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The scientific limits of understanding the (potential) relationship between complex social phenomena: the case of democracy and inequality

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The scientific limits of understanding the (potential) relationship between complex social phenomena: the case of democracy and inequality

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Abstract. This paper outlines the methodological and empirical limitations of analysing the potential relationship between complex social phenomena such as democracy and inequality. It shows that the means to assess how they may be related is much more limited than recognised in the existing literature that is laden with contradictory hypotheses and findings. Better understanding our scientific limitations in studying this potential relationship is important for research and policy because many leading economists and other social scientists such as Acemoglu and Robinson mistakenly claim to identify causal linkages between inequality and democracy but at times still inform policy. In contrast to the existing literature, the paper argues that 'structural' or 'causal' mechanisms that may potentially link the distribution of economic wealth and different political regimes will remain unknown given reasons such as their highly complex and idiosyncratic characteristics, fundamental econometric constraints and analysis at the macro-level. Neither new data sources, different analysed time periods nor new data analysis techniques can resolve this question and provide robust, general conclusions about this potential relationship across countries. Researchers are thus restricted to exploring rough correlations over specific time periods and geographic contexts with imperfect data that are very limited for cross-country comparisons.

Keywords: democracy, inequality, redistribution, methodology, causation, epistemology

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1. Introduction

The objective of this paper is to better understand our methodological and empirical limitations of analysing the potential relationship between complex social phenomena such as democracy and inequality. Our ability to understand this potential relationship is much more limited than recognised in the existing literature. The process of democratisation and changes in levels of equality are also more nuanced, idiosyncratic and heterogeneous across and within countries over time than commonly expected. Acemoglu and Robinson (2001; 2006), and Boix (2003)—arguably the most prominent and most cited authors in this literature—claim that high levels of inequality decrease the likelihood of democratisation. They also talk about "causal effects" and "the impact of democracy" on outcomes. This paper shows that such conclusions presuppose a number of very demanding assumptions and requisite premises that cannot be rigorously met.

In fact, thousands of papers analyse the potential relationship between political variables like democracy and economic variables like inequality by gathering their data, selecting their methods and then going forward with their analysis, interpreting their findings and potentially informing policy, with many other steps along the way that involve making important implicit methodological assumptions. This paper instead goes backwards to analyse whether the data and methods, which are applied by the leading authors in this literature, are even able to produce robust results as they claim. It emphasises that how we generate our correlational (or 'causal') claims cannot be viewed independent from how we make everyday, typically unreflective decisions as researchers such as what we decide to analyse, how we construct our variables, how we collect and use our data, which methods we choose to apply, how we interpret our statistical results and so forth.

Better understanding our scientific limits of analysing the potential relationship between phenomena like inequality and political regimes is important for research and policy because a number of leading economists and other social scientists misguidedly claim to establish causal relationships but at times still inform public policy and thus can bring about adverse social outcomes. Contrary to the existing literature, the paper here argues that 'structural' or 'causal' mechanisms that may potentially link the distribution of economic wealth and different political regimes will remain unknown due to a number of reasons outlined here including, for example, their highly complex and idiosyncratic characteristics, fundamental econometric constraints and analysis at the macro-level. Neither new data sources, different analysed time periods nor new data analysis techniques will resolve this question and provide robust, general conclusions about this potential relationship across countries. Researchers can provide at most correlational evidence over specific time periods and geographic contexts using imperfect data sources which strongly constrain cross-country comparisons.

After this introduction, Section 2 provides a critical review of the leading literature on the potential relationship between inequality and democracy—looking at existing studies on how inequality may influence democratisation and on how democratisation may influence inequality. The paper then outlines the methodological limitations (Section 3) and empirical limitations (Section 4) of trying to analyse either of these two potential relationships. Section 5 concludes.

2. A literature review of the potential relationship between democracy and inequality

A review of the existing literature on how levels of inequality and distribution may be related to different political regimes[2] shows that it is laden with contradictory hypotheses and findings, which constrains the possibility of deriving any general conclusions.

The question about the potential relationship between the distribution of wealth and a society's political system has been explored over the past 2500 years. Aristotle viewed that extreme inequalities hinder the functioning of political institutions. Marx argued for the allocation of resources in relation to needs, supporting an egalitarian form of distributive justice. Moore (1966) highlighted the particular interrelationship between peasants and landlords, as well as between landlords and commercial bourgeoisie in influencing the democratic, fascist and communist transitions of the early 20th century.

In more recent literature, many theories have been developed that propose that how income is distributed influences the probability of democratisation. However, no consensus exists in the literature on this potential relationship. Boix (2003) states that no scholar has persuasively shown that the distribution of wealth is empirically correlated with a greater likelihood of democracy, but claims himself to have identified robust results on this relationship. A number of papers argue that cross-country empirical evidence on the potential relationship of democracy with inequality can be ambiguous and non-robust (for example, Sirowy and Inkeles 1990; Gradstein and Milanovic 2004; Acemoglu *et al.* 2013). Acemoglu *et al.* (2013) argue that empirical evidence illustrates that democracy has no robust effect on inequality while democracy can significantly affect tax revenues as a share of GDP (see also Lee 2005). Scheve and Stasavage (2009) analyse 13 OECD countries over the period 1916-2000 with country fixed effects and argue that they find that the universal right for adults to vote (as a dummy variable) did not affect the share of national income that the top 1 percent accrued. Scheve and Stasavage (2010; 2012) argue furthermore that democracy has little effect on inequalities and on policy across OECD economies. Gil, Mulligan and Sala-i-Martin (2004) argue that in analysing a cross section of countries, no relationship exists between democratic regimes and any kind of policy outcome.[3]

While some thus argue that they find no relationship between inequality and democratic regimes, others report a negative relationship, a positive relationship or a differentiated relationship, which can be explained in part by a multitude of methodological and empirical reasons discussed later, together with the different historical periods and different groups of

[2] A political regime is viewed here—in line with Boix (2003)—as a means to collectively combine the interests and preferences of individuals.

[3] Perotti (1996) states to have found similar results.

countries that are analysed in each study. Acemoglu and Robinson (2000), for example, analyse 19th-century Europe and 20th-century Latin America and argue that this relationship is negative. Lipset (1959), Moore (1966) and Muller (1988) also argue that economic inequalities are negatively correlated with democracy. By analysing data over the past two centuries, Boix (2003) argues that high levels of equality in income and land ownership have supported democracy—especially democratic consolidation. He argues that policies, which make it more difficult to tax or expropriate capital, foster a democratic system. Applying pooled OLS regressions, Li, Squire and Zou (1998) suggest that an increase in civil liberties is associated with a reduction in inequality.

Some papers however report opposite results. Acemoglu *et al.* (2013) argue that their data illustrate an increase in inequality within ex-Soviet countries between 1989 and 1995 (or 2000) and within South Africa between 1990 and 2000 (or 2005)—in which democratic transitions took place in 1989 and 1994, respectively. They propose that this is in part explained by the greater freedom to participate in economic activities that can raise inequality within previously marginalised groups that often account for the majority of the population in non-democracies (see also Milanovic 1998).

Others argue for a differentiated relationship in which inequality is low in democracies at low and high levels of democratisation and inequality is higher at intermediate levels of democratisation—for example, Simpson (1990), Burkhart (1997), and Justman and Gradstein (1999). In addition, Boix (2003) suggests that countries are more likely to democratise when levels of inequality are low. Yet, Acemoglu and Robinson (2001; 2006) suggest that countries are more likely to democratise when inequality is neither low nor high but rather at intermediate levels, hypothesising that inequality and democratisation have an inverted-U relationship. Boix, and Acemoglu and Robinson—as leading authors in this literature—thus believe that high levels of inequality decrease the likelihood of democratisation. Moreover, while Boix, and Acemoglu and Robinson, view inequality homogeneously (i.e. do not differentiate between land, income or other forms of inequality), Ansell and Samuels (2009) argue that income inequality and land equality are expected to both have a positive effect on democratisation processes.

In terms of redistribution, empirical studies suggest that increased public resources were allocated to disadvantaged groups in India, especially landless poor and scheduled castes, once they became able to elect their representatives; though, their right to vote did not appear to lead to improvements in broad-based services such as education, as the increased public resources were largely spent on welfare transfers and government jobs—see Foster and Rosenzweig (2001), and Pande (2003). In contrast, Lindert (1994; 2004) analyses OECD countries and argues for a linkage between democratisation processes and increased public spending, especially in education. Overall, Knack and Keefer (1997) claim to find minimal evidence that in countries, in which income inequality is higher, redistribution is higher.[4] After

[4] Beyond the methodological and empirical limitations discussed in the following, a shortcoming in this literature is the analysis of inequality (or increasing inequality) in isolation, without weighting the potential benefits of overall

reviewing the literature, the paper now outlines the scientific limits of trying to analyse how these two phenomena may interact with each other.

3. Methodological limitations of analysing the potential relationship between democracy and inequality

The paper here argues that neither new data sources, different analysed time periods nor different data analysis techniques (e.g. cross-sectional regressions, time-series, panel data analyses or any new technique) can resolve the question about potential causal linkages between democracy and the distribution of material resources, and the possible direction of potential linkages. That this question is irresolvable – and that the existing literature is full of conflicting findings – is attributable to a number of methodological reasons.

First, the most common approach among existing studies of analysing one single empirical observation per country or per year constrains the possibility of deep and robust analysis beyond rough averages, whether comparing over time or across countries (some examples, La Porta *et al.* 1998; Gil *et al.* 2004; Aidt *et al.* 2006; for a survey of earlier work see, Sirowy and Inkeles 1990). This is a critical methodological constraint because comparisons across countries have the very strong assumption that each country would have similar conditions that allow for a type of political regime or a specific degree of income distribution to arise; yet, factors such as the institutional and regulatory environment, cultural norms and tax structures (to name a few) may likely influence both indicators of interest but likely arise idiosyncratically to a given set of circumstances in each specific country.[5] Some papers attempt to circumvent this methodological problem by analysing time-series or panel data and explore if countries which become democracies begin redistributing more and reducing inequalities compared to other countries (for example, Acemoglu *et al.* 2013). Such comparisons over time, however, have the very demanding assumption that direct and indirect factors that may influence both indicators (the type of political regime and the degree of income distribution) would remain the same over time—yet, we do not have empirical evidence to support such a strong assumption.

Second, it is not possible to adopt a uniform measure of democracy that can be meaningfully comparable across countries given large disparities in the effectiveness and efficiency of constitutional laws, access to political participation and power, the media, and other democratic institutions. To test for potential correlation between democracy and inequality, a dichotomous measure of democracy is generally created. Though, categorising whether

greater levels of income, wealth or social outcomes relative to changes in levels of equality. That is, irrespective of levels of inequality across countries, the bottom 40 percent of the population in democracies likely often have greater wealth and social outcomes than the top 60 percent in non-democracies. It is also conceivable that citizens in poor countries may tolerate increasing inequality provided that poverty is reducing (i.e. even though income levels of the better off would be increasing more rapidly).

[5] Likewise, most studies assume a median citizen with median political preferences, although the political preferences of individual citizens—whether of the poor or non-poor, the disenfranchised or elite—can also likely be influenced by a range of idiosyncratic factors.

countries are either democratic or not (a 1 or 0 indicator) using some measure or index of democracy denies the complexities of democracy with its many shades of grey and forces variation into black or white categories. An important limitation of Freedom House and Polity indices, which are commonly used to classify countries as democratic or not, is their measurement bias and the related spurious changes in classification of countries between these categories (see also Papaioannou and Siourounis 2008). The classification of democracies remains an ambiguous, arbitrary and disputed exercise. Likewise, there are also discrepancies in the way in which inequality and distribution are measured. These indicators range from the distribution of wealth or income (for example, the Gini coefficient), the distribution of education and health outcomes, to the shares of public funding received by certain sectors and groups in society. Some papers apply indirect input-oriented measures of redistribution such as tax revenues as a share of GDP—for example, Acemoglu *et al.* (2013). To measure inequality, most studies apply individual- or household-level survey data but these are constrained in being representative at the bottom end (the very poor) and top end (the very rich) of the income distribution as it is very rare to be able to capture these groups in surveys. In addition, being able to compare levels of inequality across countries is based on the important implicit assumption of a measure of inequality (such as income Gini coefficient) being able to be perfectly standardised across sources and measures.

Third, cross-country regressions—whether controlling for country fixed effects or not—are highly confounded with a multitude of variables that would very likely be simultaneously correlated with democracy and/or the distribution of income and wealth but are not always easily measurable and often cannot be captured in statistical analyses. This means that estimations in any such model are very likely biased. Factors that may be simultaneously correlated with democracy and inequality include the degree and effectiveness of property rights, tax and redistribution policies, the business and investment environment, financial regulations, constitutional laws, tax evasion, and other institutions. They may also include the level and distribution of education, skills and technology, political conflict and unrest, social norms, how demographically homogenous a society is, among many other factors. While some of the variables that may influence democracy and inequality may be observable, others are unobserved and unobservable. This, together with the possibility of potential influences going in both directions (from democracy to inequality and vice versa), are common econometric constrains in analysing this potential relationship.

Omitted variable bias – which can severely constrain the usefulness of results – exists among the most well-known empirical analyses. For example, Glaeser and Shleifer (2001) argue that differences between English common law and French civil law help explain differences in social and economic outcomes between these countries and their colonies—with common law associated with lay judges, general legal principles, and verbal arguments, while civil law relies on professionalised judges, and specific legal codes and records. Yet, it is possible that other factors not analysed may explain the differences in social and economic outcomes such as the greater priority on trade among England and its colonies. Similarly, Frye and Shleifer (1997) explore the reform packages of Russia and Poland in the 1990s that included privatisation, price and trade liberalisation, and macroeconomic stabilisation. They conclude that the response of the Polish economy was much better despite similar reform packages because of a much friendlier legal and regulatory environment for entrepreneurs (ibid.). Yet, it is just as likely that Poland’s geographic location directly bordering Western Europe and its associated market access and greater mobility of capital may explain much of its economic success, so that any estimated correlation between the performance of businesses and the legal/regulatory environment may likely just be a story of geographic proximity to the European Union. In another empirical study, La Porta *et al.* (1998) conduct a cross-country analysis of the potential sources of the quality of government and government performance, applying proxy measures of government intervention, government size, efficiency of the public sector, delivery of public goods, and political freedom. They argue that countries that perform weaker on such measures tend to be poorer, exhibit French or socialist legal systems, or have closer proximity to the equator. They propose that exogenous historical variables such as ethno-linguistic heterogeneity, religious affiliation and legal origins systematically affect government performance. However, it may be likely that government performance may be influenced largely by, and in combination with, other factors ranging from the level of exports to the degree of urban density that are not captured by the authors.

Fourth, endogeneity is a standard constraint afflicting analyses of the potential relationship between democracy and inequality. La Porta *et al.* (1998)—like other leading authors conducting aggregate, macro analyses on the quality of government—generally suffer from this statistical problem as they neglect the possibility of potential influences going in both directions between their independent variables (such as GNP per capita) and their dependent variables (such as school attainment or infrastructure quality). Another example is that controlling for both the universal right to vote and education in a model estimating their potential effects on the top income shares—such as in Scheve and Stasavage (2009)—would show that democratic participation may not be correlated with income inequality if democracy would affect income inequality through its potential effect on education. In turn, excluding education as a control may overestimate potential effects of democracy on equality or inequality, as democracy would then possibly be capturing these potential effects as well. Endogeneity also applies to the other common control variables, whether continuous variables such as per capita GDP, or binary variables such as democracy/dictatorship or parliamentary system/presidential system. Attempting to circumvent such econometric constraints by selecting some instrument for democracy can be arbitrary and ambiguous and has its own demanding assumptions.

Fifth, many econometric models exploring the potential effect of democracy on inequality include independent variables such as universal suffrage, per capita GDP, education, and the size of the informal sector; yet, potential effects of these different variables on inequality would likely take place at different time periods and experience different time lags. That is, adopting the universal right to vote may influence inequality in the short term in some countries that may consequently implement immediate distribution policies, but in other countries potential effects of democracy on inequality may take decades to take place or may not have any effect. The dynamic, time-variant characteristics of the observed variables thus compound the problems of analysis.

Sixth, taking democracy and inequality – or any two social phenomena – and making them quantifiable and thus amendable for statistical analysis and probabilistic claims does not mean that they must be directly correlated in the real world outside of statistical models. In a quest for causal truth, many scholars have (implicitly) turned to the idea of probabilistic causation, the idea that a potential cause (for example, lower levels of inequality) can raise the probability of a potential effect (for example, democratisation) while controlling for 'everything' else. The main concept of the theory of probabilistic causality is that if including an assumed cause (relative to excluding it) would make a difference in the likelihood of an assumed effect while controlling for 'all' confounding factors (which would affect both the independent and dependent variables) then a researcher would be able to make the claim that it probabilistically 'caused' the assumed effect among at least some observations in the sample within a given statistical model. The theoretical idea behind probabilistic causality presupposes that probabilistic differences captured in a statistical model should have a causal reason and under the condition that we would be able to control for every other potential cause (which is not possible), then the specific cause of interest must be the causal reason for the difference in probability at least for some observations in the collected sample. We must adopt some such assumption to be able to assume that we can derive correlational or 'causal' claims from differences in probability among a set of collected observations of variables that we make quantifiable such as democracy and inequality.[6] In this context it is thus not sensible to talk about 'causes', but rather that two phenomena can be mutually correlated within a statistical model and that they may *possibly* be mutually correlated in the real world outside.

Beyond these outlined methodological constraints, scientific analysis is furthermore subject to a number of other methodological issues related to, for example, data collection, selection bias, data analysis and how derived results are interpreted.

4. Empirical limitations of analysing the potential relationship between democracy and inequality

The discrepancies in the findings among existing empirical studies and the irresolvability of the question about a robust relationship between democracy and the distribution of material resources are not only related to methodological constraints but also to a number of associated empirical complexities.

First, the degree and type of democracy, inequality and overall wealth appear distinct to conditions within individual countries. Some democratic regimes may fulfil some basic criteria such as free and fair elections. Other democratic regimes may fulfil some further criteria such as the establishment of constitutional laws and institutions. And other democratic regimes may fulfil some more complex criteria such as the protection of property rights and contracts, established social norms and practices, and broad citizen participation in a legitimate, responsive and equitable process of public service provision. Likewise, the degree of income

[6] See also Cartwright (2007).

inequality and the level of income may likely influence democracy differently. In some countries inequality may be pervasive in fixed assets like land owned by ruling economic or political elite. In other countries inequality may exist due to disparities between economic sectors, or due to differences in the pace of growing sectors such as manufacturing or industry. In another set of countries inequality may be pervasive in physical capital or in other forms of social, economic or political assets. The potential relationship would thus likely be sensitive to even small differences in levels of inequality or democratisation between countries, and differences would very likely exist on both variables across any two countries.

Second, not only may different types of political regimes influence the distribution of wealth differently but also the specific laws, institutions and policies that are implemented by a particular political regime. The degree of functionality of a democracy may depend on the existing parties and the judiciary, and how conservative these are, and on the type of constitution. It may be influenced by how liberal the financial sector is—for example, in terms of the possibility for capital flight—and thus also by the degree of tax evasion. It may depend on potential threats of coups and on the extent to which aspects of a *de jure* democratic system are *de facto* influenced by local law enforcement, and military and non-state armed actors (Acemoglu *et al.* 2013). Nonetheless, while some authoritarian regimes appear to support some form of pro-poor policy, nearly all democratic regimes appear to support such policy, as democratisation can help broaden political power to the poor. Poverty reduction—if levels of income of the non-poor remain unchanged—would inevitably reduce inequality, but levels of income of the non-poor can often increase more rapidly than those of the poor, so that poverty reduction can often be correlated with increased inequality. Thus, even though pro-poor policies are necessarily connected to redistribution, they are likely often not enough to reduce inequality.[7]

Third, democratic institutions may help distribute *de jure* political power in society (Acemoglu and Robinson 2006), while inequality may also be influenced by how power may be *de facto* distributed which can be much more difficult in assessing empirically. The specific policies and institutions that a political regime produces may be related to how power among groups in society is distributed, how institutions and interest groups are able to aggregate preferences, how constraints to collective action are overcome (Acemoglu *et al.* 2013), the social norms about the level of distribution that is acceptable and desirable and, among other factors, how current economic resources are distributed. In many contexts it is nonetheless likely that the group in a democratic society that accounts for the largest share of the population—whether the working class, the poor, the middle class or another group—may have an advantage in exercising power and influencing the level and type of redistribution.

[7] Moreover, measuring the extent of citizen participation in the process of attaining reduced inequality presents another critical constraint for empirical analysis – this refers to the degree to which citizens would participate in a legitimate, responsive and democratic process of generating and distributing wealth and in the process of acquiring skills required to do so (Sen 2009). This process may indirectly take place through means that enable citizens to make complaints about basic public services, and governments taking action to improve these services, or may indirectly take the form of representation in parliament.

Fourth, democratic institutions may experience different degrees of capture by economic and political elite and interest groups, which may affect different degrees of representation of segments of the population. An example are the economic lobby groups in a number of democracies, against which societal groups often protest, for example, in favour of greater regulation or redistribution. By its very character, information on capture is not easy to obtain and include in empirical studies.

Fifth, empirical analyses on this potential relationship may be further constrained due to the types of tax structures and levels of taxation that vary widely across different political regimes and thus also the distribution of income and assets. Wealthier citizens in a given society may at times have stronger financial incentives to resist transition towards democratic institutions while poorer citizens may have stronger financial incentives to support such a transition, as democracies often allow for the majority to progressively levy higher taxes on the better off. Ansell and Samuels (2009) argue that countries are more likely to democratise when growing economic groups could lose more from expropriation under autocracy than from taxation under democracy. That is, some well-off citizens may weigh the costs of paying taxes in a more distributive political system relative to the costs of repression in a less distributive political system. The potential redistributive effects of different political regimes may thus be in conflict with each other. In right-wing authoritarian regimes, public transfers are often low and taxes are often more restricted to funding military, police and administrative services. While in some authoritarian regimes taxes are redistributed more broadly and include a range of public services, this is the case in nearly all democratic regimes. Among revolutionary regimes, nationalising citizens' assets may support the establishment of central planning governments which may often lack transparent political accountability and may often support corruption and economic stagnation given state monopoly and limited economic competition (Boix 2003). In addition, corporate tax rates have been declining globally,[8] as democracies appear increasingly under pressure to reduce such tax rates as capital becomes more mobile across borders. Taxation thus appears highly nuanced and complexly related to democracy which further limits econometric analysis.

Sixth, democratisation may often foster an increase in tax revenue, redistribution and income, and greater access to skills and market opportunities; yet, while greater redistribution may reduce inequalities, an increase in skills and market opportunities and in income may likely reach certain groups first as not all groups in society take equal advantage of skills and market opportunities. In such contexts, democracy may possibly be correlated with greater inequality. Likewise, processes of democratisation may likely often take place at the same time as processes of human and economic development, from which exporting sectors and geographically advantaged populations may be more likely to benefit first, implying that democratisation would be associated with increased inequality. This may even be the case in countries with strong tax and distribution systems, as any potential effects of these systems on inequality may likely be delayed depending on particular adopted policies and furthermore the level of efficiency and effectiveness varies widely across countries in collecting taxes and

[8] See KPMG for trends in tax rates across countries, www.kpmg.com/global/en/services/tax

distributing public resources. This additionally constrains the standard approach of cross-country comparison.

Given that country experiences with democratisation processes and changes in levels of equality are highly nuanced and may be associated with a multitude of endogenous conditions, there are examples throughout history of all types of authoritarian and democratic regimes that appear to have provided limited as well as strong support for more equitable distribution of material resources. Some authoritarian regimes passed aggressive land reforms that helped redistribute land from large land owners to poor farmers such as in South Korea and Venezuela in the 20th century. Some democratic regimes redistribute wealth through large-scale conditional cash transfer schemes for poorer households funded with tax revenue from more well-off households such as in Brazil and Mexico. While both democratic and authoritarian regimes have lifted millions out of poverty, the authoritarian Government of China has arguably been the most successful single government in history to reduce monetary poverty.

Overall, the methodological limitations together with the empirical limitations of analysing the potential relationship between democracy and inequality fundamentally constrain the formulation of theoretical explanations and general conclusions about how they may be related.

5. Conclusion

The ability to acquire knowledge about the potential relationship between political variables like democracy and economic variables like inequality is much more limited than understood in the existing literature. This potential relationship may appear positive or negative, stronger or weaker, differentiated or non-existent and to vary across and within countries and time periods but fundamental methodological and empirical limitations of analysis outlined here do not allow us to make such claims robustly. This is to some extent because the process of democratisation and of changes in levels of equality are highly nuanced, heterogeneous, difficult to capture econometrically and at times may possibly be random.

The lack of being able to establish ‘causal mechanisms’ or even a robust correlation between democracy and inequality is due to a number of critical scientific constraints outlined here. The main methodological limitations outlined include aggregate macro-level analysis using a single empirical observation per country or per year, *creating* a uniform and meaningfully comparable measure of democracy, the multitude of non-measurable factors that may simultaneously influence the independent and dependent variables, the difficulties of applying control variables that do not influence each other (endogeneity), likely different time lags in the potential effects of the influencing variables, and important assumptions behind correlational claims derived from statistical analysis. The main empirical limitations of analysing this potential relationship include trying to make meaningful comparisons across and within countries over different time periods despite very different degrees and types of democracy and inequality, and country-specific policies, different levels of distribution of *de jure* and *de facto* political power, different degrees of elite capture and, among other factors, heterogeneity in the types of tax structures and levels of taxation.

The limitations are particularly strong when trying to quantify democracy because whether democracy improves or worsens cannot be easily measured – especially compared to more quantifiable 'up-down' indicators such as whether income levels, access rates to public services or inflation increase or reduce. Given that democracy is an overarching concept encompassing the functioning of a range of difficult to measure institutions together with a number of observable, unobserved and unobservable factors outlined above, there are fundamental constraints in statistically capturing its potential relationship with most variables, not just inequality, but also poverty, education, economic output etc. Since we have been largely restricted in obtaining robust data with within-country variation on levels of democracy, researchers have focused largely on cross-country analysis. It is however, in particular, the variations between democratic institutions across countries that are too large to be meaningfully comparable from an econometric and methodological perspective. Also, especially because democracy is generally a macro variable aggregately captured with a single observation per year or country, such analysis is statistically constrained to very rough correlations. It is important to stress that dynamic social phenomena like democracy do not have an 'intrinsic nature', they do not abide by 'social laws'. It thus may not always seem very scientifically useful to compare an aggregate concept as broad and qualitative as democracy across countries or analyse it within a country over time.

Researchers interested in continuing to explore this potential relationship and trying to reduce the number of associated assumptions and limitations may consider: abandoning the standard approach of conducting cross-country analysis at the aggregate or macro level altogether and thus letting go of trying to make meaningful comparisons across countries; focusing instead on analysing micro-level data of intra-country variation among specific aspects of both democracy and inequality to try and reduce some (but will not be able to reduce all) of the unobservables outlined above; and including thereby survey questions into individual- or household-level surveys to capture such specific aspects of democracy and inequality among the same individual respondents. This way (more modest) scholars may try to understand how one single aspect of democracy may be related to one single aspect of inequality, for example trying to analyse nationally representative individual-level data over time within one country that underwent democratisation by comparing the levels of individuals' annual consumption or income with a measure of the political participation of the same individuals (such as having voted or placed a complaint about public services or a politician) or with a measure of the effectiveness of their political institutions (such as if they placed a complaint did officials addressed it, or if their property rights are being enforced). Even if researchers were to restrict themselves to such a micro-level statistical approach it would still not be possible to establish a 'causal' link between these two factors as comparisons over time also bring with them very demanding assumptions such as for example that direct and indirect factors that may influence both 'precise' indicators would remain identical over time which would be very unlikely. But with such micro-level, country-specific analysis the correlations may possibly be stronger than cross-country correlations, even if the data and methods do not allow us to say anything about causality.

The paper argues that *no* kind of theoretical framework (no unified causal theory, no multiple causal paths or anything else) is able to capture a causal connection between democracy and inequality. We need to abandon the vocabulary expressing causation – such as that used by leading scholars like Acemoglu *et al.* (2013) and Boix (2003) about "causal effects" and "the impact of democracy". The dilemma that arises is that statistical analysis can only provide rough probabilities while research aiming to inform public policy often demands greater certainty and prediction even though it is not econometrically possible. Given the limits in making democracy quantifiably amendable to scientific inquiry the study of democratic institutions across countries is generally less of a quantitative science and more of a qualitative narrative or art.

Overall, researchers have been constrained in producing meaningful results that are useful for policy and they need to be more critical and transparent in explicitly outlining the limitations of the data and methods they apply, and about the precision and interpretation of their results. The hope of the paper is to possibly be a useful warning for researchers against overly ambitious research aims and the overselling of their estimated results. Given the combination of limitations outlined here, it is argued that research on the potential relationship between the distribution of economic wealth and different political regimes remains largely limited to basic descriptive correlation analysis over specific time periods and geographic contexts with imperfect data that are very limited for cross-country comparisons. Though, not even these methods provide much hope for robust, general conclusions about this potential relationship across countries.

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