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It's the state, indeed! How state capacity facilitates social equality in authoritarian regimes

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ABSTRACT
Empirical evidence suggests that contemporary authoritarian regimes face several incentives to redistribute social policy concessions to their citizens. Yet autocracies differ extensively in their capacity to implement policy decisions. In this article, we identify three distinct but interrelated mechanisms through which state capacity determines a more equal provision of social benefits and services in healthcare and education sectors. Administrative capacity allows the regime to manage the implementation of social policy, extractive capacity ties in with more resources and information to be used for the provision of social benefits and services, and coercive capacity permits the state to effectively enforce policies. Using static and dynamic regression models for over 120 countries from 1960 to 2016, our findings show that state capacity enhances social equality in authoritarian contexts through these three interrelated mechanisms. Further analysis though suggests that the overall effect of state capacity dissipates in the long run.

Introduction

A conventional view in the literature on authoritarian regimes is that autocrats do not live in isolation and do not govern with the mere use of repressive strategies (Gandhi, 2015; Geddes, 1999). Although repression remains a viable tool in the hands of autocrats (Bove et al., 2017; Gerschewski, 2013), contemporary autocratic incumbents tend to secure their position in power by providing policy concessions to their citizens in exchange for political support (Mares & Carnes, 2009). In particular, contemporary autocrats employ social services and benefits to claim legitimacy and strengthen their position in power (Gandhi & Przeworski, 2007; Magaloni, 2006; 2008). Empirical evidence, however, reveals significant variation in non-democratic regimes' social policy expenditures (Eibl,

2020), welfare programmes (Grünewald, 2022; Knutsen & Rasmussen, 2018), and socio-economic outcomes (Panaro & Vaccaro, 2023; Teo, 2019).

In investigating the determinants of public social provision and outcomes in non-democratic regimes, scholars mainly focus on the role of elections (Gandhi & Lust-Okar, 2009), legislatures (Williamson & Magaloni, 2020), party competition (Teo, 2019), and civil society organisations (Teets, 2017). According to these studies, policy concessions constitute a specific form of co-optation because they require nominally democratic institutions (e.g. elections, legislature) to be formalised as legal norms and work effectively (Gandhi & Przeworski, 2007; Knutsen & Rasmussen, 2018). Yet recent contributions raise concerns about the need of a formally democratic institutional setting for policy concessions. Autocrats may provide policy concessions and promote concrete social outcomes regardless of the presence of nominally democratic institutions (Hanson, 2015; Panaro & Vaccaro, 2023).

Against this backdrop, a fast-growing body of scholarship explores how the policy implementation ability of the state apparatus accounts for distinct social policy provisions and outcomes (e.g. Cronert & Hadenius, 2021; Mares, 2005). These studies show that contemporary dictatorships vary extensively in their governance, ability to extract taxes and revenues, and capacity to enforce laws and policies (Hanson, 2018; Seeberg, 2014; 2019; van Ham & Seim, 2018). Nevertheless, this research has been exclusively concerned with government spending, social policy programmes, or economic aspects of inequality. There has been no systematic research attention to whether the policy implementation ability of the state fosters greater social equality.

By using the concept of state capacity, defined as 'ability of the state to accomplish its intended policy actions' (Dincecco, 2018, p. 2), our article aims to fill this research gap by investigating whether and how state capacity promotes social equality. In doing so, we start from a common assumption in the authoritarianism literature, acknowledging that dictators are not immune to redistributive pressures and share an interest to promote citizens' well-being (see e.g. Bueno de Mesquita et al., 2003; Gallagher & Hanson, 2009; Panaro & Vaccaro, 2023). Nonetheless, we contend that a well-functioning state apparatus fundamentally contributes to social equality through three distinct but interconnected mechanisms: administrative, extractive, and coercive.

Administrative capacity reflects the state's ability to organise administrative functions, manage the implementation of policy decisions, and deliver social services; it hinges mainly on an effective, professional state bureaucracy. Extractive capacity entails the state's ability to extract taxes and information on citizens. A state apparatus that is better equipped to collect tax revenues and gather information on citizens' policy preferences is more likely to reduce policy coordination problems and increase resources available for social service provision. Finally, coercive capacity reflects the state's authority to maintain internal order and enforce compliance with the law. Stronger coercive capacity increases the state's ability to enforce policy decisions and tame potential threats to regime stability.

Regarding social equality, we build on the distributive principle of equality, according to which an 'equal distribution of resources will ensure that people enjoy the same results or outcomes in life' (Blakemore & Griggs, 2007, p. 20). We contend that social equality takes place only when the welfare state's services and benefits are distributed equally among individuals (see also Esping-Andersen, 1990; Titmuss, 1974). We operationalise

social equality by looking at the distribution of high-quality basic education and health-care. We focus on these two sectors because of their relevance in the modern welfare state, as the provision of healthcare and education is a core responsibility of the state in almost all countries (Lake & Baum, 2001). Moreover, they are key 'enabling sectors' towards more equal social outcomes, as they empower individuals to combat poverty and social exclusion, and foster citizens' well-being (Sen, 1999). Access to healthcare and education services is a fundamental prerequisite to 'promote equal social opportunities, improve social conditions and overcome material deprivation' (Altman & Castiglioni, 2019, p. 7).

Importantly, our argument stems from empirical evidence showing that there are disparities in both state capacity and social equality between autocracies and democracies (Figure S1, Supplementary Material) and that state capacity is particularly important in enhancing social outcomes in authoritarian regimes (e.g. Hanson, 2015).

The empirical analysis is mainly based on a set of static and dynamic regressions for over 120 countries from 1960 to 2016, allowing us to investigate whether state capacity leads to social equality both in the short and long run. In line with our expectations, the findings show that state capacity promotes social equality through the three hypothesised interrelated mechanisms. Nevertheless, the results also suggest that this effect tends to dissipate in the long run.

Our article makes two important contributions to the literature on authoritarian regimes. First, while most existing studies on social policy and outcomes in autocracies focus on domestic political dynamics, we demonstrate that state capacity plays a key role in dictating social equality. In doing so, we also shed light on the mechanisms accounting for such relationship. Second, we contribute to the growing body of research on state capacity in autocracies by showing that state capacity facilitates more equal social outcomes. Our results also demonstrate a clear difference between short- and long-term effects: state capacity's positive impact materialises relatively quickly, rather than slowly over time.

The reminder of this article is organised as follows. Section II reviews previous contributions on the effect of state capacity on development outcomes. In Section III, we elaborate more in detail our theoretical argument on the causal relationship between state capacity and social equality. Section IV presents the data and our empirical strategy, whereas Section V illustrates the results and discusses the findings. Finally, a conclusive section summarises the main contribution of this study and reflects on potential pathways for future research.

State capacity and socioeconomic development: what do we know so far?

In the past few decades, research on state capacity has attracted the attention of many political scientists, and today, abundant empirical evidence shows that state capacity matters for development. There are two major strands of research in the literature dealing with the socio-economic consequences of state capacity.

The first asks whether state capacity boosts economic performance. In a seminal study, Evans and Rauch (1999) use the Weberian notion of bureaucracy to demonstrate that bureaucracies characterised by meritocratic recruitment and predictable, long-term career rewards facilitate economic growth. Similarly, Bockstette et al. (2002) find that

countries with a longer history of statehood have higher institutional quality and better economic performance.

Although the link between state capacity and economic progress enjoys widespread consensus, some studies indicate that a Weberian bureaucracy has a strong positive impact on economic performance mainly in the short run (Acemoglu, 2009; Cornell et al., 2020). Yet many contributions suggest that the positive impact of state capacity holds also in the long run (e.g. Besley & Persson, 2009; Dincecco, 2015; Dincecco & Katz, 2016). These studies are particularly helpful in untangling the long-term effect of state capacity by shedding light on how distinct aspects of state capacity lead to sustained economic growth. For instance, Dincecco and Katz (2016) emphasise the effect of tax extraction on regimes' long-run economic performance.

The second strand of literature focuses on the role of state capacity in social policy decisions and outcomes. Cross-national large-N studies reveal, for instance, that state capacity increases welfare spending (Rothstein et al., 2012), expands social insurance coverage (Mares, 2005), improves the quality of education and healthcare (D'Arcy & Nistotskaya, 2017), and alleviates child deprivation in developing countries (Halleröd et al., 2013).

In considering more specifically authoritarian regimes, recent contributions show that state capacity is at least as important as political institutions in producing desirable social outcomes. Hanson (2015) demonstrates that state capacity is a key determinant of better health and education outcomes in non-democratic contexts; Cronert and Hadenius (2021) argue that state capacity is linked to a broader expansion of the scope of social protection schemes in countries with low or moderate levels of democracy; and Brieba's (2018) comparative case study on Chile and Argentina indicates that state capacity matters more than regime type or economic progress for building a better public health system and improving health outcomes.

Some scholars push this argument further by identifying the dimensions of state capacity that are linked to inequality. Amendola et al. (2013) find that better property rights protection preserves the interests of a powerful minority, thereby increasing income inequality in low and middle-income economies in Africa, Asia, and Latin America —many of which are autocracies. Other scholars instead underscore the state's capacity to raise taxes (Gerry & Mickiewicz, 2008) or a country's fiscal system (Goñi et al., 2008) as key determinants of lower income inequality. More broadly, Panaro and Vaccaro (2023) find that state capacity reduces income inequality in autocracies regardless of differences in political institutions or economic performance.

In short, many contributions indicate that state capacity is an important determinant of better socio-economic performance in authoritarian regimes. The state seems to matter, but past studies have primarily focused on the links between state capacity and government spending, characteristics of social policy programmes, or economic inequality, overlooking the social aspects of equality. In fact, there is little cross-national empirical evidence on whether and how state capacity promotes social equality in autocracies.

How state capacity leads to social equality: three interrelated mechanisms

The notion of equality is not of recent origin and has been used in distinct fields of research. The comparative social policy literature offers manifold conceptualisations of equality ranging from the rational-choice, liberal egalitarian approach —mostly focused

on the extent to which a mix of freedoms and abilities are granted at the individual level — to the more radical equalitarianism perspective that reflects the allocation of benefits and services at the community level.[1]

Inspired by Titmuss' (1974) and Esping-Andersen's (1990) pioneering works, we posit that social equality is achieved when there is an equal provision of social services and benefits to citizens. Our notion of social equality thus relies on the distributional principle of equality, according to which an equal allocation of social services and benefits promotes equal social outcomes, for instance, by reducing levels of poverty and social exclusion, improving individual well-being, and enhancing citizens' ability to excise their political rights (Fourie et al., 2015).

Two areas of social policy are particularly important for the development of more equal outcomes. As Drèze and Sen (2002) emphasise, healthcare and education sectors play a key role in empowering citizens and enhancing individual well-being. Likewise, Sanborn and Thyne (2014) and Giunchi (2011) show that public investments in education and health reduce income inequality and improve human development in autocracies.

Our argument stems from the evidence that, regardless of a regime's political institutions (Panaro & Vaccaro, 2023), dictators use social policy to co-opt potential opposition groups in the political arena. By distributing social policy concessions, dictators enhance their political support and strengthen their grip on power (Cassani, 2017; Gandhi & Przeworski, 2007; Magaloni, 2008; Mares & Carnes, 2009). Similarly, distributive politics theories pinpoint that higher income and social inequality increase the probability of autocratic regime breakdown (Acemoglu & Robinson, 2006; Boix, 2003; Haggard & Kaufman, 2012). As all dictators are primarily concerned with maintaining their position in power (Bueno de Mesquita et al., 2003), we can reasonably assume that they are also motived to reduce social inequality in a strategic effort to secure regime stability.

Built on these insights, we argue that an equal provision of public social benefits and services is fundamentally dictated by state capacity. We expect autocracies with higher state capacity to encounter less problems in implementing more equal social policy decisions, thereby promoting more equal social outcomes than autocracies with a weak state apparatus.

Case studies on Kenya and Somalia illustrate well how weak state capacity contributes to unequal social outcomes in autocracies. In 2017, the government of Kenya introduced a new universal social pension programme. One of the intended objectives of the social pension scheme was to expand health insurance coverage nationwide. Yet evidence shows that in remote areas of the country, problems such as an inadequate road network, lack of administrative personnel, limited financial resources, and violence between ethnic groups did not allow successful registration of many eligible beneficiaries, thus affecting negatively the uptake of social pension (Porisky et al., 2023).

Another illustrative example is Somalia —'an extreme case of state failure' (Schäferhoff, 2014, p. 676). The Somali state has limited ability to implement laws and policies, public officials are constantly accused of corruption and malfeasance, federal institutions are in the hands of distinct clans, and extremist groups manage local taxation schemes (Freedom House, 2022). One of the main causes of the country's unequal social policy outcomes is its dysfunctional state institutions. Schäferhoff (2014) finds that a complex HIV/AIDS health project in Somalia succeeded best in regions with better public health infrastructure and security, attributing the failure of such complex health projects to the

absence of state capacity. A similar pattern is evident in Somalia's education sector, where 'chronic conflict and limited state resources have resulted in uneven access to education' (Cloutier et al., 2022, p. 10).

In elaborating our theoretical argument, we then identify three interconnected mechanisms through which state capacity leads to social equality.

First, state capacity is determined by the state's ability to organise administrative functions, manage the implementation of policy decisions, deliver social services, and regulate commercial activities. Through effective policy administration, public officials work synergistically to produce social outcomes. Technical competences among state actors are clearly outlined, and data collection, monitoring, and policy coordination are in the hands of a qualified, well-trained group of bureaucrats. Additionally, professional bureaucracies legitimise the state's authority, can manage complex policy issues, and above all, ensure efficiency in policy implementation (Hanson & Sigman, 2021). Through administrative capacity thus autocracies are more likely to successfully implement policy decisions designed to advance social equality.

Second, the state's ability to collect and manage tax revenues as well as to obtain information on its citizens and their economic activities determines distinct social policy outcomes. Authoritarian regimes where incumbents are unable to collect and manage revenues will also have more problems to coordinate the social demands of their citizens. According to Levi (1988) and Tilly (1990), extractive capacity impacts directly both tax revenues and policy outcomes. If we assume that a modern state mainly finances its activities with tax revenues, then a country with a state apparatus that is unable to collect taxes and/or information on its citizens is likely to have major problems in implementing its policy decisions. Moreover, a lack of resources reduces the possibilities of the state to finance its administrative and coercive functions.

Finally, coercive capacity reflects the state's ability to protect its citizens against external threats, maintain internal order, and enforce compliance with the law. By definition, the state possesses a monopoly on the legitimate use of force within its territory (Weber, 1946). A strong coercive capacity thus reflects the ability of the state to enforce policy decisions despite potential threats to regime stability (Levi, 1988). A complete absence of coercive capacity leads to anarchy and internal conflict, whereas weak coercive capacity is likely to undermine the state's ability to successfully implement its policies, including the delivery of social benefits and services.

Even if it is possible to identify these three different mechanisms and their respective dimensions of state capacity, we argue that the administrative, extractive, and coercive functions of the state are inextricably interconnected. Administrative capacity facilitates extractive capacity via a more effective collection of taxes and provides organisational support to the coercive apparatus of the state. Extractive capacity strengthens both the administrative and coercive functions of the state via more resources and information. Coercive capacity helps the administrative apparatus to work more productively than in a situation of unrest and augments the capacity to extract resources via stronger rule enforcement. Recent empirical evidence supports our view on the interconnectedness of the three dimensions of state capacity (see Hanson & Sigman, 2021).

Overall, we posit that autocracies with a more capable state apparatus promote a more equal provision of social services and benefits in healthcare and education. Moreover, we
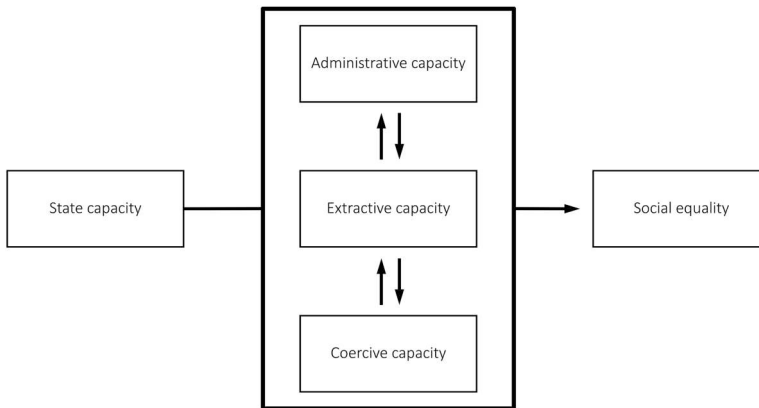
Figure 1. State capacity and social equality: three interrelated mechanisms.

shed light on the three different but inextricably interrelated mechanisms —administrative, extractive, and coercive— through which state capacity impinges on social equality (Figure 1).

Research design, data, and methods

To test the validity of our hypothesis, we conduct a series of panel data regressions on up to 126 countries from 1960 to 2016 with country-year as the unit of analysis. The chosen time span is determined by both research focus and data availability. First, we are interested in the link between state capacity and social equality in contemporary autocracies, because the role of the state in providing public health and education services is more important today than in the early twentieth century or before. Second, data on state capacity is not available for a longer time period.

Our study focuses on non-democratic regimes. We use Lührmann et al.'s (2018) *Regimes of the World* (RoW) classification to distinguish between autocracies and democracies. According to RoW, there are four regime types: (1) closed autocracies, (2) electoral autocracies, (3) electoral democracies, and (4) liberal democracies. We exclude from our sample countries that have been classified as electoral or liberal democracies throughout the period of analysis.

Relatedly, a major issue concerns the treatment of countries that have had short democratic spells in between many autocratic years (e.g. Togo 2008–2009, 2014–2016; Gambia 1971, 1988–1989). Both theoretical and empirical arguments seem to suggest that these countries should be included in our sample. First, the literature on democratisation shows that autocracies do not transit to democracy overnight, as democratic political institutions need a long time span to consolidate (cf. Hadenius & Teorell, 2007; Gandhi, 2015). Second, the exclusion of these 'democratic' country-years would interrupt the time series, wasting relevant time-series information and causing less precise estimates. Hence, in addition to autocratic country-years, we also include in our sample democratic spells that have lasted less than ten years and are both preceded and followed by autocratic country-years.

To exemplify, we include Togo from 2008 to 2009 and from 2014 to 2016 even if it is classified as democratic because it is autocratic in all other years. Conversely, we exclude

democratic Venezuela from 1963 to 2002 even if it is autocratic in all other years because its democratic spell is over 10 years. We acknowledge that a clear-cut solution to this problem does not exist and test the robustness of our results to three alternative samples: (1) a restrictive sample of exclusively autocratic country-years; (2) an inclusive sample of all countries that have been coded as autocratic for over 20 years in our period of analysis; and (3) a sample based on our main criteria but a different regime type classification —namely, the Boix-Miller-Rosato (BMR) dichotomous classification of political regimes (Boix et al., 2012).

Dependent variables

Our main outcome of interest is social equality. To measure it, we use indicators of educational equality (*v2peedueq*) and health equality (*v2pehealth*) from the Varieties of Democracy (V-Dem) dataset (Coppedge et al., 2020b). Both indicators are based on expert responses to five-point questions in V-Dem's survey questionnaire and are transformed to an interval scale by V-Dem's measurement model (Coppedge et al., 2020a). In our main sample, the indicators run approximately on a scale from –3 to 3 (mean: –0.3; standard deviation: 1.3). Higher scores mean higher social equality.

The decision of selecting these two measures rests upon careful consideration. First, the two indicators match closely with our understanding of social equality, by capturing the extent to which high-quality basic education and healthcare are equally guaranteed to all citizens in a given country (Coppedge et al., 2020b). Second, although we assume that both education and healthcare are key 'enabling sectors' to enhance social opportunities and promote more equal outcomes, we contend that they are driven by two different logics of provision. While investing in health services may be motivated by increasing aging population or civil conflicts, promoting better educational outcomes may be driven by a programmatic development of the country or international donors' contributions (Jones et al., 2017; Panaro, 2022). Hence, we assess state capacity's impact on the equality of education and health policy separately.

The main disadvantage of the two selected measures is that like any 'subjective' indicator they may contain measurement error, and we do not know how closely experts' perceptions align with reality. Yet existing evaluations of the quality of V-Dem's data do not point out major biases or shortcomings, and V-Dem's data performs well compared to other indicators. Evidence suggests, for instance, that V-Dem's polyarchy index has no bias driven by ideology or coder characteristics (Teorell et al., 2019) and that it is better constructed than other common measures of democracy (Boese, 2019; Vaccaro, 2021). Additionally, all common democracy indicators appear to have some degree of method bias, but V-Dem's data contains less method bias than democracy data from other providers (Elff & Ziaja, 2018).

Using 'objective' data could be an alternative. However, we believe that frequently used objective indicators of educational and health outcomes, such as 'educational attainment' and 'life expectancy', would deviate from our conceptualisation of social equality, and thus, surely contain measurement error. Life expectancy might be a consequence of more health equality, but may also reflect other factors like income, nutrition, and living conditions. Similarly, higher levels of educational attainment might result from wider access to education, but more schooling years do not automatically entail that

educational services are more equally distributed. Simply put, for the study at hand, V-Dem's educational and health equality seem to be the most valid publicly available indicators.

Explanatory variables

When it comes to our main explanatory variable —state capacity— the literature offers a wide range of indicators (see e.g. Hanson, 2018; Savoia & Sen, 2015; Vaccaro, 2023). We choose Hanson and Sigman's (2021) *state capacity index* because it encompasses perfectly our definition of state capacity. The index synthesises 21 indicators of administrative, extractive, and coercive capacity, and is in line with our theoretical reasoning, as we argue that these three dimensions are ultimately intermingled in their links with social equality. It ranges in our main sample from –2.31 to 1.91 (mean: –0.20; standard deviation: 0.65). Year-to-year changes tend to be small, but there are exceptions. The largest positive and negative year-to-year changes occur, respectively, in Kuwait (from –0.34 in 1991 to 0.81 in 1992) and Tajikistan (from –0.49 in 1991 to –1.53 in 1992).

In additional tests we further investigate whether more specific measures reveal any differences among dimensions of state capacity. In these 'disaggregate' analyses, we measure administrative capacity with *rigorous and impartial public administration*, extractive capacity with *state fiscal capacity*, and coercive capacity with *state authority over territory*. These three measures are all sub-indicators of the broader state capacity index. They are produced by V-Dem (Coppedge et al., 2020b) and collected via Hanson and Sigman's (2021) *State Capacity Dataset*.

Control variables

Several confounding factors may affect the relationship between state capacity and social equality. Based on previous studies we identify these factors and control for them in the regression analysis.

First, economic performance provides the material conditions for the distribution of social benefits and services (e.g. Brown & Hunter, 1999; Haggard & Kaufman, 2008). Wealthier countries simply have more resources to provide their citizens with equal access to high quality education and healthcare. We thus control for economic performance with *GDP/capita*, transformed by the natural logarithm (Coppedge et al., 2020b).

Second, population size may matter, because 'countries with larger populations tend to redistribute less' (Jäntti et al., 2020, p. 67). We thus control for the *size of the total population*, transformed by the natural logarithm (World Bank, 2020).

Third, globalisation can affect both social policy decisions (e.g. Rudra & Haggard, 2005; Swank, 1998) and outcomes (e.g. Antràs et al., 2017; Bergh & Nilsson, 2010). Following a conventional approach, we use *trade openness* (World Bank, 2020) as a proxy of globalisation, and control for it.

Fourth, classic comparative politics studies suggest that democratic experience impinges on social policy decisions (e.g. Przeworski et al., 2000). Hence, we control for the level of *democracy* with V-Dem's polyarchy index (Coppedge et al., 2020b).

Finally, factors like historical legacy, colonial experience, and global economic crisis may affect the distribution of high-quality healthcare and education services. We thus

include country and year fixed effects (FE) to control for time-invariant characteristics within countries and global year-to-year shocks. The inclusion of 'two-way FE' also accounts for possible confounding factors that are typically measured with time-invariant indicators, like ethnic diversity, and reduces the likelihood of omitted variable bias.

Methods

We use various quantitative methods to assess our argument's validity. First, we explore the state capacity-social equality nexus with a descriptive approach. Specifically, through scatterplots, we analyse the bivariate relationship between state capacity and social equality, without considering potential confounding factors. This analysis provides an interesting preliminary snapshot on the hypothesised association.

Then, we move ahead with a more rigorous statistical approach by running a battery of panel data regressions that allow us to investigate the relationship between state capacity and social equality, *ceteris paribus*. We begin the regressions with simple static models, where both the outcome and explanatory variables are measured in levels. These models are useful to understand whether increases in the level of state capacity are associated with increases in the level of social equality. Nevertheless, they assume that the effect of state capacity occurs immediately, and that past social equality does not affect current social equality. While previous studies have shown that state capacity may have both short and long run effects, the latter assumption seems relatively unrealistic.

We thus continue our regression analysis in a dynamic framework, where we assume that past values of social equality do affect current social equality. As our main variables of interest are stationary, we follow De Boef and Keele's (2008) advice to start with a general dynamic model. We run a set of general error correction models (ECMs), where the dependent variable is measured in first differences and the independent variables are measured both in first differences and lagged levels. Even though ECMs are typically used with integrated data, they 'may be used with stationary data to great advantage' (De Boef & Keele, 2008, p. 189).

Dynamic models such as the general ECM are particularly instructive for our study, as they provide information on the short- and long-term relationships between the variables of interest. As there is disagreement regarding whether a well-functioning state fosters development in the long run (e.g. Dincecco & Katz, 2016) or in the short run (e.g. Cornell et al., 2020), acquiring knowledge on the temporal dynamics of the relationship between state capacity and social equality is particularly important.

The results estimated via general ECMs suggest that the association between state capacity and social equality occurs mainly in the short run. Hence, we complement the general ECMs with more restricted dynamic models that focus on the short-term relationship. In doing so, we first estimate the regression equation in first differences, where both the outcome variable and predictors are measured exclusively in changes. In these models, β refers only to the short-term 'effect' of changes in x to changes in y. Any information about the long-term relationship between x and y is removed. These 'first differenced' models tell us whether current changes in state capacity ($x_{it} - x_{it-1}$) are related to current changes in social equality ($y_{it} - y_{it-1}$).

Yet with the above models we cannot entirely rule out the possibility that it is social equality influencing state capacity, rather than the other way around. To address this issue, we run 'lagged first differenced' models, where we estimate the relationship between past changes in state capacity ($x_{it-1} - x_{it-2}$) and current changes in educational equality and health equality ($y_{it} - y_{it-1}$). As current changes in social equality are unlikely to affect past changes in state capacity, these models offer higher robustness against potential reverse causality than the previous sets of regression models.

Findings

Figure 2 depicts the average relationship between state capacity and social equality in our sample of autocracies from 1960 to 2015. State capacity is strongly associated with both educational equality ($r = 0.58$) and health equality ($r = 0.62$), providing preliminary evidence in support of our main hypothesis. Autocracies with a comparatively strong state apparatus like Turkey, Qatar, and Singapore have generally higher levels of educational and health equality than autocracies with weak and dysfunctional state institutions like Somalia, Afghanistan, and Yemen. At least when potential confounding factors are not controlled for, autocracies with higher state capacity tend to have more social equality.

We begin our regression analysis by estimating a set of static models, where the variables on both sides of the regression equation are measured at time *t*. The baseline model includes country FE and a control for GDP/capita. The intermediate model includes two-way FE and a control for GDP/capita. The full model includes also controls for democracy, total population, and trade openness. These three models are repeated for both educational and health equality.

The slope coefficient of state capacity is statistically significant and has the expected positive sign in all models (Table 1). State capacity seems to be related to educational equality and health equality with a relatively similar magnitude,
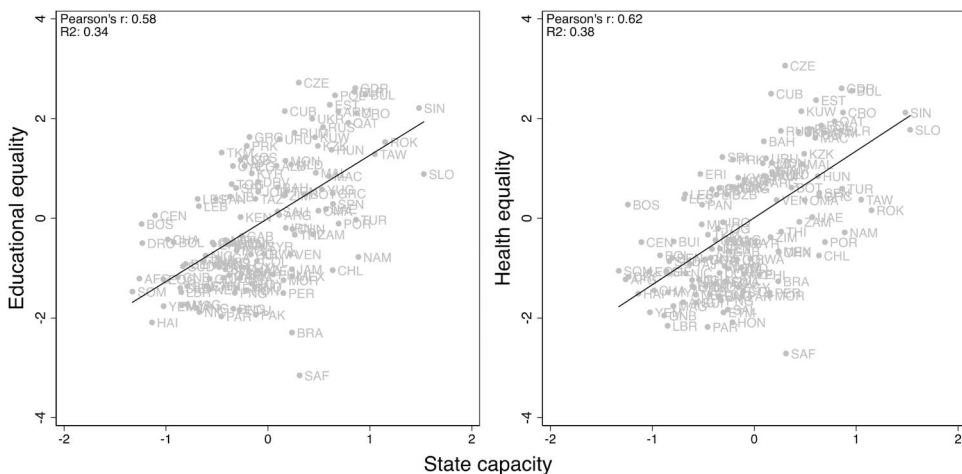

Figure 2. State capacity and social equality (1960–2015). Dots represent average values from 1960 to 2015.

Table 1. State capacity and social equality: static OLS regression models.

	Dependent variable (Y):					
	Educational equality$_t$			Health equality$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)
Capacity$_t$	0.530***	0.516***	0.432***	0.409***	0.458***	0.424***
	(0.131)	(0.127)	(0.128)	(0.116)	(0.110)	(0.115)
Ln(GDP/capita)$_t$	0.026	0.019	−0.009	0.207***	0.268***	0.210**
	(0.081)	(0.096)	(0.105)	(0.067)	(0.075)	(0.095)
Democracy$_t$			−0.179			0.127
			(0.341)			(0.310)
Ln(Total pop.)$_t$			0.433*			0.324
			(0.252)			(0.239)
Trade$_t$			0.001			0.001
			(0.001)			(0.001)
Within R^2	0.14	0.15	0.12	0.17	0.20	0.21
Observations	4884	4884	3792	4884	4884	3792
Countries	126	126	119	126	126	119
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
AIC	5953.24	6002.69	4154.84	5536.37	5488.10	3388.27
BIC	5966.22	6372.84	4529.28	5549.36	5858.24	3762.71

Robust standard errors in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$. Constant coefficient measured but not reported.

suggesting that the strength of the contemporaneous link between a capable, well-functioning state apparatus and social equality does not depend on the sector under consideration.

We continue our regression analysis with dynamic models that more realistically capture the true data generating process. As suggested in the literature, we begin these analyses with a general ECM. Like in the static models, we first run baseline models with a control for GDP/capita and unit FE, then include also year FE, and finally add also further controls for democracy, total population, and trade openness. It may be useful to recall that in ECMs information on the short-term effect of a given predictor is provided by the beta coefficient in changes, whereas information on the long-term effect is provided by the beta coefficient in levels.

The results from the general ECMs (Table 2) indicate that state capacity has a positive effect on social equality in the short run. Regardless of the model, the finding is significant at the highest level of confidence for both educational and health equality, as shown by the beta coefficients for the differenced state capacity terms. In the long run, however, we find at best weak support for our hypothesis. As shown by the coefficients for the lagged state capacity terms, the relationship between state capacity and social equality is positive throughout the models, but statistically significant only in some of them. Once the full set controls is included, we find no significant evidence of a long run effect of state capacity on either educational or health equality.

We then calculate the 'long run multiplier' (LRM) to understand more in detail the long-term relationship between state capacity and social equality.[2] As with the lagged state capacity terms, the LRM coefficients for state capacity are not statistically significant once the model includes full controls. When full controls are not included the LRM coefficient is statistically significant, yet even in such cases, the long-term positive effect of state capacity on educational and health equality is never more than three times its short-term

Table 2. State capacity and social equality: ECMs.

	Dependent variable:					
	ΔEducational equality$_t$			ΔHealth equality$_t$		
	(1)	(2)	(3)	(4)	(5)	(6)
ΔCapacity	0.164***	0.166***	0.197***	0.176***	0.177***	0.166***
	(0.048)	(0.047)	(0.057)	(0.040)	(0.040)	(0.048)
Capacity$_{t-1}$	0.020	0.024*	0.016	0.023*	0.031**	0.023
	(0.012)	(0.013)	(0.017)	(0.012)	(0.012)	(0.016)
ΔLn(GDP/capita)	0.097**	0.085**	0.044	0.193***	0.194***	0.159***
	(0.039)	(0.039)	(0.038)	(0.048)	(0.047)	(0.054)
Ln(GDP/capita)$_{t-1}$	0.007	0.009	0.005	0.002	0.007	−0.003
	(0.008)	(0.009)	(0.014)	(0.009)	(0.010)	(0.017)
ΔDemocracy			0.177*			0.086
			(0.094)			(0.106)
Democracy$_{t-1}$			−0.024			0.021
			(0.038)			(0.042)
ΔLn(Total pop.)			−0.265			0.309
			(0.362)			(0.400)
Ln(Total pop.)$_{t-1}$			−0.018			−0.097**
			(0.044)			(0.042)
ΔTrade			−0.001*			−0.001
			(0.000)			(0.000)
Trade$_{t-1}$			−0.000			0.000
			(0.000)			(0.000)
Y$_{t-1}$	−0.063***	−0.062***	−0.073***	−0.063***	−0.064***	−0.081***
	(0.008)	(0.008)	(0.015)	(0.009)	(0.009)	(0.014)
LRM						
Capacity	0.312*	0.378**	0.215	0.361**	0.482***	0.288
	(0.184)	(0.198)	(0.231)	(0.180)	(0.172)	(0.198)
Within R^2	0.06	0.07	0.09	0.07	0.08	0.10
Observations	4746	4746	3658	4746	4746	3658
Countries	123	123	115	123	123	115
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Lagged Y	Yes	Yes	Yes	Yes	Yes	Yes
AIC	−4333.84	−4306.23	−3525.13	−4367.28	−4341.92	−3431.81
BIC	−4301.52	−3924.79	−3121.83	−4334.95	−3960.48	−3028.50

Robust standard errors in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$. Constant coefficient measured but not reported. LRM standard errors calculated using the delta method.

effect. Our findings thus indicate that increases in state capacity lead to more social equality, but a large part of such effect occurs in the short run, rather than in the long run.

Based on these results, we take a further step in the regression analysis by specifically focusing on the short run relationship between state capacity and social equality with more restricted dynamic models that exclude long run information. First, we estimate our regression equation in first differences (Table 3). First-differencing all variables removes automatically unit FE. The baseline model thus controls only for GDP/capita; then, we add year FE to account for possible common shocks; and finally, we also include controls for democracy, total population, and trade openness. The estimates indicate that changes in state capacity at time t are positively related to changes in both educational equality and health equality at time t. The result is statistically significant at the highest level of confidence. As before, we find no substantial difference in the magnitude of the predicted effect between health and educational equality.

To exclude potential reverse causality, we re-run the above models with lagged first differences instead of first differences (Table 4). The results indicate that past changes

Table 3. State capacity and social equality: first-differenced regression models

| | Dependent variable (Y): | | | | | |
| | ΔEducational equality$_t$ | | | ΔHealth equality$_t$ | | |
	(1)	(2)	(3)	(4)	(5)	(6)
ΔCapacity$_t$	0.166***	0.166***	0.205***	0.174***	0.171***	0.173***
	(0.048)	(0.048)	(0.064)	(0.043)	(0.043)	(0.054)
ΔLn(GDP/capita)$_t$	0.111***	0.098***	0.072*	0.208***	0.206***	0.200***
	(0.036)	(0.038)	(0.041)	(0.053)	(0.054)	(0.067)
ΔDemocracy$_t$			0.179*			0.072
			(0.091)			(0.097)
ΔLn(Total pop.)$_t$			0.427*			0.504*
			(0.255)			(0.275)
ΔTrade$_t$			−0.000			−0.000
			(0.000)			(0.000)
R^2	0.03	0.04	0.05	0.04	0.06	0.06
Observations	4746	4746	3658	4746	4746	3658
Countries	123	123	115	123	123	115
Year FE	No	Yes	Yes	No	Yes	Yes
AIC	−4019.55	−3995.69	−3195.93	−4075.11	−4055.74	−3106.76
BIC	−4000.16	−3627.19	−2823.65	−4055.71	−3687.23	−2734.48

Robust standard errors in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$. Constant coefficient measured but not reported.

in state capacity affect positively current changes in health and educational equality. This time, however, we find some small systematic differences between the two sectors of social policy. The positive impact of state capacity is slightly stronger in magnitude and more robust for educational equality than health equality. For educational equality, the effect is statistically significant at the highest level of confidence. For health equality the effect is statistically significant at the 95% or at the 90% levels, depending on the model.

According to this last set of models, a one-unit change in past state capacity is positively related to a 0.07 change in equality in access to high-quality education and to a 0.05 change in equality in access to high-quality health care. These positive effects may

Table 4. State capacity and social equality: lagged first-differenced regression models

| | Dependent variable (Y): | | | | | |
| | ΔEducational equality$_t$ | | | ΔHealth equality$_t$ | | |
	(1)	(2)	(3)	(4)	(5)	(6)
ΔCapacity$_{t-1}$	0.073***	0.074***	0.071***	0.068***	0.065**	0.053*
	(0.023)	(0.023)	(0.027)	(0.026)	(0.026)	(0.030)
ΔLn(GDP/capita)$_{t-1}$	0.009	−0.001	−0.014	0.024	0.022	0.009
	(0.034)	(0.035)	(0.047)	(0.045)	(0.046)	(0.062)
ΔDemocracy$_{t-1}$			0.016			−0.077
			(0.078)			(0.069)
ΔLn(Total pop.)$_{t-1}$			0.264			0.105
			(0.246)			(0.330)
ΔTrade$_{t-1}$			0.000			0.000
			(0.000)			(0.000)
R^2	0.003	0.02	0.02	0.003	0.02	0.03
Observations	4687	4687	3607	4687	4687	3607
Countries	121	121	113	121	121	113
Year FE	No	Yes	Yes	No	Yes	Yes
AIC	−3869.34	−3853.61	−2972.74	−3946.78	−3929.98	−3000.32
BIC	−3849.98	−3485.82	−2601.30	−3927.42	−3562.19	−2628.88

Robust standard errors in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$. Constant coefficient measured but not reported.

seem modest at first glance, but given that large changes in social equality tend to occur slowly over time, our findings are in fact of significant importance. For instance, between 1960 and 2010, educational equality did not change at all in Honduras, increased by less than 0.01 in Nigeria, and decreased by less than 0.02 in Lebanon.

As a further robustness test, we check whether using more specific measures of state capacity affects our results. We re-run all the previous sets of models first by using separately a proxy for each of the three identified dimensions of state capacity (Tables S1-S12, Supplementary Material), and then by including these three proxies together in the same models (Tables S13-S16, Supplementary Material).

Interestingly, the results of these models suggest that administrative capacity matters more than extractive or coercive capacity for educational and health equality. The finding is robust to most, but not all models. Additionally, we find evidence that administrative capacity leads to higher levels of social equality not only in the short but also in the long run.

Extractive capacity seems to matter only for educational equality and only in the short-term, although its coefficient is non-significant in the static models once all controls are included. We do not find any evidence of a significant relationship between extractive capacity and health equality. Coercive capacity also seems to matter only in the short-term but more for health equality than educational equality. ECMs with the all the three indicators of state capacity along with a full set of controls provide evidence of a significant positive short-term relationship between coercive capacity and health equality, but not educational equality. Administrative capacity instead is positively linked to both educational and health equality in all models, except lagged first-differenced models. In these particular models, if other dimensions of state capacity are not controlled for, administrative capacity matters only for health equality. Conversely, we find no robust evidence of an association between administrative capacity and education or health equality in these models, once we control for other dimensions of state capacity.

While generally administrative capacity seems to matter more than extractive or coercive capacity, it is essential to note that overall state capacity has the most consistent relationship with social equality across various regression models and specifications. This is unsurprising, considering the interconnections among the three dimensions. The above results corroborate our argument that it is more appropriate to analyse the relationship between state capacity and social equality with an aggregate measure of state capacity instead of disaggregating the three dimensions and analysing them separately in relation to social equality.

Finally, we test the robustness of our results to three alternative samples of countries. First, we run our main regressions with a sample of autocratic country-years that excludes also brief democratic spells that are both preceded and followed by autocratic country-years (Tables S17-S20, Supplementary Material). Second, we run the regressions with a broader sample that includes autocratic country-years as well as democratic country-years of countries that have been coded as autocratic for over 20 years from 1960 onwards (Tables S21-S24, Supplementary Material). Third, we run the regressions with a sample of autocratic countries based on the BMR classification of political regimes, rather than RoW (Tables S25-S28, Supplementary Material).

These robustness tests with alternative samples do not significantly affect the interpretation of the results. There are minimal differences in the results between the

main models and the first two alternative samples. With the BMR classification, the relationship between state capacity and health equality becomes statistically non-significant in the lagged first-differenced model with full controls but remains significant in the general ECMs. Hence, these robustness checks corroborate the validity of our findings.

The bottom line is that state capacity increases equality in education and healthcare sectors at least in the short-term. Our main hypothesis, according to which authoritarian regimes with well-functioning, effective state institutions lead to more equal social outcomes, is robustly supported by our statistical analysis and available data. While the evidence is strong for a short-term positive effect on both educational and health equality, we do not find systematic statistically significant evidence of a long-term association between overall state capacity and social equality.

Conclusion

Recent advances in the literature on authoritarianism show that dictators, much like democratic governments, face incentives to adopt redistributive policies and promote citizens' well-being (Gallagher & Hanson, 2009). Yet much of this flourishing body of research is focused on the role of elections, legislatures, and party competition in providing different incentives for autocratic incumbents to enhance social spending, adopt more inclusive welfare programs, and reduce income inequality (e.g. Gandhi, 2008; Miller, 2015; Pelke, 2020; Teo, 2019; Williamson & Magaloni, 2020).

In this article, we take a step forward by discussing why and showing how the ability of the state to implement its policy decisions is related to differences in social equality. We build on the empirical evidence suggesting that state capacity is an important factor in promoting social outcomes in authoritarian regimes (Hanson, 2015), and demonstrate that it leads to more equal provision of education and healthcare through three different mechanisms. Through administrative capacity, autocracies manage more effectively the implementation of social policy; coercive capacity allows autocracies to successfully enforce the implementation of social policies; and through extractive capacity, autocracies reduce coordination problems and collect resources.

Importantly, we assume that these three mechanisms are inextricably linked to each other. Dictatorships with high extractive capacity need to have extensive information on their citizens and the economy —otherwise collecting taxes would be impossible. This information, along with collected tax revenues, is more than likely to have a crucial role also for administrative and coercive purposes. Likewise, a professional and effective state bureaucracy enhances both the extractive and coercive apparatuses of the state, whereas coercive capacity impinges on the ability of the state to extract resources and manage the implementation of social policy decisions.

Overall, our findings suggest that more research attention should be devoted to the policy implementation ability of the state when studying social and economic outcomes in authoritarian contexts. Since the mid-2010s, the neo-institutional approach has dominated this field of research. We now know a lot about how political institutions relate to a wide range of important policy outcomes like government spending and income inequality. By contrast, state institutions and social equality have received much less attention in the literature on authoritarianism. This article brings the state back in and shows that state capacity is a key determinant of social well-being in autocracies. We also contribute more

specifically to the state capacity literature by reflecting on the mechanisms through which state capacity influences the social aspects of equality.

Our results come along with some limitations and raise further questions on the relationship between state capacity and social equality. For one thing, while our findings indicate a clear causal direction —from state capacity to social equality— we cannot fully rule out the possibility of reverse causality. Additionally, when breaking down the effects of the three core components of state capacity, administrative capacity emerges as the main driver of the relationship. The impact of a well-functioning state bureaucracy on both educational and health equality seems to be strong and positive not only in the short-term, but also endures in the long-term. As previously discussed, making a sharp distinction between the three components of state capacity is a difficult if not impossible task both theoretically and empirically. Therefore, we believe that this finding must be read with caution.

That said, we would not be surprised if the effect of the administrative apparatus of the state on social equality would be truly distributed over a longer period compared to the effect of extractive or coercive capacity. Among these three components of the state, the administrative apparatus is most directly involved in managing the implementation of complex social policies, rather than enforcing them (coercive capacity) or extracting resources for them (extractive capacity).

Interestingly, we only find robust evidence of a short-term impact of state capacity on social equality, with limited evidence of a long-term effect on either educational or health equality. This result echoes some of the past studies suggesting that state capacity facilitates development mainly in the short run (e.g. Acemoglu, 2009; Cornell et al., 2020).

Our interpretation of this result is that a strong and positive long-term effect of state capacity on social equality is likely to occur primarily in democracies. Both authoritarian political elites and their democratic counterparts have incentives to use state capacity to improve social policy outcomes. However, as autocratic rulers tend to have shorter time horizons (Olson, 1993), to be more insulated from particularistic and deliberative pressures, and to be less responsive to citizens' demands, they do successfully deploy state capacity to provide social equality in the immediate —as for instance China did by building a hospital in six days in the early weeks of the COVID-19 pandemic (Williams, 2020)— but are too short-sighted to use state capacity for more complex social policies that may require a longer time for their effects to materialise. It is not by chance that countries with the highest levels of social equality in the post-World War II era such as Norway, New Zealand, and Japan have been liberal democracies throughout our period of analysis.

Last, while several insightful contributions have explored the interactive effect of democracy and state capacity on social outcomes (e.g. Cronert & Hadenius, 2021; Hanson, 2015), our findings stress the need for further research attention to the demand-side of state capacity, in order to unveil the factors that determine distinct state policy implementation's abilities. We anticipate that these factors will diverge between democracies and autocracies, potentially explaining more in detail why state capacity does not seem to foster social equality in autocracies in the long run.

Notes

1. See Fourie et al. (2015) and Blakemore and Griggs (2007) for a review of different approaches to equality.
2. LRM is calculated by dividing the coefficient of the lagged state capacity term with the negative coefficient of the lagged dependent variable.

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Disclosure statement

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