The New Institutionalism and Africa

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1. Introduction

This article characterizes what many call "the new institutionalism" and explores its relevance to Africa. In doing so, it focuses on a core hypothesis in this literature: that there is a positive relationship between democracy and development (Lipset, 1959). Given the magnitude and speed of political change in late-century Africa (see Figure 1), the continent has generated ample data with which to test this hypothesis.

Our exploration addresses both those interested in the new institutionalism and those interested in Africa per se. For the former, it offers an opportunity for testing. For the latter, it offers an opportunity to probe the economic realities of Africa armed with the insights from the new institutionalism. In particular, it teaches us the degree to which changes in political institutions – i.e. political reform – may have changed political incentives, thereby weakening the commitment of governments to policies that retarded the growth of Africa's economies.

In Section 2A we introduce the new institutionalism, employing public choice theory as a useful foil. In doing so, we introduce and describe the so-called "Lipset hypothesis". In Section 2b, we provide an overview of political and economic changes in Africa, emphasizing the sharp, late-century changes in political institutions and government policies. We devote Section 3 to the analysis of macro-level data and document the distinctive position occupied by Africa in global samples: in Africa, but not elsewhere,

we show, democracy is positively related to (indeed, Granger causes) economic growth. Section 4 begins the search for causal channels between democratization and growth, arguing from "micro-" foundations: electoral reform, party competition, and changes in the location of the median voter, on the one hand, and changes in the rate of growth of total factor productivity (TFP) in agriculture on the other.

2. Background

2.A The Approach

To introduce the new institutionalism, it is useful to juxtapose it against public choice theory – an approach which it has largely eclipsed. The contrast between the two schools highlights the new institutionalist's core argument: that political power can be socially productive.

As do others (Hirshleifer 1994), public choice theorists identify two routes to the accumulation of wealth. One is production and exchange in markets and the other the use of power in politics. In markets, they argue, no one need consent to an exchange that renders him worse off. Insofar as the pursuit of wealth takes place within markets, then, it is compatible with the social welfare (Buchanan 1989). In political settings, by contrast, power can be marshaled to elicit involuntary transfers. This is true when political institutions underpin despots, of course; but, Buchanan and others argue (e.g. Buchanan and Tullock 1962), it is also true in democracies, where political majorities can expropriate minorities and where concentrated minorities, for their part, can use public

power to extract private benefits while distributing the costs widely. The public choice school thus views power as a threat to social welfare.

Contrast this argument with that of the new institutionalists (e.g. North and Thomas 1973; North 1981; North 1990). While conceding that indeed power can destroy wealth, they also insist that it can promote its creation. Highlighting the pervasiveness of market failure, they note that political sanctions can be structured so as to strengthen the forces of production. Tort law weakens incentives for non-performance, for example, making possible agreements that previously would have been shunned. And governments can enforce property rights in ways that align private interests with the social welfare in situations that might otherwise have led to opportunistic – and self-defeating—behavior. Whereas the public choice school emphasized the use of coercion to impose involuntary losses, the new institutionalists thus emphasize its use to facilitate social gains. They view political institutions as a form of capital that, if properly configured, can unleash the productive potential of the economy, making economic growth possible (Bates et al. 2002).

In search of evidence for such arguments, the new institutionalism has pursued several lines of inquiry. Of particular relevance to Africa is research into the relationship between democracy and development.

Writing in 1959, Seymour Martin Lipset reported a strong and positive correlation between income per capita and democracy in a global cross section of nations (Lipset

1959). Lipset interpreted his findings as suggesting that economic development leads to democracy. But those who work on Africa endorsed another interpretation: that democratic governments were more likely to promote economic development -- an interpretation more in keeping with institutionalist arguments.

2.B The Case of Africa

As documented in academic studies (Ndulu et al. 2008) and official reports (World Bank 1991), those addressing Africa's poor economic performance in the post-independence period traced its roots to Africa's political systems. Overwhelmingly single party or military regimes, (see Figure 1), they were narrowly based, resting on a coalition composed of urban-based, public-sector employees, manufacturers, and industrial firms. As best summarized in (Ndulu et al. 2008), the economic policies of many of these regimes were characterized (*inter alia*) by:

- Tariff policies that protected domestic manufacturing (but not agriculture).
- Industrial regulations that conferred market power on the producers of manufactured goods but on the purchasers of agricultural products.
- Over-valuation of domestic currencies.

Given that manufacturing received tariff protection from imports, while farmiing did not, the last of these measures further tilted relative prices in favor of the urban sector.

Taken together, these policies shifted relative prices against agriculture – the largest single sector of most of Africa's economies. One result was slower growth, as incentives eroded for persons to invest capital or labor power in farming.[1] Given that agricultural exports generated a significant portion of Africa's earnings in foreign markets, another was external debt.

Although international donors pressured Africa's governments for policy reform, the governments were reluctant to comply. While Africa's farmers stood to benefit from policy reform, they lay widely scattered, resided in culturally distinctive communities, and therefore found it difficult to organize. As the logic of collective action (Olson 1985, Bates 1981, Becker 1983) would suggest, the urban coalition – highly concentrated spatially and economically -- therefore prevailed, and the policies remained in place despite theri economic costs.

Recognizing the political forces at play, those who sought to alter government policies and thereby secure the renewal of economic growth in Africa sought to alter Africa's political institutions. They sought thereby to alter political incentives so that politicians would no longer regard such policies as politically impregnable. In particular, they

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[1] As reported in Ndulu et al. (2008). The adoption of these policies (which, taken together, they call "control regimes") imposed a loss of nearly two percentage points to the annual rate of growth.

recognized that should Africa's rural dwellers once again be able to vote, then, given their numbers, their interests, and their presence in numerous electoral districts, they could render policies that damaged the fortunes of farming politically unsustainable. In pursuit of policy reform, Africa's creditors abroad therefore joined domestic reformers at home in demanding a return to open political competition and majority rule.

In the absence of political reform, financial institutions could – and did – suspend further lending. In pursuit of international capital and domestic political support, Africa's governments capitulated, conceding the right to form opposition parties that could compete for votes (see Figure 1). Importantly, the change in institutions enfranchised a largely rural electorate.

These changes were inherently valuable; for social scientists, moreover, they offered an opportunity to observe and to measure the relationship between political institutions and economic performance. Section 3 relates political reform in Africa to the growth of national incomes. Section 4 relates political change to changes in total factor productivity in agriculture. Both report evidence supportive of institutionalist arguments.

3. Institutions and Development

When exploring the relationship between democracy and economic performance in Africa, we employ an augmented version of the Pooled Mean Group (PMG) estimator (Pesaran et al. 1999) which relaxes the assumption of cross-sectional parameter homogeneity. We thereby gain access to variation unavailable to previous researchers, and in doing so detect a statistically significant relationship between political institutions

and economic performance that had eluded them[2]. In Africa, we find, institutional reform appears to have proven economically productive.[3]

The model we estimate is:

$$\Delta d_{it} = \varphi_i (d_{i,t-1} - \mu_i - \beta y_{it} - \eta \bar{y}_t - \alpha \bar{d}_t) + \sum_{j=1}^{p-1} \lambda_{ij} \Delta d_{i,t-j} + \sum_{j=0}^{p-1} \delta_{ij} \Delta y_{i,t-j} + \sum_{j=0}^{p-1} v_{ij} \Delta \bar{d}_{i,t-j} + \sum_{j=0}^{p-1} \omega_{ij} \Delta \bar{y}_{i,t-j} + \varepsilon_{it}$$

(1)

Where d_{it} represents democracy and y_{it} represents income per capita for country i at time t, and $\bar{y}_t = N^{-1} \sum_{i=1}^{N} y_{it}$, $\bar{d}_t = N^{-1} \sum_{i=1}^{N} d_{it}$ respectively represent their cross-sectional averages. Crucially, the error term ε_{it} is identically and independently distributed across i and t even in the presence of common time effects. Country intercepts -- unobserved country heterogeneity – are captured by the term μ_i.

Based on this model, we explored the direction of (Granger) causality between institutions and income in both the global sample and the African sub-sample of the data. As Table 1 shows, for the *global* sample the direction of causality cannot be established: democracy Granger causes income and income Granger causes democracy. However, for the *Africa* subsample, Granger causality runs *from* democrcy *to* income. We then proceed

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[2] In particular, {Przeworski, 2000 #1685}{Acemoglu, 2008 #1910}

[4] This conclusion finds additional support in the report by Radelet, S. (2010). See also Fosu (2008) and Nkurunziza and Bates (2003).

to analyze income as a function of democracy for Sub-Saharan Africa (Table 2). The first column reports the PMG estimates and the second column presents the mean group estimator results. The Hausman test in column 3 result testifies to the validity of the long-run homogeneity restrictions imposed by the PMG estimator. The coefficients generated by the PMG estimator suggest that democracy is positively and significantly related to income. Given that the model is linear log, the coeffient estimate suggests that a one unit increase in the Polity score is associated with a 1.5% increase in income per capita.

Political reform in Africa thus appears to have generated evidence that supports the arguments of both reformers and scholars alike and produced higher incomes for Africa's impoverished economies.[4]

Recent political developments suggest that these gains are under threat, however. While "17 countries are leading the way" (Radelet, 2010), a sumber seem to be backsliding. Over the past decade, there have been seven successful coups and a further six failed attempts. Over the same period, according to the Ibrahim Index, in 15 countries, governance failed to improve[5], while, according to The African President's Index , in 22,

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[4] This conclusion finds additional support in the report by Radelet, S. (2010). See also Fosu (2008) and Nkurunziza and Bates (2003).

[5] Own calculations based on the Ibrahim Index of Governance

http://www.moibrahimfoundation.org/en/section/the-ibrahim-index (accessed 18 Dec. 2010)

leadership was extremely poor.[6] Political incumbents in Burkina Faso, Cameroon, Chad, Senegal and Uganda successfully altered their constitutions in order to allow them to compete yet again for the presidency (see Posner and Young, 2007); in each instance, the incumbents, having won, remained in office. While Africa has benefitted from political reform, the process appears to have slowed.

4. Evidence from the Micro- Level

The evidence thus far has come from the macro- level: It consists of relationships between political institutions and measures of the total economic product. In the section that follows, we draw upon finer features of the polity and upon micro-level data on the economy to explore once again the relationship between political institutions and economic performance.

We argue that by enfranchising a largely rural electorate, institutional reform shifted the "center of mass" of Africa's political economies[7] from the relatively small urban core to the larger rural sector, thereby rendering previous policies politically unsustainable. The result, we suggest, was policy reform and the strengthening of incentives for farming: the largest single industry in most African economies.

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6 The African Presidents Index: The good, the bad and the ugly. The East African. Nairobi. December 27, 2010 - January 2, 2011.

[7] Or, more correctly, median voter. See Shepsle (2010).

4.A Total Factor Productivity

As our measure of the performance of farmers, we draw on the research of Steven Block (2010), who combined data from 44 countries over 46 years (1961-2007) to generate estimates of changes in total factor productivity growth in African agriculture. In the initial years of independence, he found, total factor productivity dramatically declined. In the early 1980s, however, it began to grow. And by the early 2000s, its average annual rate of growth was over four times faster than it had been 25 years earlier. His estimates suggest that the average rate of TFP growth in the baseline estimate is 0.97% per year, a figure that falls to 0.87% per year when we adjust for land quality and to 0.59% per year when we include adjustments for the quality of labor.

For our purposes, however, the key finding is the post-independence decline and subsequent rise of cross-country agricultural productivity growth in Africa, which give rise to two questions: Did changes in Africa's political institutions bear a systematic relationship to changes in the performance of Africa's rural economy? And, if so, through what mechanism did their impact run? We argue that they did, both directly and through their impact on government policies.

4.B. The Data

Using aggregate crop output figures for each country, and Africa-specific prices and PPP exchange rates, Block derives his estimates from a semi-parametric specification of a constant returns to scale Cobb-Douglas production function:

(1)

$$y_i(t) = c + \sum_{j=2}^{k} \beta_j x_{ij}(t) + \sum_{j=1}^{k} \lambda_j z_{ij}(t) + \sum_{j=1}^{m} \gamma_j\, p_{ij}(t) + g\big(TD(s)\big) + \sum_{h=1}^{n-1} \varphi_h CD_h + \varepsilon_i(t)$$

where $y_i(t)$ is aggregate crop output for country i in year t, $x_{ij}(t)$ is a vector of j conventional agricultural inputs (land, chemical fertilizer, tractors, and livestock); $z_{ij}(t)$ are quality shifters associated with these inputs (average years of schooling to adjust labor quality, as well as rainfall and irrigated land share to adjust for the quality of land); $p_{ij}(t)$ are other potential explanations for TFP growth (to include political competition); *TD* are annual time dummies; and *CD* are country dummies. All variables are in logs, normalized by the size of the labor force in agriculture.[8]

To derive the country-specific rates of agricultural TFP growth, Block estimates equation (1) country-by-country. The "baseline" estimates (shown in the cross-country aggregates in Figure 2) exclude the adjustments for input quality contained in the vector *z*. He then re-estimates the function while adjusting for land quality (by controlling for the effect of annual rainfall and irrigated land share), and then re-estimates it once again while adjusting as well for labor quality (by controlling for average years of schooling). While

[8] Block (2010) constructs these aggregates from crop-specific output data published by the Food and Agricultural Organization of the UN, using aggregate crop output figures for each country and Africa-specific prices and PPP exchange rates. Other studies simply employ the FAO's pre-constructed output aggregates, which are based on global prices and exchange rates. Block's estimates thus more closely reflect the circumstances actually faced by Africa's farmers.

the estimate of TFP growth is reduced by the extent to which those additional variables "explain" the initial baseline estimate, the adjustments help to differentiate between productivity increases resulting from the use of improved inputs from those that result from increases in the efficiency with which these inputs are employed.

When relating these changes in total factor productivity to changes in political institutions, we make use of a scale that provides a measure of the degree of political competition that the incumbent chief executive faced when coming to office.[9] For each country in each year, the scale assigns a number that indicates whether:

1 -- No executive exists.

2 – An executive exists but was not elected.

3 – The executive was elected, but was the sole candidate.

4 – The executive was elected, with multiple candidates competing for the office.

5 -- Multiple parties were also able to contest the executive elections.

6 -- Candidates from more than one party competed in executive elections, and the winner won more than 75% of the votes.

7 -- Candidates from more than one party competed in executive elections, and the winner won less than 75% of the vote.

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[9] The measure is taken from the World Bank's Data Base of Political Institutions: Beck et al. (2001). The measure was devised by the Africa Research Program at Harvard, who established that it yields a cumulative (Guttman) scale. See Bates et al. (1996).

We employ as our measure a dummy variable, named "electoral competition," that takes the value 1 when a government is rated 6 or above and 0 otherwise.

When discussing public policy, we employ two measures. One is the black market premium (BMP) for foreign exchange. While the BMP is a direct measure of exchange rate misalignment, we follow Rodriguez and Rodrik (2001) who view BMP as a proxy for broader distortions in macroeconomic policy.

Our second policy indicator is the nominal rate of assistance to agricultural importables, a sectoral indicator of trade policy intervention, which we take from the World Bank's database on Distortions to Agricultural Incentives (Anderson 2009). When an ad valorem tariff is the sole policy intervention for good (x), the nominal rate of assistance for commodity x is:

(3) $$NRA_x = \frac{E * P(1+t_m) - E * P}{E * P} = t_m$$

where t_m is tariff rate, E is the nominal exchange rate, and P is the dollar-denominated world price of the commodity. The nominal rates of assistance for individual crops may be aggregated to form the nominal rate of assistance for agricultural importables (NRA_totm), which are typically foodgrains. Food imports compete with the product of Africa's famers for the domestic market and the NRA_totm therefore determines the prices at which local producers can sell what they grow. It also influences the distribution of income, as the lower prices that reduce the incomes of rural producers enhance the purchasing power of urban consumers. It follows from our central line of

reasoning that the enfranchisement of the rural majority should be associated with decreased assistance for competing agricultural imports.

Lastly, we also make use of the Relative Rate of Assistance (RRA), calculated as:

$$(4) \qquad RRA = \left[\frac{1 + NRAag^{t}}{1 + NRAnonag^{t}} - 1 \right]$$

where $NRA_{ag/nonag}$ represents an aggregate index of the commodity-specific NRAs for the agricultural and nonagricultural sectors of each country. The RRA provides a measure of the relative level of protection conferred upon agricultural and non-agricultural (manufactured) goods. When agriculture is relatively favored by trade, the RRA is greater than one; when disfavored, it is less. The RRA therefore provides a measure of "urban bias".

Table 3 provides descriptive statistics for these data.

4.B. Bivariate Relations

To motivate the analysis that follows, we introduce Figure 3, which distinguishes the time path of TFP growth rates[10] in observations with and without electoral competition Note that the TFP growth rate in settings characterized by electoral competition progressively diverges from the TFP growth rate in settings that lack it. On average,

[10] Net of adjustments for input quality.

countries with electoral competition experienced agricultural TFP growth of 1.04% per year, while the average rate was only 0.48% per year in countries without.[11]

We also introduce Figure 4, which compares government policies in country-years with and without electoral competition. Each panel in Figure 4 contains a box that depicts the portion of the observations of a variable that fall within the interquartile range, i.e. those whose values place them between the lower 25% and the upper 25% of the range of the values of the variable. The horizontal lines within the boxes mark the variable's median value. The upper and lower horizontal lines laying outside the boxes mark the upper and lower values of the data.

The data suggest that governments headed by an executive chosen in a competitive election not only spend more on agricultural research, secure higher levels of educational attainment, and pave a larger percentage of their roads. The data also suggest that they exercise greater fiscal and monetary restraint than do their authoritarian counterparts (as indicated by the virtual absence of black markets for their currencies) and intervene in markets in ways less likely to shift relative prices against farmers (as indicated by their relative rates of assistance). Calculating the means, we apply one-sided t-tests to the differences and find each to be significant and in the expected direction. Governments in competitive political systems adopt policies that lower the costs, increase the earnings, and strengthen the incentives for farmers.

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[11] These averages are statistically different in a two-sided t-test (P = 0.0014).

In the estimates we develop below, we focus in particular on the nominal rate of assistance to agricultural importables. In Figure 5, we superimpose a smoothed version of the mean RRA over the TFP growth profiles. The Figure underscores that TFP growth declined when urban bias was increasing and increased when urban bias was decreasing. The difference in the mean growth rates is statistically different at greater than the .01-level.

To probe deeper and more rigorously, we turn to multivariate analysis.

4.C. A Deeper Look

Tables 5-7 provide both the structure of and evidence for our argument. They report the total effect of institutional reform on the growth of total factor productivity in agriculture; the mediated effect, i.e. its impact on policies that themselves affect TFP growth; and the direct effect (McKinnon 2008; Imai et al., 2010). Given that political reform and the growth of total factor productivity in agriculture could be the joint products of variables excluded from the analysis, in each table, we introduce country fixed effects to account for (at least) the time-invariant unobservable characteristics.[12] And because of the

[12] Block (2010), among others, found that expenditures on agricultural R&D explain a substantial share of TFP growth, and our illustrative result in Figure 4 indicates that spending on R&D is higher in settings with electoral competition. Thus, we must be concerned that excluding R&D expenditures from our specification, which we are forced to do by the lack of a sufficiently large common sample, introduces potential bias into our estimates of the effect of electoral competition on TFP. However, the magnitude of

possibility of reciprocal causality in the relationship between political reform and productivity growth, we also make use of instrumental variables, introducing the level of political competition in neighboring states (lagged by one year) and the end of the Cold War as excluded instruments in a fixed effects two-stage least squares estimator.[13]

Table 4 presents estimates of the total effect of institutional change on the rate of growth of total agricultural productivity in Africa 1961-2007. Columns 1 and 2 address the basic relationship between electoral competition and agricultural TFP growth. Controlling only for a year trend and country fixed effects, we find that electoral competition increases TFP growth by about 0.7 percentage points. Instrumenting -- as described above -- for electoral competition increases this point estimate by approximately one

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any potential bias is a direct function of the correlation between (excluded) R&D and (included) electoral competition. The simple correlation between R&D expenditures and EIEC is low (0.11) and the R-squared in a fixed-effects regression of (log) R&D on our electoral competition dummy is essentially zero (0.0008). These considerations suggest that excluding R&D from our specifications does not significantly influence our finding for electoral competition. In addition, virtually all of the variation in R&D is "between" rather than "within" variation (the between coefficient of variation is nearly 4 times greater than the within), suggesting that country dummies absorb nearly all of the variation in R&D.

[13] As discussed by Dunning (2004), until the late 1980s, the Cold War initially kept external pressures in check. Following the breakup of the Soviet Union, however, foreign ministries in the West were less inclined to stay the hand of finance ministries, and the latter enjoyed far greater latitude in their negotiations with debtor governments. Financial institutions were now free openly to act in concert with domestic reformers.

percentage point (column 2).[14] We introduce additional controls, seeking to take into account the impact of Africa's endemic civil conflicts and the share of its rural population. These controls enter (individually in columns 3 and 4, and together in column 5) with the expected signs and have no impact on our estimated effect of electoral competition on agricultural TFP growth. In column 6 we deepen our analysis by including the interaction between our dummy for electoral competition and the rural population share. We hypothesize that if outcomes favorable to agriculture are more likely when policymakers face electoral competition, then the magnitude of the effect should itself be a positive function of the rural population share. The results in column 5 are therefore suggestive: the point estimates increase with the rural population share. They are not statistically different from one another, however.

In Table 5, we explore the impact of institutions on policy choice, which we view as mediating between the introduction of political competition and growth of total factor productivity. We assess the effect of electoral competition on the two policy variables – RRA (in columns 1 and 2) and BMP (in columns 3 and 4). In both sets of equations, we allow the effect of electoral competition to vary as a function of the rural population share; and we estimate each model by both fixed effects and fixed effects two-stage least squares using the identification strategy outlined above.

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[14] The Cragg-Donald F-tests of excluded instruments uniformly support the strength of our instruments, and the Sargan-Hansen J statistic uniformly fails to reject the null hypothesis that the instruments are exogenous.

The coefficients in column 1 confirm that the magnitude of the relationship between institutional change and policy choice is a function of the size of the rural electorate: the greater the portion of the total population that lives in rural areas, the greater the reduction in urban bias (e.g., the higher or less negative the RRA) when governments must compete for votes. Column 2 corrects for the potential endogeneity of electoral competition and confirms that more favorable treatment is given farmers by governments that must compete for votes to secure public office. We also find (in columns 3 and 4) that electoral competition reduces the black market premium.

In Table 6, we estimate the direct and indirect impact of institutional change by adding our mediating policy variables, RRA and BMP, to the specification from Table 4. In columns 1 and 3, respectively, we first measure the total impact (for the available sample set of observations) of electoral competition by excluding each policy variable. In columns 2 and 4, we then add the policy variables. The change in the point estimate for electoral competition when the policy variable is added provides an estimate of the extent to which electoral competition operates through its impact on the policy variable.

Comparing the point estimates for electoral competition in columns 1 and 2, we find little effect of including RRA. This suggests that while RRA is influenced by electoral competition, most of total effect of electoral competition is direct; it runs through channels other than its impact on relative prices. Columns 3 and 4 suggest that some of the effect of electoral competition on agricultural TFP growth may operate through improved macroeconomic policy. The estimated coefficient on electoral competition is

reduced by the inclusion of black market premium, though the difference in the point estimates for electoral competition in columns 3 and 4 is not statistically significant.[15]

Electoral competition thus leads directly to an increase in the growth rate of agricultural TFP growth on the order of one percentage point. Moreover, given that the majority of the electorate resides in rural areas, when competing for majorities at the polls, politicians, we have seen, now have strong incentives to adopt policies that increase the returns to farming. We can speculate on additional channels through which it might operate. They include the return of private agents to the rural economy, the reduced regulation of agricultural markets, improved rural infrastructure, and increased rural incomes as a result of greater government spending on roads and public facilities.

5. Conclusion

The late century changes in Africa's political institutions constituted a natural experiment, enabling scholars to test institutionalist arguments. In this article, we have sought to take advantage of the data thus supplied, both to assess the power of institutionalist arguments and to achieve a deeper understanding of economic development in Africa.

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[15] Here, too, we instrument for the existence of electoral competition. Diagnostic tests support the strength of our instruments, though the tests of overidentifying restrictions in columns 3 and 4 suggest some concern for their exogeneity. Given the weakness of this test, and that previous tests of similar models gave rise to no concerns, we report this finding, but do not consider it a threat to our argument.

In Africa, we find, institutions bear a systematic and significant relationship to economic performance. At the macro-level, political reform is (Granger) causally related to economic growth; and at the micro-level, positively and significantly related to TFP growth in agriculture. The latter relationship is both direct and through its impact on government policies. Given that Africa's electorate is largely rural, the movement to majoritarian institutions led to the creation of an electorate dominated by farmers, thus weakening the governments' commitment to policies favoring consumers at the expense of the producers of agricultural products.

Our analysis of Africa's "great experiment" thus suggests that the hopes of the late century reformers were fulfilled: changes in institutions led to changes in policy and to economic growth. They also suggest that the new instituionalism is right: the structure of political institutions influences the performance of economies. In doing so, they offer reasons for concerned citizens to continue to mount a defense of the political reforms secured by their predecessors.

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Comment [a1]: Other authors?

Figure 1.A. Political institutions

Note: For construction of the scale score, see Section 4.B.

Figure 1. B Party Systems

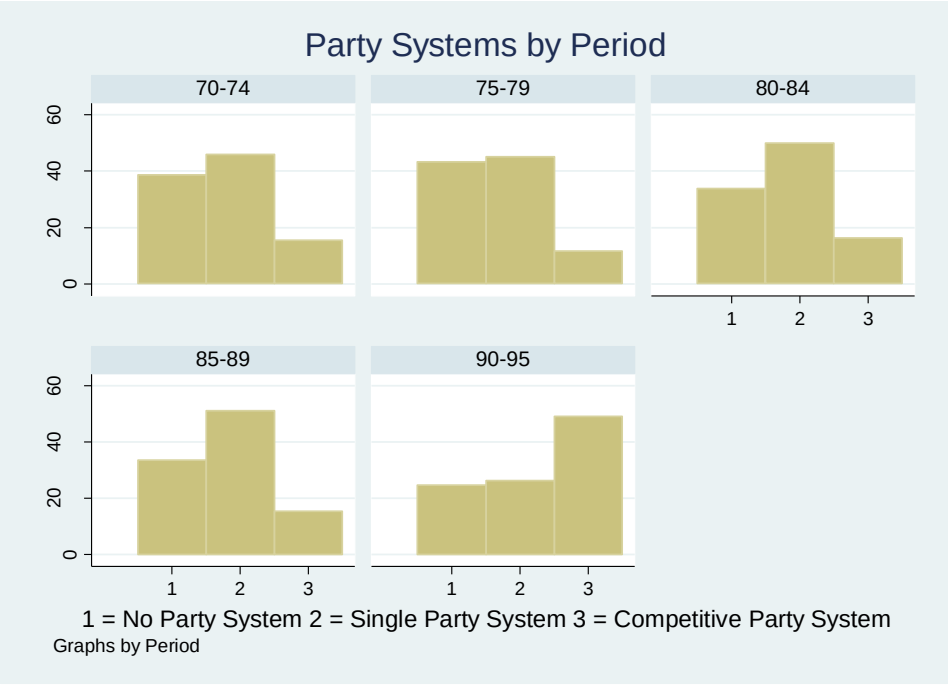

Figure 2. Agricultural TFP Growth Rates Adjusted for Input Quality

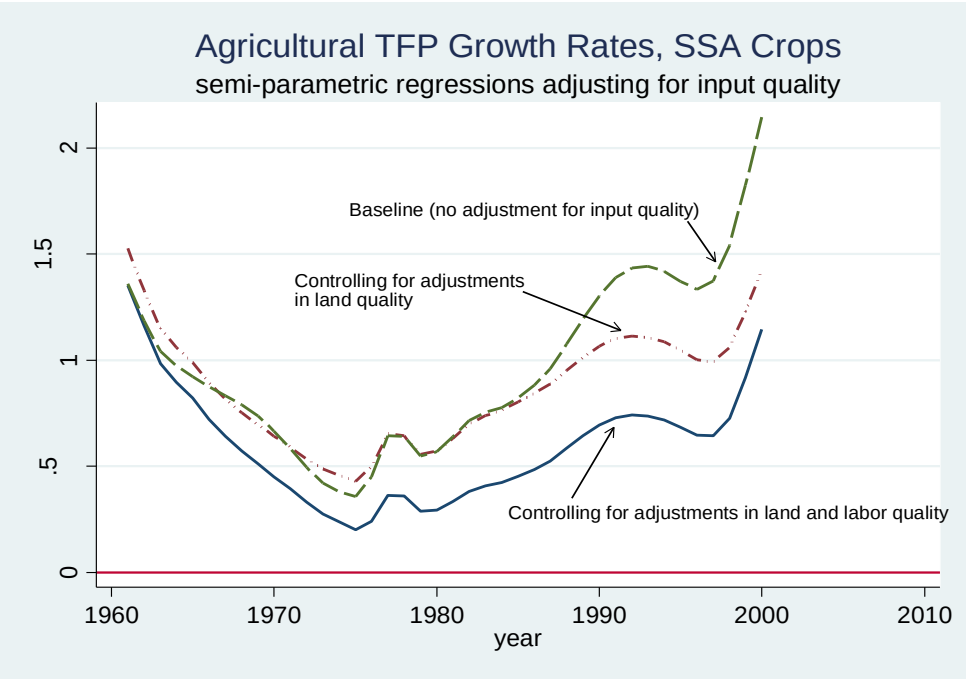

Figure 3. Agricultural TFP Growth Profile for Country-Years With and Without Electoral Competition

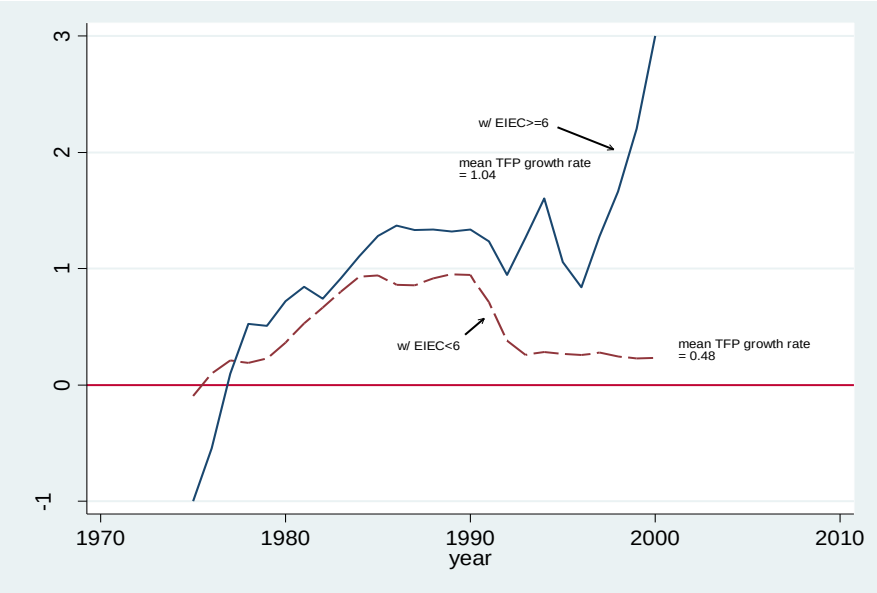

Figure 4: Policy Differences: With and Without Electoral Competition

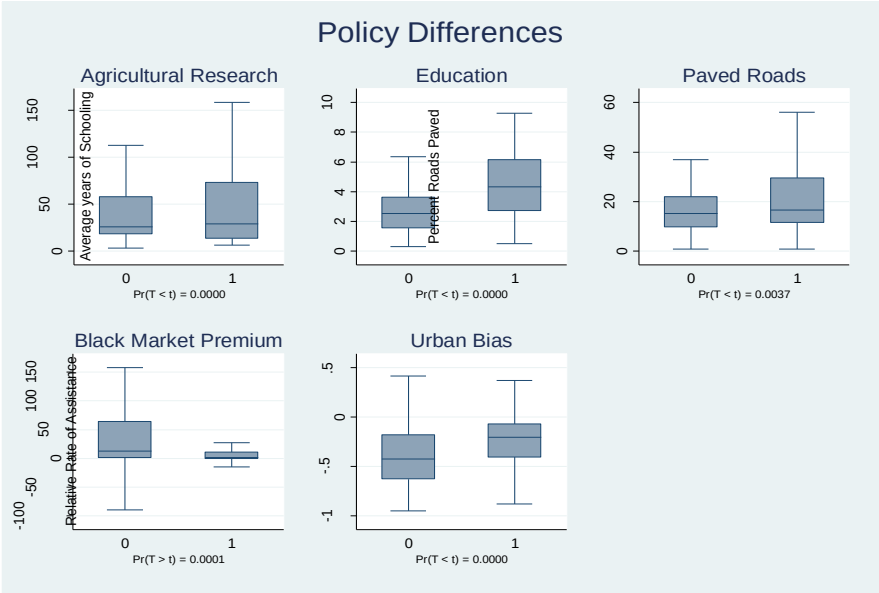

Figure 5. Effect of Nominal Rate of Assistance to Agricultural Importables on Agricultural TFP Growth

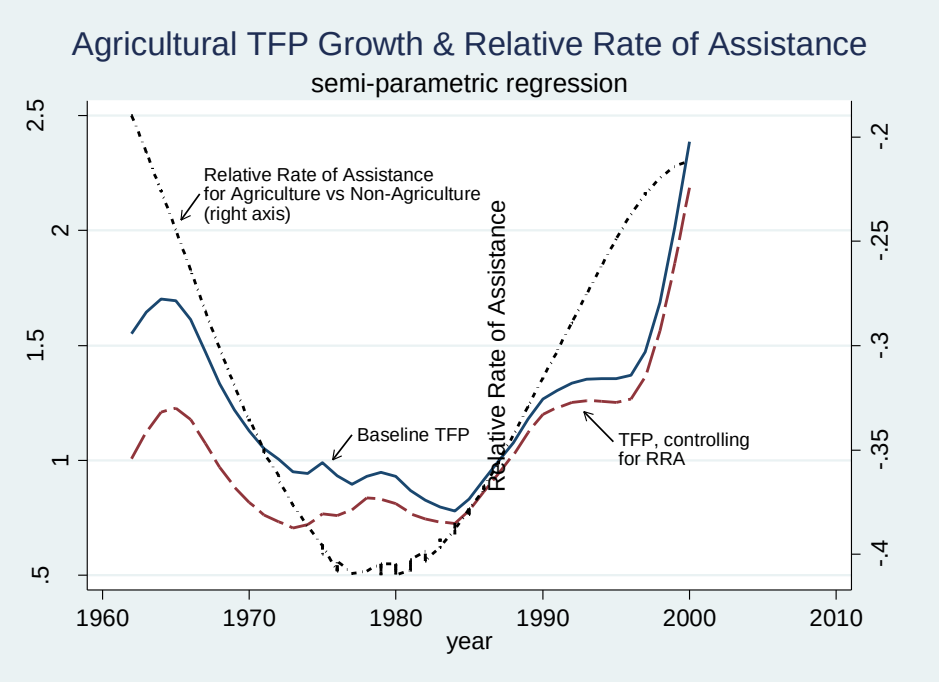

Table 1: Granger causality tests

		Overall sample		
Null hypothesis	Observations	Lags	F-stat	Probability
Democracy does not Granger cause income	4532	3	5.472	0.001
Income does not Granger cause democracy	4532	3	6.870	0.000
		Sub-Saharan Africa sample		
Null hypothesis	Observations	Lags	F-stat	Probability
Democracy does not Granger cause income	1741	3	2.574	0.052
Income does not Granger				

cause democracy	1741	3	1.521	0.207
		Non-Sub-Saharan Africa sample		
Null hypothesis	Observations	Lags	F-stat	Probability
Democracy does not Granger cause income	2791	3	2.612	0.050
Income does not Granger cause democracy	2791	3	5.283	0.001

Note: In testing whether democracy Granger causes income, income is regressed on lags of income and democracy, and the reported F-stat is a Wald-type test of the joint significance of all estimated coefficients on such lags. We also report the probability of rejecting the null hypothesis.

Table 2: Augmented PMG estimation; Sub-Saharan Africa sample (N=42); 1955-2007

Dependent variable: Log of GDP per capita			
Long-run Coefficients	PMG	MG	Hausman Test
Democracy	0.015***	0.081	1.46
	(0.002)	(0.055)	[0.23]
World Democracy	0.018***	-0.018	2.13
	(0.003)	(0.025)	[0.14]
World Output	1.176***	1.191***	0.00
	(0.103)	(0.363)	[0.97]
	Joint Hausman test		2.64
			[0.45]
Error Correction Coefficient	-0.122***	-0.259***	
	(0.030)	(0.034)	

Notes: All equations include a constant country-specific term. Numbers reported in parentheses are standard errors. Numbers reported in brackets are p-values.***, **, and * indicate significance respectively at the 1, 5, and 10 percent levels. We use the Schwartz Bayesian optimal lag selection Criterion subject to a maximum lag of three. World

democracy and world output are respectively the cross-sectional averages of democracy and output, which we take as proxies of the common unobserved global shocks

Table 3. Variables and Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Source:
Agricultural TFP Growth	1494	0.614	2.117	-7.694	8.247	Block (2010)
Dummy=1 if Exec. Index of Electoral Competition >6	1460	0.427	0.495	0.000	1.000	Beck and Clarke (2009)
Neighbors' Executive Index of Electoral Competition	1230	4.289	1.586	1.500	7.000	Based on Beck & Clarke (2009)
Relative Rate of Assistance (RRA)	642	-0.279	0.299	-0.946	1.295	Anderson and Valenzuela (2008)
Black Market Premium on Foreign Exchange	1321	1.361	3.436	-6.908	6.122	World Devt Indicators (2009)
Civil War dummy	2162	0.166	0.372	0.000	1.000	Sambanis and Doyle (2006)
Rural Population Share	2064	71.713	16.410	12.700	97.960	World Devt Indicators (2009)

Countries for which we have estimates of agricultural TFP growth (boldface indicates the existence of data for RRA for that country): Angola, Benin, Botswana, Burkina Faso, Burundi, **Cameroon,** Central African Republic**,** Democratic Republic of Congo, **Côte d'Ivoire,** Equatorial Guinea, Gabon, Gambia, **Ghana,** Guinea, Guinea-Bissau, **Kenya,** Malawi, Mali, Mauritania, Mauritius, **Mozambique,** Niger, **Nigeria,** Rwanda, **Senegal,** Seychelles, Sierra Leone, Somalia, **South Africa,** Swaziland, **Tanzania,** Togo, **Uganda, Zimbabwe.**

Table 4. Effect of Electoral Competition on Agricultural TFP Growth for Crop Agriculture in SSA

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FE	FE-2SLS	FE-2SLS	FE-2SLS	FE-2SLS	FE-2SLS
Electoral Comp dummy	0.691*	1.670***	1.633***	1.945***	1.928***	1.414
	(0.376)	(0.385)	(0.380)	(0.355)	(0.353)	(0.969)
Year trend	0.0249	-0.00780	-0.00453	-0.109***	-0.106***	-0.111***
	(0.0335)	(0.0145)	(0.0142)	(0.017)	(0.0167)	(0.0193)
Civil War Dummy			-0.440***		-0.179	-0.174
			(0.157)		(0.145)	(0.147)
Rural Pop Shr				-0.168***	-0.165***	-0.175***
				(0.014)	(0.0139)	(0.0232)
EleComp x Rural Pop Shr						0.00799
						(0.0146)
Constant	-49.54					
	(66.47)					

Observations	635	635	635	635	635	635
R-squared	0.116	0.049	0.066	0.211	0.215	0.206
Number of countries	27	27	27	27	27	27
Sargan-Hansen (P-value)		0.482	0.70	0.418	0.502	0.510
Cragg-Donald Wald (F-stat)		53.29[a]	53.80[a]	52.00[a]	52.38[a]	29.94[a]
Partial Effect of Elecomp						
with rural pop share =						
63% (25th pctl)						1.90***
						(0.356)
72% (50th pctl)						1.98***
						(0.376)
85% (75th pctl)						2.08***
						(0.475)

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1 Excluded instruments used in 1st stage regressions: lagged mean level of electoral competition in neighboring countries, dummy for Cold War (and interaction of rural population share with Cold War dummy in column 6, only). [a] Exceeds 10% maximal IV size value for Stock-Yogo weak ID test.

Table 5 Effect of Electoral Competition on RRA and Black Market Premium

	(1)	(2)	(3)	(4)
VARIABLES	FE	FE-2SLS	FE	FE-2SLS
Dep Var:	RRA		Black Market Premium (log)	
Electoral Competition	-0.355	-1.067***	-2.089	-8.303***
dummy	(0.245)	(0.251)	(1.977)	(2.568)
Rural Pop. Share	-0.0130	-0.0188***	0.278***	0.143***
	(0.00773)	(0.00419)	(0.0588)	(0.0397)
EleComp dummy *x* Rural	0.00685*	0.0169***	-0.0135	0.0307
Pop. Share	(0.00340)	(0.00330)	(0.0261)	(0.0337)
Civil War dummy	-0.0237	-0.0174	1.239**	1.524***
	(0.0571)	(0.0277)	(0.571)	(0.335)
Constant	0.569	1.116***	-17.85***	-11.69***
	(0.559)	(0.373)	(4.349)	(2.251)
Observations	399	399	762	762
R-squared	0.205	0.635	0.418	0.462
Number of countries	14	14	38	38
F-test of excluded		43.26		102.6
instruments		47.36[a]		110.3[a]
Sargan Statistic (P-value)		0.034**		0.010**
Partial Effect of EIEC with				
rural pop share =				

63% (25th pctl)	0.072	0.041	-2.93***	-6.38***
	(0.054)	(0.070)	(0.552)	(0.662)
72% (50th pctl)	0.138**	0.213***	-3.059***	-6.09***
	(0.047)	(0.070)	(0.473)	(0.524)
85% (75th pctl)	0.223***	0.437***	-3.226***	-5.71***
	(0.066)	(0.135)	(0.552)	(0.610)

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Excluded instruments for electoral competition: first lag of the average level of electoral competition in each country's neighbors, and dummy variable equal to 1 for years during the Cold War.

[a] F-test for 1st-stage regression to predict the interaction term (excluded instruments included interaction of rural population share with Cold War dummy).

Table 6. Effect of Electoral Competition on Agricultural TFP Growth for Crop Agriculture in SSA

	(1)	(2)	(3)	(4)
VARIABLES	FE-2SLS	FE-2SLS	FE-2SLS	FE-2SLS
Electoral Comp dummy	1.150**	0.997**	1.285***	1.039***
	(0.485)	(0.474)	(0.340)	(0.345)
Relative Rate of Assistance		1.747***		
		(0.417)		
Log Black Mkt Premium				-0.144***
				(0.0387)
Rural Pop Shr	-0.087***	-0.0569*	-0.195***	-0.195***
	(0.0335)	(0.0333)	(0.0152)	(0.0148)
Year Trend	-0.051**	-0.0573**	-0.101***	-0.107***
	(0.0246)	(0.0239)	(0.0157)	(0.0152)
Civil War Dummy	-0.0400	-0.0432	-0.141	0.0145
	(0.218)	(0.211)	(0.153)	(0.155)
Observations	268	268	472	472
R-squared	0.174	0.223	0.297	0.337
Number of Countries	11	11	26	26
Sargan-Hansen (P-value)	.889	0.074*	0.01***	0.01***
Cragg-Donald Wald (F-stat)	28.25[a]	27.76[a]	48.99[a]	44.85[a]

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1 Excluded instruments used in 1st stage regressions: lagged mean level of electoral competition in neighboring countries, dummy for Cold War. [a] Exceeds 10% maximal IV size value for Stock-Yogo weak ID test.