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The impact of democracy on economic growth in sub-Saharan Africa, 1982-2012

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Abstract: Does democracy promote economic growth? There is still an ongoing debate over the economic implications of democracy, and this question has gained critical importance particularly in the African context, where a wave of democratization in the early 1990s coincided with the start of a new era of rapid economic growth. In this paper, we revisit this important topic and argue that the existing literature is inadequate in distinguishing the effects of regime transitions and democratic consolidation on economic growth. Through the analysis of the latest economic and political data, which include up to 43 countries in sub-Saharan Africa for the period of 1982-2012, we find strong evidence that democracy is positively associated with economic growth, and that this ‘democratic advantage’ is more pronounced for those African countries that have remained democratic for longer periods of time. Our findings call for more nuanced studies that carefully distinguish potentially divergent effects of regime transitions and democratic consolidation on economic growth.

Keywords: economic growth, democracy, democratization

JEL classification: O10, O40, O43, O57

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1 Introduction

Sub-Saharan Africa's (SSA) recent political and economic evolution suggests a positive relationship in the region between democracy and economic growth. As is well known, the region underwent a wave of democratization in the early 1990s (Bratton and van de Walle 1997; Lindberg 2006); whereas only two states in the region (Botswana and Mauritius) had conducted regular multi-party competitive elections before the 1990s, within a decade over 40 countries in the region did so. Thus, the region underwent a striking process of substantial political liberalization, with significant progress in civic and political rights in a majority of countries of the region, even if still perhaps only a dozen states could today be considered full-fledged democracies (Herbst 2001; Diamond 2010).

Since the early 1990s, at the same time, the region's economic-growth trajectory seemed to alter, from the previous two decades of economic stagnation and recession, to a substantial and sustained growth spurt that has now lasted for over two decades in a majority of states in the region. Whereas overall gross national product (GNP) growth in the region was a mediocre 1.7 per cent during the 1980s, it increased appreciably to 2.5 per cent annual growth in the 1990s, and over five per cent annually in the first decade of the new century. The latest numbers suggest gross domestic product (GDP) growth at 5.3 per cent in 2012 and 5.6 per cent in 2013 (World Bank 2014). The growth appears to be widespread, since over a third of the region's 49 states are growing by more than six per cent this year.

Are these two major regional political and economic trends related? Oddly, relatively few observers have argued for a positive causal relationship between the current economic boom and the region's political reform. Radelet (2010) and journalistic outlets such as *The Economist*¹ have suggested that the improvements in political conditions have facilitated the growth, but they are exceptions. Indeed, the consensus in the public policy literature has been that the region's political changes are likely to have either no effect or a negative effect on economic growth. Collier (2009) and Sachs (2005) are just two prominent economists who have written popular best sellers arguing among other things that democratization is not likely to be helpful for the task of economic development. In Britain, the donor sponsored Overseas Development Institute (ODI) has similarly espoused research on low-income country governance issues that is characterized by the argument that multi-party electoral democracy is likely to have a negative effect on governance and economic growth (Kelsall and Booth 2013; Booth 2012). Multi-party electoral systems in the region are often derided as corrupt and clientelist, and their prospects for economic growth contrasted unfavorably with those of autocratic regimes like Angola and Rwanda.

So, is the current economic boom taking place despite democratization rather than because of it? In this paper, we argue that empirical and theoretical reasons exist to believe that democratization in Africa since 1990 is associated with faster economic growth and that this 'democratic advantage' increases over time, as democratic consolidation takes place. We argue it is important not to confound the economic effects of stable democracy with those of the actual period of transition to democracy, which is characterized by political instability and uncertainty, which is almost certainly bad for growth, and we show that the longer a democracy sustains itself, the greater its positive impact on growth. The paper is organized in the following manner. The next section

¹ For instance, an article on the *Economist* issued on 3 December 2011, entitled 'Leaders: Africa Rising: the Hopeful Continent', attributes recent economic growth in Africa to improvements in governance and political stability.

examines the theoretical reasoning behind the different arguments in this debate. Section 3 presents our own data analysis, and provides relatively robust econometric evidence that in Africa over the course of the last three decades, that economic growth is associated with greater levels of political and civic freedom. A final section offers some caveats as well as implications of the econometric results.

2 Theory

A vast literature already exists on the impact of political regimes on economic growth since the Second World War. In their meta-analysis of the econometric literature on this relationship, Doucouliagos and Ulubasoglu (2008) list some 84 different studies in the previous three decades.

The arguments about the effect of regime on economic growth have not changed all that much over this period.² Since the 1950s, scholars have posited an authoritarian advantage in the process of economic development, with three related arguments. First, perhaps the oldest argument is that democratic forms of government undermine property rights in order to redistribute income to provide consumption resources to the majority of citizens, who have elected the government to serve their interests. This first factor's effect on economic growth is exacerbated, secondly, by the fact that the participatory politics of democratic regimes discourage investment, as governments were forced to promote current consumption, in order to increase their chances of re-election (Keefer 2007). In the low-income countries emerging from colonialism with weak political institutions, and a small educated middle-class, democratic institutions are argued to be inherently weak, unstable, and unable to resist participatory pressures (e.g. Huntington 1968). Positing a 'cruel choice' (Bhagwati 1966: 204) between economic growth and democracy, modernization theorists argued that democracy should be deferred until economic growth had transformed society.

The handful of so called 'developmental dictatorships' in East Asia provided evidence for a third argument on behalf of an authoritarian advantage, when it came to late development. A number of scholars attributed their remarkable success to the autonomy of decision-makers within the state apparatus, who could resist the sirens of popular opinion because they did not have to face the voters, and as a result they made the tough policy decisions that brought about economic growth (Woo-Cumings 1999; Haggard 1990). Similar arguments are today used to explain the positive economic results of autocratic states in Africa, such as Rwanda or Ethiopia (e.g. Kelsall and Booth 2013). In sum, a more likely ability to promote state autonomy has been argued to constitute a third related authoritarian advantage.

These arguments have enjoyed considerable currency, notably in the public-policy community. Still, a number of scholars have countered each of the arguments sketched out above. Thus, at least since North (1990), scholars have suggested that democratic regimes actually promote property rights better than authoritarian governments, in which there is no institutional guarantees protecting property owners from the deprivations of the state elite itself (van de Walle 2001; Przeworski and Limongi 1993). Secondly, the extra public expenditures brought about by popular and electoral pressures might well serve to promote the delivery of public goods such as education, which have a positive effect on

² For excellent reviews, see Przeworski (2000), Przeworski and Limongi (1993), Tavares and Wacziarg (2001), and Baum and Lake (2003).

economic growth (Baum and Lake 2003; Stasavage 2005). Moreover, elections might constitute a brake on prestige state spending without an economic payoff, from white marbled presidential palaces to international airports in the hometown of heads of states. Thus, Przeworski and his colleagues found that democratic regimes did undertake less public investments, but argued they also tended to get higher returns on their investments (Przeworski 2000) than authoritarian states. Finally, without denying that state autonomy appears to have made a positive impact on growth in half a dozen East-Asian states, scholars have argued that the greater accountability of democratic regimes, whose poor performance can be sanctioned at the ballot box on a regular basis, were more likely to outperform most authoritarian leaders who were able to stay in power regardless of their performance (Schedler et al. 1999).

The econometric studies on the relationship between regime type and economic growth reflect these theoretical debates, with a wide variety of findings reported in the literature. Perhaps as a result, it is tempting to balance out the different studies and conclude that the net effect of democracy on growth to be negligible or negative. This is indeed the way in which the econometric evidence as a whole has been characterized (e.g. Gerring et al. 2005: 323). In their review of 84 studies between 1983-2005, Doucouliagos and Ulubasoglu (2008: 61) thus conclude cautiously that taken together, these studies lead them to conclude that ‘democracy’s net effect on the economy does not seem to be detrimental’.

What then is the motivation for the current paper? Several factors justify a focus on the contemporary relationship between democracy and growth in SSA alone. First, the inconclusive econometrics literature on the relationship for a global dataset suggests that the relationship may well be different across different regions of the world (Krieckhaus 2006), because of historical factors or subnational divisions for instance. In fact, previous econometric analyses have suggested that the democratic advantage is greater in Latin America, but smaller in Asia (Doucouliagos and Ulubasoglu 2008).

Second, the econometric analyses of Africa’s ‘growth tragedy’ in the 1970s and 1980s largely ignored regime-type variables. Ndulu and O’Connell (1999) constitute an exception in arguing that Africa’s poor economic performance in the 1970s and 1980s may have been due to the authoritarian nature of most of its rulers. But most analyses either blamed the poor growth record on ethnic fragmentation (Easterly and Levine 1997), on the artificial nature of African state borders (Englebert 2000), on geographical characteristics of the region (Sachs and Warner 1997), or on the power of urban interest groups (Bates 1981).

Thirdly, democratization in Africa is relatively recent. With the exception of Mauritius and Botswana that democratized in the 1960s, the introduction of multi-party electoral politics and the emergence of greater level of political freedoms really date to the early 1990s. A few studies examined the relationship between democracy and growth shortly thereafter (van de Walle 1999; Bienen and Herbst 1996; Fosu 2008; Humphreys and Bates 2005), but many of these studies were undertaken before all African transitions had been completed, and even the most recent are based on data that cover less than half of the current era of democratic politics in the region. The democratic era in Africa is now more than two decades old, and a proper assessment of its impact on economic growth seems timely.

Finally, we innovate in this paper and attempt to address several weaknesses in the recent literature. First, most econometric analyses of democracy have defined it in binary fashion. As a result, at least some of the differences in findings are the result of different definitions of what is meant by democracy. Yet, the variety of regimes present in Africa today

suggests the need for an ordinal measure of political regime, such as the one we have adopted, from the Polity IV dataset, which rates countries on a scale from -10 to +10 (see the next section for the discussion of our variables and some measurement issues). In fact, one of the defining characteristics of the current era in Africa is the emergence of what have been called ‘electoral autocracies’ in which authoritarian regimes convene regular multi-party elections that provide the illusion of real political competition, but do not threaten their rule, and are accompanied by systematic restriction of political and civil rights (Carothers 2002; Levitsky and Way 2010). An ordinal scale for regime type allows us to account for this variation in the level of democracy, and in the analysis below, we explicitly test for the hypothesis that even some political liberalization is linked with greater economic growth in contemporary Africa. But we also examine the long-term impact of the duration of democracy with a stricter definition of democracy.

The second manner, in which we innovate, is to test for the hypothesis that the effect of democracy grows over time, as a democratic regime consolidates. As Gerring et al. (2005) argue, democracy’s economic effect is cumulative, and the advantages of democratic institutions probably take at least several electoral cycles to start reaching their full effect. Economic agents need time to fully believe the democratic commitment of office holders, while the distinct patterns of public investment and economic policy-making, such as greater investment in human capital, require some time to demonstrate their effects. In the analysis below, we thus test the impact of the duration of the democratic regime, and we interact this variable with a version of our democracy variable. If democracy duration does matter, the longer a country has been democratic, the greater the positive impact.

Thirdly, our analysis makes a distinction between democratization and democracy. By definition, periods of regime transitions are characterized by a great deal of uncertainty, which serves to dampen investment as economic agents defer decisions until the political situation is clarified. Transitions are also marked by social unrest and in some cases political violence, both of which might be expected to exact a cost on economic growth. The literature has often conflated the economic impact of democratic transitions with that of democracy.

For instance, Mansfield and Snyder (2005) show that recently democratized or states in the process of transitioning to democracy have a greater propensity for political instability and violence. This makes much intuitive sense—states that are in the process of radically altering the rules of the political game might be expected to be more politically volatile than stable regimes. They are careful to explicitly argue they are not making the argument that stable democracies have this same proclivity to violence. However, critics of democracy in low-income countries do not always share this caution, when they approvingly cite Mansfield and Snyder to suggest that democracy in Africa is associated with greater violence. We use a dummy variable for countries undergoing political transition to capture the distinction between transitioning countries and stable countries, and we expect the former to exact a negative effect on economic growth, unlike the latter.

3 Econometric model and data

To test the effect of democracy on economic growth, we use cross-sectional annual time-series data that include up to 43 SSA countries for the past three decades: 1982-2012.³ This time period is selected solely based on data availability. For most of our analyses, we draw the measure of GDP per capita growth from the World Development Indicators (WDI), because it is most comprehensive in its coverage of countries and time periods, amongst all the major sources of growth indicators.⁴ The independent variables of our interest are the *level* and *duration* of democracy. The democracy level is measured using the POLITY2 variable in Polity IV, which ranges from -10 (hereditary monarchy) to 10 (consolidated democracy) (Marshall and Jaggers 2003). We code the duration of democracy by counting the number of consecutive years for which POLITY2 scores are greater than zero, which means that a given country exhibits a greater degree of democracy than autocracy.⁵ As stated above, we predict that transitions to democracy may spur uncertainty and instability that may scare investors away and stunt growth in the short term. The Polity IV dataset is particularly useful for our analysis because it enables us to distinguish the periods of transitions and interregnums from normal years. To account for the effects of transitions, we include a binary variable (transitions/interregnums) coded 1 if the POLITY variable in Polity IV takes the value of -77 or -88, which indicate that a given country is in the state of some sorts of political transitions; and 0 otherwise. The co-efficients on the democracy level and duration, and their interaction are of our particular concern.

Our econometric analysis sequentially estimates three different models: pooled, random effects (RE), and fixed effects (FE) models. If correctly specified, the RE estimates tend to be more efficient than the pooled or FE estimates. The former are biased, however, if the regressors are correlated with unobserved, country-specific effects. The FE model is more conservative in the sense that it controls for all the time-invariant country-specific characteristics that may systematically bias our pooled or RE estimates.

Endogeneity constitutes one of the major concerns that have plagued the growth-democracy literature. The FE model does little to alleviate this problem. It is widely recognized that political regimes are endogenous to economic landscapes of the countries (Przeworski and Limongi 1993; Lipset 1960; Barro 1999). Similar to Gerring et al. (2005) and Ferree and Singh (2006), we lag all the endogenous political and economic variables in our regression estimation to eliminate the reverse effect of economic growth on our endogenous regressors. Therefore, it is practically impossible for economic performance in year t to affect the level and duration of democracy in $t-1$.⁶ Based on this logic, we estimate the following baseline model:

³ Due to data limitations, the following countries are excluded in our analysis: Eritrea, Nigeria, São Tomé and Príncipe, Seychelles, and Somalia.

⁴ For sensitivity checks, we subject our regression results to different measures of GDP per capita growth from two other popular sources: the Penn World Tables (PWT) and the datasets of Angus Maddison. Our main results remain unchanged regardless of which measure of GDP per capita growth is used for our analysis.

⁵ The choice of using the POLITY2 score of zero to distinguish between democracies and autocracies is somewhat arbitrary although the same threshold is employed in other studies (Jones and Olken 2009; Dutta et al. 2013; Groshek 2009). We also employed the threshold of -1 or 1 in the POLITY2 score to code the duration of democracy and obtained very similar results.

⁶ The use of lagged endogenous variables does not necessarily eliminate the problem of endogeneity as these lagged variables may still be correlated with the error terms in the growth equation in year t . Since our data are comprised of observations at the annual intervals, any shocks that disrupt these endogenous variables in the previous years may persist to be correlated with the error terms in the growth equation in year t . For this reason, our models do not necessarily permit a causal interpretation.

$$G_{i,t} = \rho Democracy_{i,t-1} + \gamma Duration_{i,t-1} + \Phi Democracy_{i,t-1} \times Duration_{i,t-1} + \beta \mathbf{X}'_{i,t-1} + \mu_i + \delta_t + \epsilon_{i,t}$$

where i and t index country and year, $G_{i,t}$ is annual growth in GDP per capita in year t in country i , *Democracy* and *Duration* refer to the level and duration of democracy, respectively, and $\mathbf{X}'_{i,t-1}$ contains all time-variant control variables that the growth literature commonly identifies as important determinants of GDP per capita growth. These control variables include the logarithm of GDP per capita (US\$2000), inflation rate,⁷ government spending (% of GDP), net inflows of foreign direct investment (% of GDP), terms of trade change (%), the logarithm of life expectancy, and trade openness (see the definitions, sources, and descriptive statistics of these variables in Table A in Appendix). μ_i and δ_t capture country and year dummies. If our hypothesis is correct, we would expect the marginal effect of democracy to be positive and statistically significant. In particular, we hypothesize Φ to be positive because we claim that the democratic dividend is greater for those countries that manage to sustain the democratic status for longer periods, indicating some sorts of democratic consolidation.⁸ Since the relationship between the magnitude of the effect of democracy on growth and democracy duration can be non-linear, we also include another multiplicative interaction term $Democracy \times Duration^2$ in the equation to allow for greater flexibility.

4 Results

Table 1 reports our main estimation results. According to ongoing debates over the relationship between democracy and economic growth, we find evidence that democracy yields positive effects on growth, at least in the long run. We start with discussing the results from the pooled and RE models (Models I and II). As predicted by our hypothesis, the co-efficients on the level of democracy are positive and statistically significant ($p < 0.01$). These co-efficients should be interpreted carefully because of the presence of the interaction term between the level and duration of democracy. Substantively, a one-point increase in the POLITY score is expected to produce a 0.10 per cent increase in GDP per capita growth with a standard error of 0.04 per cent *when the given country has not been democratic in the preceding year* (democracy duration=0). However, once we control for country-fixed and year-specific effects (Model III), or include the additional multiplicative interaction term $Democracy \times Duration^2$ and control for political violence (Model VI), which is a potential confounder, it loses statistical significance at the conventional level of 95 per cent. Same goes for the effect of regime transitions on growth. The co-efficient on transition/interregnum has an expected negative sign and is statistically significant at the conventional level in the pooled and RE models (Models I and II). Yet, in the FE models (Models III-VI), this effect becomes no longer significant at the conventional level. As briefly discussed above, the pooled and RE estimates are likely to be biased due to failing to account for any country-specific characteristics, which are probably strong confounders (Gerring et al.

⁷ We use $\log(100 + \text{CPI inflation rate})$ as a control for all our regression models.

⁸ Mathematically, the marginal effect of democracy can be expressed as follows:

$$\frac{\partial G_{i,t}}{\partial Democracy} = \rho + \Phi Duration_{i,t-1}.$$

This expression indicates that the effect of democracy on growth varies according to how long a given country has remained democratic in the preceding years. The co-efficient on democracy ρ represents the effect of democracy on growth when democracy duration is set at zero. Implicit in this equation is the idea that a unit increase in POLITY2 induces different impact on growth, depending on the maturity of democracy in the given country.

2005).⁹ In short, while the co-efficients on democracy and regime transitions have expected signs, these estimates are somewhat sensitive to different model specifications.

Table 1: The impact of democracy and democracy duration on GDP per capita growth

Models	I	II	III	IV	V	VI
Estimator	Pooled	RE	FE	FE	FE	FE
Democracy	0.102** (0.041)	0.097** (0.045)	0.081 (0.049)	0.125** (0.058)	0.125** (0.058)	0.116* (0.060)
Democracy duration	-0.11 (0.078)	-0.140** (0.065)	-0.200*** (0.070)	-0.515*** (0.156)	-0.515*** (0.155)	-0.525*** (0.145)
Democracy x democracy duration	0.01 (0.009)	0.014** (0.007)	0.027*** (0.007)	0.053*** (0.016)	0.053*** (0.016)	0.055*** (0.015)
Democracy duration ²				0.017** (0.007)	0.017** (0.006)	0.019*** (0.006)
Democracy x democracy duration ²				-0.002** (0.001)	-0.002** (0.001)	-0.002*** (0.001)
Transition/Interregnum	-1.476*** (0.469)	-1.096** (0.460)	-0.704 (0.476)	-0.851* (0.481)	-0.850* (0.489)	-0.632 (0.481)
GDP per capita (ln)	0.268 (0.290)	-0.419 (0.296)	-2.890*** (0.888)	-3.069*** (0.920)	-3.061*** (1.007)	-3.329*** (1.058)
Foreign direct investment (FDI)	0.238** (0.094)	0.221** (0.088)	0.213*** (0.073)	0.212*** (0.071)	0.212*** (0.071)	0.212*** (0.070)
Inflation (ln(100+inflation rate))	-2.728*** (0.563)	-2.428*** (0.541)	-2.554*** (0.690)	-2.616*** (0.691)	-2.617*** (0.690)	-2.602*** (0.660)
Life exp. (ln)	5.766** (2.794)	7.940** (3.126)	11.787*** (3.245)	12.761*** (3.195)	12.757*** (3.174)	12.315*** (3.111)
Govt. consumption	-0.06 (0.039)	-0.079* (0.042)	-0.116* (0.065)	-0.115* (0.065)	-0.115* (0.065)	-0.114* (0.066)
Openness	0.028** (0.011)	0.039** (0.016)	0.052** (0.026)	0.054** (0.026)	0.054** (0.026)	0.054** (0.026)
Terms of trade change	1.609 (1.153)	1.467 (1.064)	0.823 (1.140)	0.811 (1.157)	0.813 (1.161)	0.857 (1.146)
Population (ln)	0.471* (0.267)	0.372 (0.380)	0.275 (3.655)	-0.17 (3.962)	-0.155 (4.045)	-1.327 (3.971)
Ethno-linguistic fragmentation	-0.656 (2.161)	-0.675 (2.534)				
Landlock	1.379** (0.587)	1.293** (0.617)				
Tropics	1.596 (1.406)	1.411 (1.950)				
Oil and gas production					0.000 (0.013)	
Political violence						-0.330* (0.181)
Constant	-19.414 (12.321)	-24.152* (14.476)	-21.634 (57.647)	-17.022 (63.731)	-17.294 (65.788)	3.871 (64.848)
Number of observations	1,046	1,046	1,046	1,046	1,046	1,046
R-squared	0.263	0.210	0.273	0.276	0.276	0.279
Number of countries	43	43	43	43	43	43

Sources: Authors' calculations using Teorell et al.'s (2013) Quality of Government dataset, World Development Indicators (World Bank 2013), Polity IV (Marshall and Jaggers 2003), Ross (2013), Alesina et al. (2003), Major Episodes of Political Violence (MEPV) (Marshall 2012), Mayer and Zignago (2011), and Gallup et al. (1999). See Appendix for descriptions on each variable.

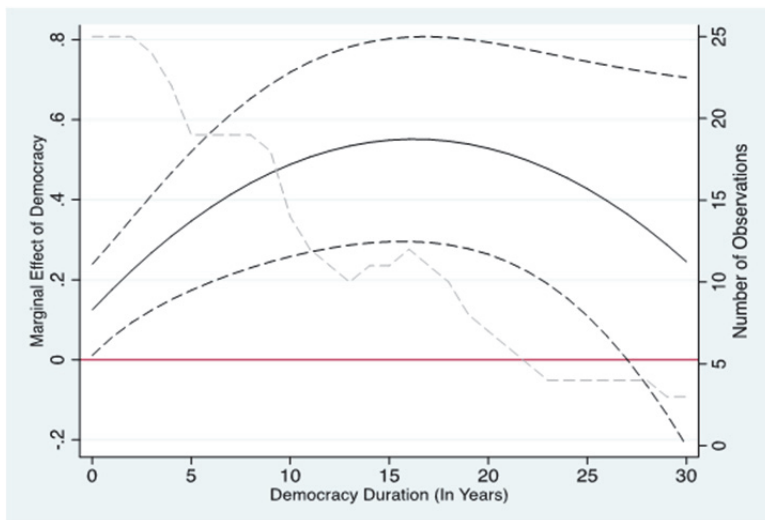
Notes: Standard errors reported in parentheses are all clustered by country. For Models I and II, we include dummies for past British and French colonies though we do not report the results for these variables. In Models III-VI, we control for country-fixed and temporal effects using the FE model with year dummies. All the explanatory variables are lagged one year in all these models. *** p<0.01, ** p<0.05, * p<0.1.

⁹ The Hausmann test indeed fails to reject the null hypothesis of no significant differences between RE and FE estimates (p-value<0.001), alluding to the potential danger of omitted variable bias in the pooled or RE estimates.

More importantly (and more interestingly), the co-efficients on the interaction of the level and duration of democracy turn out to be positive and statistically significant, once we control for country-fixed and temporal effects in the FE models ($p < 0.01$ in Models III-VI). These results lend support to our hypothesis that the democratic dividend is more pronounced for African countries where democratic institutions are sustained for longer periods of time. In Figure 1, we plot the marginal effect of democracy on GDP per capita growth at different lengths of democracy duration based on Model IV in Table 1. The solid slope represents the marginal effect of democracy and the dashed lines around it correspond to the 95 per cent confidence intervals.

As clearly depicted in the Figure 1, the marginal positive effect of democracy on growth is greater for those countries that manage to remain democratic for longer years (although its effect eventually becomes indistinguishable from zero when democracy duration exceeds roughly 25 years). The magnitude of the effect of the interaction term between the level and duration of democracy is certainly non-negligible. Just to illustrate this point, for countries like Ghana, Benin, Botswana, Zambia, and South Africa, which have managed to remain democratic for more than fifteen consecutive years, an one-unit increase in POLITY2 is expected to increase GDP per capita growth by 0.54 per cent with a standard error of ± 0.13 per cent.

Figure 1: The marginal effect of democracy on growth at different lengths of democracy duration



Source: Authors' own construction. The figure is based on the baseline model (Model IV) in Table 1.

Notes: The solid black line represents the marginal effect of democracy, while the dashed black lines around it show the 95 per cent confidence intervals. The dashed, grey line shows the number of observations across different lengths of democracy duration.

To test the sensitivity of our results, we first exclude some of the outliers in our sample. Botswana and Mauritius are two of the most stable democratic regimes that have enjoyed fast-growing economies in our sample. In Model VII, Table 2, we exclude these two outliers and replicate Model IV reported in Table 1. The results remain almost identical to what we observed in Model IV. The interaction term between the level and duration of democracy remains strongly positive and significant, and this result ensures that our results are not driven by these outliers. In Model VIII, we control for foreign aid (% of GDP), which may be another potential confounder. Some empirical studies show that *ceteris paribus*, donors tend to allocate a greater amount of aid to more democratic countries, which may in turn impact growth (Alesina and Dollar 2000; Frot and Santiso 2010). Again, the inclusion of aid/ gross national income (GNI) as a control does not seem to affect our results.

We also test our results with different measures of GDP per capita growth. As Jerven (2013) highlights, a few major sources of data on GDP do not agree with each other, alluding to the possibility that they tend to suffer from a significant degree of measurement errors. Therefore, we investigate whether our results remain robust to the use of different measures of GDP per capita growth. We utilize two alternative sources of data on GDP per capita growth—namely, the Penn World Table (PWT) and databases of Angus Maddison. It is worth noting that these two alternative measures are highly correlated with the WDI measure, while the former has less coverage than the latter. The results are shown in Models IX and X, Table 2. Our main results are unchanged.

Table 2: Sensitivity tests

Models	VII	VIII	IX	X
Estimator	FE	FE	FE	FE
Sources of data on DV	WDI	WDI	PWT	Maddison
Democracy	0.112*	0.112*	0.055	0.002
	(0.063)	(0.062)	(0.067)	(0.080)
Democracy×democracy duration	0.049**	0.057***	0.037**	0.044**
	(0.022)	(0.015)	(0.018)	(0.021)
Democracy×democracy duration ²	-0.002	-0.002**	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
Number of observation	984	1022	1013	921
R-squared	0.278	0.277	0.29	0.284
Number of countries	41	43	43	42

Source: Authors' calculations using Teorell et al.'s (2013) Quality of Government dataset, World Development Indicators (2013), Penn World Table (Version 8.0) (Feenstra et al. 2013), New Maddison Project database (Bolt and Van Zanden 2013), Polity IV (Marshall and Jagers 2003). See Appendix for descriptions on each variable.

Notes: Standard errors reported in parentheses are all clustered by country. Models VII-X replicate Model IV in Table 1 but exclude outliers, include additional controls, or the use different measures of GDP per capita growth for robustness checks. Botswana and Mauritius are excluded from Model VII to check how sensitive our results are to the exclusion of these two outliers. In Model VIII, we include aid/GNI as a control. In Models IX and X, we use different measures of GDP per capita growth drawn from the Penn World Table (PWT) and databases of Angus Maddison. ***p<0.01, **p<0.05, *p<0.1.

5 Caveats and implications

The analysis in the preceding section is suggestive of a democratic advantage in the process of economic growth in contemporary SSA. We are agnostic about the possibility that a similar regression on a global sample would bring about similar findings. We recognize that the impact of regime on economic growth varies across time and space. In Africa, the disastrous economic management of the 1970s and 1980s had no doubt many causes, but it did suggest that the region's authoritarian governments, unlike perhaps those of East Asia, were not adopt at promoting economic growth. It was possible that the authoritarian governments persisting in the Africa region today might perform better, but in the absence of clear reasons to believe so, it seemed to us more likely that in the region a democratic advantage is present, at least in the long run.

We also found strong evidence that the interaction between the level and duration of democracy is strongly positively correlated with economic growth in the region, which conforms to very intuitive expectations that the advantages of greater democracy expand over time. Finally, we found some evidence for our paper that regime transitions have a negative impact on growth, although this effect is not robust to different model specifications tested in our analysis.

Some caveats need to be emphasized regarding our findings. First, until a valid instrument for democracy is found, the use of a lagged variable is an imperfect fix for endogeneity in the relationship with economic growth. We tried different ways to palliate this problem but none are completely satisfactory. Second, the low qualities of national-accounts data give us pause. Again, we checked our results with different datasets, but none are perfect.

On a more theoretical level, some readers will protest that there is too much variation across democratic forms of government for it to be a meaningful category, and that it makes more sense to characterize precisely the nature of the relationship between citizen and state, or of the properties of the elites at an apex of the state who make economic decisions. In fact, however, the measure of democracy we use is broadly comparable across time and place, by focusing on relatively parsimonious dimensions such as the level of political competition and participation in political systems. We do not contest that some authoritarian governments are excellent at promoting economic growth, and it is possible that this is true because they are particularly good at protecting property rights or stimulating productive investments, or even insulating enlightened policy makers from popular pressures. It is all the more incumbent on scholars to explain why some authoritarian states are able to do so, because they are the exceptions. On average, at least in Africa today, there is a clear democratic advantage.

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Appendix

Table A

Descriptive statistics (in sample)

Variable Names	N	Mean	Std. Dev.	Min	Max
GDP per capita growth (WDI)	1046	1.2479	6.1304	-47.3142	65.7762
GDP per capita growth (PWT)	1013	1.292	6.3028	-45.7939	89.0892
GDP per capita growth (Maddison)	921	1.0739	6.4515	-39.8417	66.4807
GDP per capita (US\$2000)	1046	1118.8973	1728.5375	105.1748	13209.582
Democracy	1046	-0.4446	6.1205	-10	10
Transition/interregnum	1046	0.1291	0.3354	0	1
Democracy duration	1046	5.8308	10.5501	0	53
Foreign direct investment (% of GDP)	1046	3.3197	8.3399	-8.5894	145.202
Inflation	1046	74.0167	1065.8782	-17.6404	24411.0313
Terms of trade change (%)	1046	0.0092	0.1354	-0.6229	1.0162
Life expectancy	1046	52.797	6.8589	26.8187	73.9168
Government consumption (% of GDP)	1046	15.196	6.6258	2.7361	54.5154
Trade openness (%)	1046	72.7321	38.4405	6.3203	275.2324
Oil and gas production (% of GDP)	1046	7.2602	21.6803	0	186.2890
Political violence	1046	0.6482	1.5351	0	7
Former British colony	1046	0.3967	0.4895	0	1
Former French colony	1046	0.3939	0.4888	0	1
Ethnolinguistic fractionalization	1046	0.6554	0.2199	0	0.9302
Landlock	1046	0.3987	0.4899	0	1
Tropical	1046	0.8921	0.2783	0	1
Aid/GNI (%)	1022	12.9113	13.7229	-0.2532	181.1872

Sources: Author's calculations using Teorell et al.'s (2013) Quality of Government dataset, World Development Indicators (World Bank 2013), Penn World Table (Version 8.0) (Feenstra et al. 2013), New Maddison Project database (Bolt and Van Zanden 2013), Polity IV (Marshall and Jaggers 2003), Ross (2013), Alesina et al. (2003), Major Episodes of Political Violence (MEPV) (Marshall 2012), Mayer and Zignago (2011), and Gallup et al. (1999).

Notes: We draw measures of *GDP per capita growth* from three different sources: the World Development Indicators (WDI), the Penn World Table (PWT), and the New Maddison Project database (Bolt and Van Zanden 2013). The following socio-economic variables are also taken from the WDI: *GDP per capita (US\$2000)*, *foreign direct investment (% of GDP)*, the *CPI inflation rate*, the *terms of trade change (%)*, *life expectancy*, *government consumption (% of GDP)*, and *trade openness*. The *terms of trade change* is computed based on the annual percentage change in the net barter terms of trade index created by the World Bank. *Trade openness* is measured by the sum of merchandise exports and imports divided by GDP. *Democracy* is equivalent to Polity IV's POLITY2 variable, and the *duration of democracy* is the number of consecutive years for which POLITY2 is greater than zero. *Transitions/interregnums* is a binary variable coded 1 if Polity IV's POLITY is either -77 or -88, numerical codes used to represent transition or interregnum periods; and 0 otherwise. *Oil and gas production (% of GDP)* is an approximate measure of the value of oil and gas production (US\$2000) divided by GDP (US\$2000) and taken from Ross's (2013) oil and gas dataset. *Ethnolinguistic fractionalization* refers to Alesina et al.'s (2003) index of ethnic fractionalization. *Political violence* is the index of societal and interstate violence (ACTOTAL) from the Major Episodes of Political Violence (MEPV), which is the sum of societal and interstate violence scores in a country-year. This index ranges from 0 to 10, with a higher value indicating a greater degree of political violence. *Landlock* is a binary variable coded 1 if a given country is landlocked; and 0 otherwise, taken from Mayer and Zignago (2011). *Tropics* captures the approximate percentage of a given country's land area in geographical tropics and derives from Gallup et al.'s (1999) dataset, while we expanded its coverage by manually imputing values for Comoros, Cape Verde, and Mauritius. *Aid/GNI* refers to the fraction of net ODA in GNI (%) and is taken from the WDI.