether democracy promotes economic growth and development is widely debated, recent challenges faced by democracies, for example, due to the rise of radical populist parties on both the left and right, have reignited concerns about the real effectiveness of democracy for reducing poverty-related social maladies. Contrarily, there is much evidence to suggest that economic freedoms and free-market capitalistic policies generate economic growth and reduce a host of societal ills (Berggren, 2003; Lawson, 2022). A large portion of the public health literature, however, blames processes of globalization, such as the spread of neoliberal policies that challenge government involvement in providing welfare as a threat to population health and poverty reduction (Barnish et al., 2021; Labonté, 2022; Navarro et al., 2006; Schrecker & Bambra, 2015; Wilkinson & Pickett, 2009). These scholars generally encourage more social protections under the banner of 'degrowth', while calling for ending free-market policies and processes, urging greater democratic control over policy. Clearly, freedoms are intrinsically valuable and inherently add to human wellbeing, but policymakers and the electorate might do well to know which side of these policy packages to err on for producing desirable material conditions that increase human health. All good things may not necessarily go together in a complex world of policy choice, and such epithets as 'degrowth' for addressing human wellbeing might cause more harm than good, for the poor as well as for sustainable democracy (de Soysa, 2023).

The best welfare states, of course, exist among the rich countries due to wealth creation and accumulation, whereas many poor countries can only pretend to have welfare states, which require finances for being practically effective. The highest scorers on the HALE rankings are countries, such as Hong Kong and Singapore, which have generated their stellar population health standings through rapid economic growth and development and effective state building facilitated by sustained wealth creation. Recently, China and Vietnam among others have had sustained high growth under autocratic rule, but presumably, access to private solutions as well as incentives for investing in productivity enhancing public goods due to greater economic freedoms explain the economic and health

gains in these countries. Alternatively, countries in South Asia, such as India and Sri Lanka, generated admirable welfare states and even achieved a great deal of improvements, but have ultimately failed, both economically, socially, and in terms of population health standards in comparative terms. Human capital improvements without sound macroeconomic environments are likely to be wasted, and worse, disincentivizes human capital investment. The lack of growth and development in the long run are also likely to keep any future democratization and political freedoms on hold, potentially affecting both forms of liberty.

We have addressed these broad questions by testing whether democracy (political freedoms) or free markets (economic freedoms) generate the most positive outcomes in terms of population health, and specifically, child mortality rates, which ostensibly capture most maladies associated with poverty. Using the latest data for a wide cross-section of countries over the past three decades, we find clear and robust evidence suggesting that free markets matter more for reducing child mortality than do political freedoms. Indeed, democracy seems to increase child mortality weakly, results consistent with the findings of others (Ramos et al., 2020; Ross, 2006). Our results also support numerous other studies showing that economic freedoms generate favourable outcomes for society, including the reduction of poverty, the fairness of access to human capital, and better population health (Bergh & Nilsson, 2010; de Soysa & Vadlamannati, 2020; Gehring, 2013; Lawson, 2022; Stroup, 2007). Future studies should probe more keenly the various direct and indirect paths by which economic freedoms pave the way for improving population health. For example, how might economic freedoms drive the rates of private and public consumption of health? How might commercial interests drive governments to invest in human capital and how, for example, might private and state solutions combine to produce better population health outcomes? Further work is needed to probe precisely why some democracies may do better than others. Relatedly, one might also probe the many ways in which some autocrats secure their revenue by investing in the productivity of the lowest skilled, thereby unwittingly reducing more poverty in the process compared with democracies. After all, many dictators, such as in Cuba and Venezuela, often remain loved, particularly by the poorest segments of society even if population health gains may have been achieved under conditions of political repression. How to make democracy deliver may require thinking hard about how to make them increase economic freedoms and free market competition, resisting the dangers of rent-seeking and the allure of offering people 'fool's gold' in terms of patronage and subsidies. For our purposes, however, the data has clearly picked a winner—economic liberty associates with lower child mortality and overall population health compared with political liberties.

## CONFLICT OF INTEREST STATEMENT

We have no conflicts of interest. No funding was received for conducting this research.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in Indra De Soysa's website at <https://folk.ntnu.no/indras/index.html>.

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## ENDNOTES

- <sup>1</sup> See <https://sdgs.un.org/goals/goal1#:~:text=Goal%201%20calls%20for%20an,and%20environmental%20shocks%20and%20disasters.>
- <sup>2</sup> At this point, some might point to the health gains in the former Soviet Union or Cuba today and remark that neither political freedoms nor economic freedoms are necessary to reduce child death. Such mortality reductions, however, are accompanied by tremendous violations of personal freedoms (even medical ethics) and are more of a façade than real human capital gains employed for socially beneficial productive activity, such as reducing shortages (see Berdine et al., 2018).



- <sup>3</sup> See <https://databank.worldbank.org/reports.aspx?source=world-development-indicators>.
- <sup>4</sup> See <https://ucdp.uu.se>.
- <sup>5</sup> The replication data and do file will be made available upon publication.
- <sup>6</sup> We define the 23 developed democracies as Western Europe, North America, Oceania, and Japan because of mature levels of industrialization and very similar histories of democracy.
- <sup>7</sup> See VDEM codebook for details: [https://v-dem.net/documents/24/codebook\\_v13.pdf](https://v-dem.net/documents/24/codebook_v13.pdf) (Last accessed 01, November 2023).
- <sup>8</sup> A detailed description of the data and method can be obtained from <https://tommykrieger.eu/uploads/Index.pdf>. (Last accessed 1 November 2023).
- <sup>9</sup> See VDEM codebook for details: [https://v-dem.net/documents/24/codebook\\_v13.pdf](https://v-dem.net/documents/24/codebook_v13.pdf) (Last accessed 1 November 2023).
- <sup>10</sup> All robustness test results are available upon request.

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## APPENDIX A

TABLE A1 Intercorrelation matrix.

	1	2	3	4	5	6	7	8	9	10	11
1. HALE	1										
2. Under-five-mort	-0.8614	1									
3. Democracy	0.4566	-0.5635	1								
4. Private ownership	0.1832	-0.2478	0.6575	1							
5. EFW	0.6423	-0.7376	0.5922	0.4876	1						
6. GDP per capita	0.7494	-0.8727	0.5403	0.233	0.7249	1					
7. Resources/GDP	-0.4302	0.4711	-0.511	-0.4375	-0.5299	-0.3912	1				
8. Civil war ongoing	-0.2302	0.2701	-0.2317	-0.082	-0.2933	-0.2896	0.1961	1			
9. Peace exposure	0.3757	-0.4952	0.3319	0.1087	0.4655	0.5023	-0.3103	-0.5575	1		
10. Urban population%	0.639	-0.6424	0.3828	0.1481	0.4954	0.7349	-0.2088	-0.2299	0.3234	1	
11. Health equality	0.6484	-0.8041	0.5393	0.1401	0.6167	0.7561	-0.4247	-0.3111	0.5096	0.5638	1
12. Political corruption	-0.4773	0.671	-0.6669	-0.2688	-0.6366	-0.7006	0.4339	0.2642	-0.4865	-0.4161	-0.7367

## Summary statistics.

Variable	Obs	Mean	Std. dev.	Min	Max
1. HALE	4866	60.14353	7.798375	9.16628	74.48135
2. Under-five-mort	4866	49.2313	52.20244	2.3	340.6
3. Democracy	4866	0.516499	0.266026	0.013	0.926
4. Private ownership	4866	0.547619	1.07652	-4.11	2.782
5. EFW	3928	6.585119	1.124492	2.78	8.85
6. GDP per capita	4866	11062.23	16666.93	189.2822	112417.9
7. Resources/GDP	4866	7.68189	11.40642	0	87.57735
8. Civil war ongoing	4866	0.168516	0.374363	0	1
9. Peace exposure	4866	26.38635	19.9751	0	59
10. Urban population%	4866	54.58019	22.80561	5.416	100
11. Health equality	4866	0.617287	1.508117	-3.226	3.558
12. Political corruption	4850	0.50706	0.300159	0.002	0.966

## Marginal conditional effects of democracy and the control of corruption on child mortality.

Delta-method						
	dy/dx	Std. err.	z	P >  z	[95% conf. interval]	
v2x_polyarchy at values of control of corruption						
1	0.2560541	0.0591638	4.33	0.000	0.1400952	0.372013
2	0.2027766	0.0493237	4.11	0.000	0.1061041	0.2994492
3	0.1494992	0.0409351	3.65	0.000	0.0692679	0.2297305
4	0.0962217	0.0350561	2.74	0.006	0.0275131	0.1649304
5	0.0429443	0.033054	1.30	0.194	-0.0218403	0.1077289
6	-0.0103332	0.0355892	-0.29	0.772	-0.0800867	0.0594204
7	-0.0636106	0.041845	-1.52	0.128	-0.1456254	0.0184041
8	-0.1168881	0.050456	-2.32	0.021	-0.2157801	-0.0179961
9	-0.1701656	0.0604235	-2.82	0.005	-0.2885935	-0.0517377
10	-0.223443	0.0711799	-3.14	0.002	-0.3629531	-0.0839329
11	-0.2767205	0.0824169	-3.36	0.001	-0.4382547	-0.1151862

Marginal conditional effects of democracy and economic freedom on child mortality.

	Delta-method		z	P >  z	[95% conf. interval]	
	dy/dx	Std. err.				
v2x_polyarchy at values of economic freedom						
1	0.120552	0.0789223	1.53	0.127	-0.0341329	0.2752368
2	0.1169976	0.0648068	1.81	0.071	-0.0100214	0.2440165
3	0.1134432	0.052201	2.17	0.030	0.0111311	0.2157554
4	0.1098888	0.0424714	2.59	0.010	0.0266465	0.1931312
5	0.1063345	0.0379015	2.81	0.005	0.0320489	0.1806201
6	0.1027801	0.0402874	2.55	0.011	0.0238183	0.1817418
7	0.0992257	0.0486154	2.04	0.041	0.0039413	0.1945101
8	0.0956713	0.0604788	1.58	0.114	-0.0228649	0.2142075
9	0.092117	0.0742007	1.24	0.214	0.0533137	0.2375477