The New Institutionalism and Africa

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Abstract

After briefly reviewing the new institutionalism, this article uses the history of political reform in Africa to test its key tenet: that power, if properly organized, is a productive resource. It does so by exploring the relationship between changes in political institutions and changes in economic performance, both at the macro- and the micro-level. The evidence indicates that political reform (Granger) causes increases in GDP per capita in the African subset of panels of global data. And, at the mIcro-level, it demonstrates that changes in national political institutions in Africa strongly relate to changes in total factor productivity in agriculture.

1. Introduction

This article proceeds in several stages. Section 2 provides an overview of the new institutionalism and reviews recent changes in the politics and economics of Africa. Sections 3 and 4 then makes use of the data supplied by Africa's efforts at political reform to address a core issue in the new institutionalism: the relationship between democracy and development. At both the macro- and the micro-level, we find, the evidence supports institutionalist arguments: variation in political institutions bears a systematic, significant and plausibly causal relationship to variation in economic performance.

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 largely eclipsed. The contrast between the two schools highlights the new institutinalist'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 needs consent to an exchange that renders him worse off. Insofar as the pursuit of wealth takes place within market, therefore, 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 imposing the costs on the broader public. 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, they also insist that it can promote the creation of wealth. 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, Greif 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). Economic development, he argued, leads to democracy. Lipset's work thus

anticipated a major portion of the contemporary agenda in the new institutionalism.[1]

Lipset's finding invites a dynamic and causal interpretation. It was therefore startling

that when estimating Markov transition models, Przeworski et al. (2000) failed to find a

significant relationship between the level of income per capita and the likelihood of

transition to democracy. While Boix and Stokes (2003) and Epstein, Bates et al. (2006)

have challenged Przeworski et al.'s finding, it has subsequently been replicated by

Acemoglu, Johnson et al. (2008).[2]

Beginning in the 1980s, political forces from within Africa and without engineered

sweeping political changes, introducing democratic institutions into what had been

authoritarian settings. Among their objectives was to secure political reform and to

reignite growth in Africa's stagnant economies. Late-century Africa thus, in effect,

offers an experiment that empowers us to evaluate institutionalist arguments.

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[1] See the contributions to Helpman, E., Ed. (2008). Institutions and Economic Performance. Princeton NJ, Princeton University Press.

[2] The portions of this essay devoted to the Lipset hypothesis draw heavily from Fayad, G., et al. (2011). Income and Democracy: Lipset's Law Inverted. OxCarre Research Paper 61. Oxford, Oxford Center for the Analysis of Research Rich Economies. Those devoted to agriculture draw heavily draw from Bates, R. H. and S. Block (2010). Revisiting African Agriculture: Institutional Change and Productivity Growth. Cambridge MA, Weatherhead Center.

2.B The Case of Africa

As documented in academic studies (Ndulu, O'Connell 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, O'Connell 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 agriculture 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.[3] Given that agricultural

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[3] As reported in Ndulu, B. J., S. A. O'Connell, et al. (2008). The Political Economy of Economic Growth in Africa, 1960-2000. New York, Cambridge University Press, 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.

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. As authoritarian regimes, they were based on a narrow set of organized interests and the fortunes of each depended to a significant extent upon government policies. 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 this mix of policies remained in place despite its 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 winning. In particular, they 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.

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. In the absence of political reform, they could – and did – suspend further lending. In pursuit of foreign capital, Africa's governments capitulated, conceding the right to form opposition parties that could compete for votes (see Figure 1). The change in institutions enfranchised Africa's rural population.

These changes were inherently valuable; for social scientists, moreover, they offered an opportunity to observe and to measure the relationship between political change and changes in economic performance. Focusing on the Lipset hypothesis, 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

We begin with the work of Fayad, G., et al. (2011), who have conducted the most recent investigation of the Lipset hypothesis. Fayad et al. themselves target the work of Acemoglu, Johnson, et al. (2008) (henceforth AJRY), who had concluded that Lipset was wrong. Using a variety of estimators and including fixed effects, AJRY found that, *pace* Lipset, there was no relationship between GDP per capita and democracy in global samples, 1960-2000. Fayad, G., et al. (2011) concur with Grundlach and Paldam's

(2009) critique of AJRY, arguing that by applying an OLS estimator (which assumes

cross sectional parameter homogeneity) while including annual and country fixed effects,

AJRY purge from their panels useful information, thereby predisposing them to fail in

their search for a relationship between income and democracy. Fayad G., et al. (2011)

instead employ an augmented version of the Pooled Mean Group (PMG) estimator

(Pesaran, Shin, and Smith 1999) which relaxes the assumption of cross-sectional

parameter homogeneity. They thereby gain access to variation unavailable to AJRY, and

in doing so detect a statistically significant relationship between institutions and

economic performance that had eluded AJRY.

The PMG estimator allows intercepts, slope coefficients and error variances to differ

across panel members. More specifically, it allows the short-run coefficients to vary

across countries, while restricting long-run relationships to be homogeneous.[4]

The model they estimate is:

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

(1)

Where d_{it} represent democracy and y_{it} represent income per capita for country i at time t,

and $\overline{y}_t = N^{-1} \sum_{i=1}^{N} y_{it}$, $\overline{d}_t = N^{-1} \sum_{i=1}^{N} d_{it}$ respectively represent their cross-sectional averages.

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[4] In the context of this research, the estimator in effect "assumes" that in the short run – or while adjusting to a common long-run equilibrium – each country's political institutions respond differently to income shocks.

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.

The second part of equation (1) includes the lagged changes of income and democracy; the coefficients represent the short-run adjustment terms and are assumed to vary across countries. We do not report the short-run coefficients below. The first part of equation (1) captures the common long-run relationship between income and democracy. The slope coefficients -- β, η, and α -- measure the long-run response of democracy to income, world income and world democracy. φ is the error correction coefficient and indicates the speed of adjustment If the system is dynamically stable and converges to a long-run equilibrium, then this coefficient will be negative and less than one in absolute value. We report these long-run coefficients below.

Fayad G., et al. (2011) apply this model to a panel of 105 countries spanning the years 1960-2000. As did AJRY, Fayad G., et al. (2011) employ the Polity IV democracy index[5] and the Penn World Tables' (PWT 6.3) chain weighted estimates of real GDP per capita income. When they estimate the relationship between democracy and income from pooled data using OLS, they – as did AJRY -- find the coefficient on the income variable to be positive and significant. And when they include time and country fixed effects, they – as did AJRY -- find that the coefficient does not significantly differ from

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[5] Which distributes over a range spanning the interval between perfect autocracies (score of -10) and perfect democracies (score of 10).

zero[6]. But when Fayad, G., et al. (2011) employ the pooled mean group estimator, they

find the coefficient significant and negative. Fayad, G., et al. (2011) confirm that

differences in the samples do not account for differences in the estimates. Rather, they

conclude, the difference arises from differences in their choice of estimator.

2.D Principal Findings

Table 1 presents the major results derived from this model. The results are reported in

the first column of Table 1, while estimates derived from the mean group estimator

appear in the second. The Hausman test in column 3 result testifies to the validity of the

long-run homogeneity restrictions imposed by the PMG estimator.[7] The coefficients

generated by the pooled mean estimator suggest *that income is negatively and*

significantly related to democracy. Given that the model is linear log, they suggest that a

10% *increase* in per capita income leads in the long run to a roughly 0.12 unit *decrease* in

the polity scale.

Proceeding further, Fayad G., et al. (2011) disaggregate their sample. They then find

significant regional differences in the relationship between income and democracy. They

find that while running both ways in the global sample, in the Africa subsample, Granger

causality runs *from* democrcy *to* income (Table 2) and that the relationship is

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[6] Because it allows for heterogeneous intercepts, the PMG estimator can incorporate country-specific fixed effects. But because it estimates the model for each country separately, it can not allow the inclusion of year fixed effects. To correct for potential cross-section dependence in the estimated errors, Fayad G., et al. (2011) – as do Binder and Offermanns (2007) – therefore augment the model with the cross-sectional averages of the dependent variable and regressors.

[7] More precisely, the difference between both MG and PMG estimators is used to compute a Hausman-type statistic.

significantly positive. As can be seen in Table 3, in Sub-Saharan Africa, a one unit

increases in the Polity score is associated with a 1.5% increase in income per capita.[8]

Institutional change in Africa thus associates with changes in incomes.[9] Political reform

in Africa appears to have generated evidence that supports the arguments of both

reformers and scholars alike and produced higher incomes for Africa's impoverished

economies.[10] 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, seven experienced successful coups and a further six

failed attempts. Over the same period, according to the Ibrahim Index, in 15 countries,

governance failed to improve[11], while, according to The African President's Index , in 22

leadership was extremely poor.[12] 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 won and remained in office. Clearly, institutional reform remains work in

progress.

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[8] The Hausman test in column 3 result testifies to the validity of the long-run homogeneity restrictions imposed by the PMG estimator.

[9] This conclusion finds additional support in the report by Radelet, S. (2010). Emerging Africa: How 17 Countries Are Leading the Way. Washington DC, Center for Global Development. See also Fosu, A. K. (2008). "Democracy and Growth: Implications of Increasing Electoral Competiveness." Economic Letters 100(September): 442-444.

[10] This conclusion finds additional support in the report by Radelet, S. (2010). Emerging Africa: How 17 Countries Are Leading the Way. Washington DC, Center for Global Development. See also Fosu, A. K. (2008). "Democracy and Growth: Implications of Increasing Electoral Competiveness." Economic Letters 100(September): 442-444 and Nkurunziza, J. D. and R. H. Bates (2003). Political Institutions and Economic Growth in Africa. CID Working Paper No. 98. Cambridge MA, Center for International Development, Harvard University.

[11] Own calculations based on the Ibrahim Index of Governance http://www.moibrahimfoundation.org/en/section/the-ibrahim-index (accessed 18 Dec. 2010)

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

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. But recall the argument advanced in the introduction, which appealed to the utility functions and policy preferences of politicians, to the structure of political competition, and, in particular, to changes in the composition of the electorate resulting from the enfranchisement of farmers. In the section that follows, we draw upon these 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.

4.A Total Factor Productivity

In a recent paper, Steven Block (2010) combined data from 44 countries over 46 years (1961-2007) to generate estimates of changes in total factor productivity 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.

4A. The Data

Using aggregate crop output figures for each country, and Africa-specific prices and PPP exchange rates,[13] Block derives his estimates from a semi-parametric specification of a constant returns to scale Cobb-Douglass production function:

(1)

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

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.

To derive the country-specific rates of agricultural TFP growth – the principal dependent variable in this paper -- he estimates equation (1) country-by-country. The "baseline" estimates (shown in the cross-country aggregates in Figure 2) exclude the adjustments for

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[13] Block (2010) constructs these aggregates from crop-specific output data published by the Food and Agricultural Organization of the UN. 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.

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 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.

We seek to relate these changes in total factor productivity to changes in political institutions. As a measure of 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. [14] 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.

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[14] The measure is taken from the World Bank's Data Base of Political Institutions: Beck, T., G. Clarke, et al. (2001). "New Tools and New Tests in Comparative Political Economy: The Database of Political Institutions." World Bank Economic Review. The measure was devised by the Africa Research Program at Harvard, who established that it yields a cumulative (Guttman) scale. See Bates, R. H., K. Ferree, et al. (1996). Toward the Systematic Study of Transitions. Development Discussion Paper No. 256. Cambridge MA, Harvard Institute for International Development.

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

We employ as our measure a dummy variable, named "electoral competition," that takes the value 1 when the 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:

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

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 lower the fortunes 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 agricultural imports.

The Relative Rate of Assistance (RRA) is calculated as:

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

where $NRA_{ag/nonag}$ represent aggregates 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. The RRA 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 4 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 in observations with and without electoral competition[15].

The TFP growth rate in settings characterized by electoral competition progressively

diverges from the TFP growth rate in settings that lacked it. On average, countries with

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[15] Net of adjustments for input quality.

electoral competition experienced agricultural TFP growth of 1.04% per year, while the average rate was only 0.48% per year in countries without.[16]

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 act in ways that lower the costs, increase the earnings, and strengthen the incentives for farmers.

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[16] 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. Figure 5 applies this approach to the relationship of RRA and agricultural TFP growth; in this instance, the lagged first difference of the policy variable "accounts for" 16% of the estimated average growth rate of TFP. We superimpose a smoothed version of the mean RRA over the TFP growth profiles to underscore the finding 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 illustrate 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, Keele, 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 (at least) for the time-invariant unobservable characteristics.[17] And because of the possibility of reciprocal causality in the relationship

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[17] 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 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

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.

Table 5 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

percentage point (column 2). [18] 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

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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.

[18] 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.

are therefore suggestive: the point estimates increase with the rural population share.

They are not statistically different from one another, however.

In Table 6, 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.

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 (or, more broadly, improves

macroeconomic policy). The reduction of the black market premium implies an

economy-wide increase in local currency earnings from the exports, including exports of

agricultural products, and a decrease in the price advantage enjoyed by imported goods.

It also implies a reduction in the costs of marketing, as governments that liberalize

markets for foreign exchange have less need to police against smuggling. In this instance, however, we find that the size of the reduction unrelated to the share of the population living in rural areas.

In Table 7, we estimate the direct and indirect impact of institutional change by adding our mediating policy variables, RRA and BMP, to the specification from Table 5. 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.[19]

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[19] 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.

Electoral competition thus leads directly to an increase in the growth rate of agricultural TFP growth on the order of one percentage point. We can only speculate on the channels through which it does so. Mechanisms that might be explored 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

This paper has characterized the new institutionalism and contributed to one of its canonical themes: the relationship between democracy and development. The subject is of direct relevance to Africa. For when Africa's people overthrew authoritarian regimes and installed competitive political systems, they not only reaffirmed their rights as citizens; they also unwittingly performed a natural experiment, enabling social scientists to test institutionalist arguments.

In this article, we have drawn inferences from the data thus supplied. We have described the origins, the nature and the magnitude of the changes in Africa's political institutions and related them to changes in the level of incomes and the growth of total factor productivity in farming. We have found, *contra* Lipset (1959), that in Africa democracy elicits economic growth, rather than the other way 'round; and that the enfranchisement of Africa's rural majorities appears to have focused the minds and altered the policy preferences of its governments, resulting in higher TFP growth in agriculture. As

proclaimed by Rodrik, Subramanian et al. (2002), "institutions rule" – or at least make a

significant difference.

Competitive electoral systems thus appear to have enhanced the level of welfare for

African citizens. But the reforms appear embattled and, unless consolidated, they will be

incapable of assuring future gains.

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Figure 1.A.   Political institutions

Average Political Competition by Year

Figure 1. B   Party Systems

Party Systems by Period

1 = No Party System 2 = Single Party System 3 = Competitive Party System

Graphs by Period
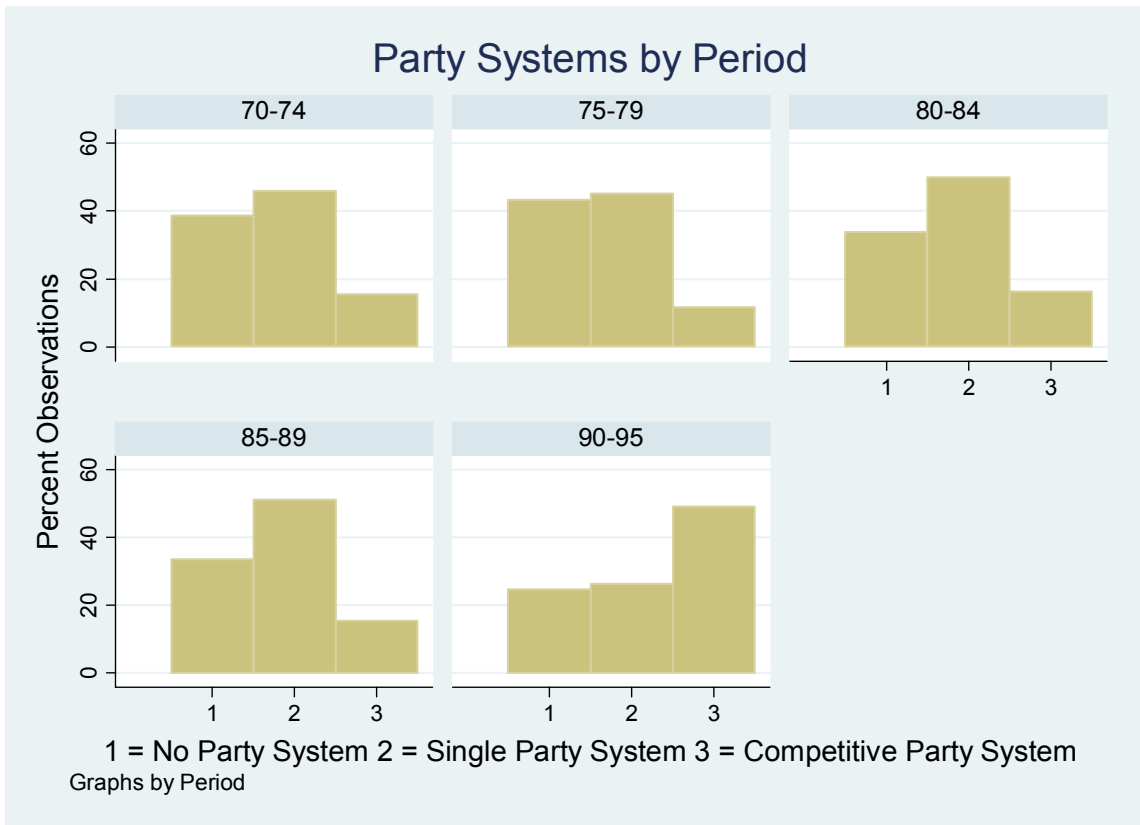
Figure 2. Agricultural TFP Growth Rates Adjusted for Input Quality

Agricultural TFP Growth Rates, SSA Crops
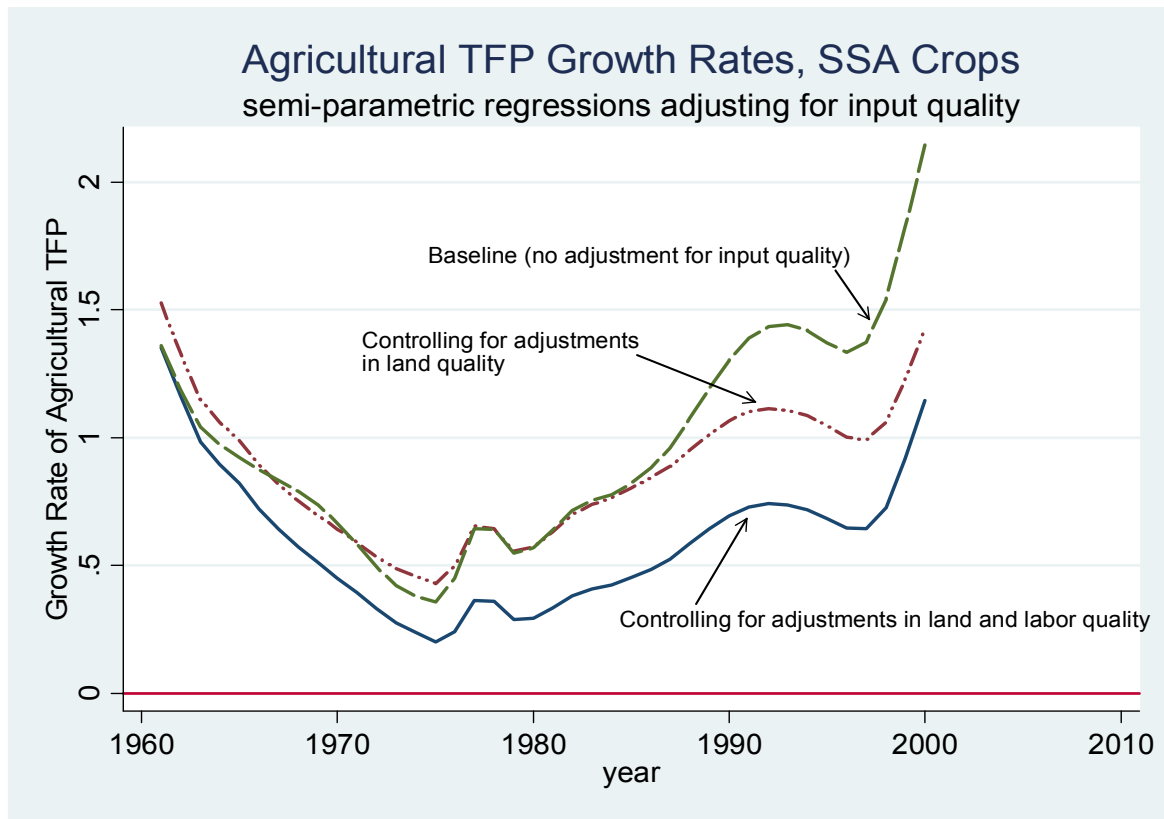semi-parametric regressions adjusting for input quality

Figure 3. Agricultural TFP Growth Profile for Country-Years With and Without Electoral Competition
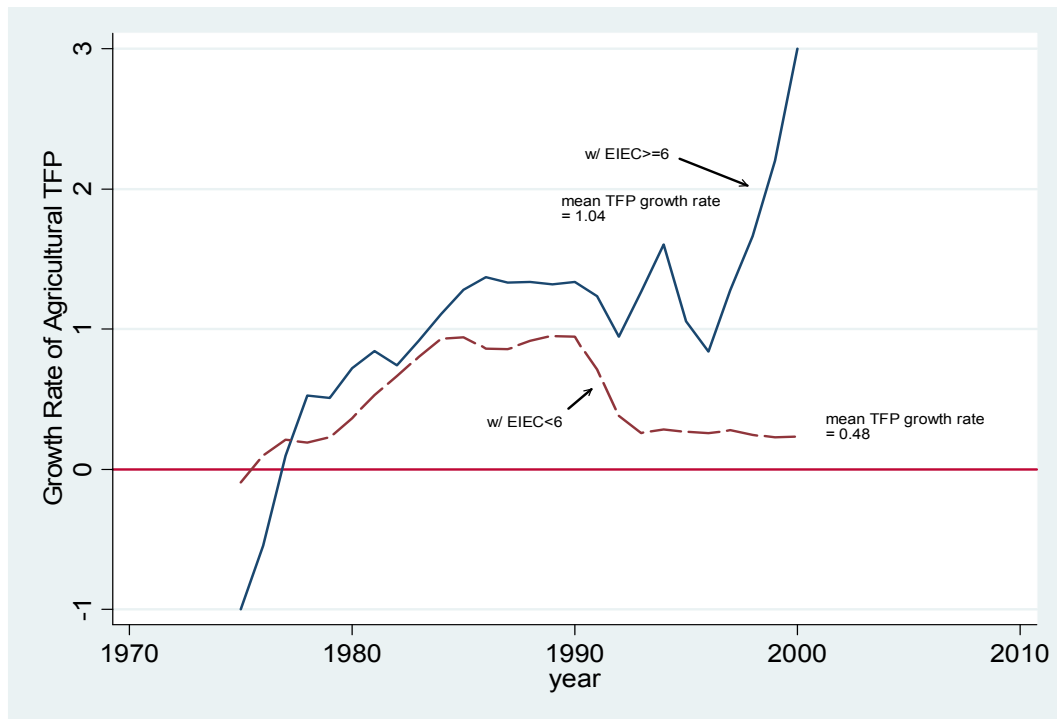
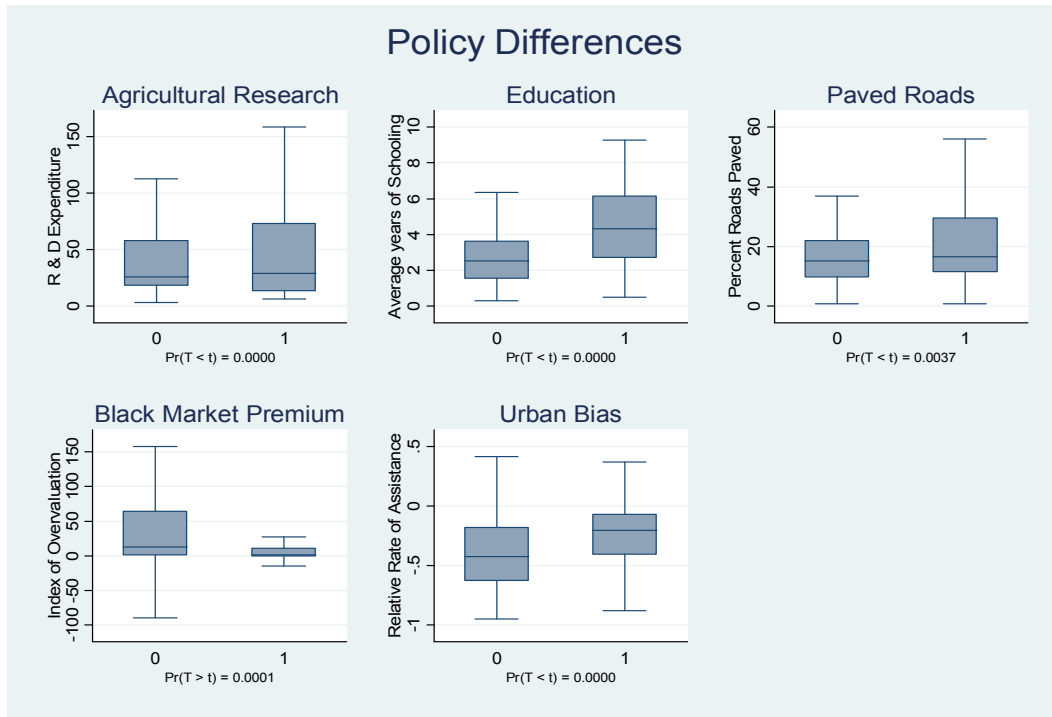Figure 4: Policy Differences: With and Without Electoral Competition

Figure 5. Effect of Nominal Rate of Assistance to Agricultural Importables on Agricultural TFP Growth
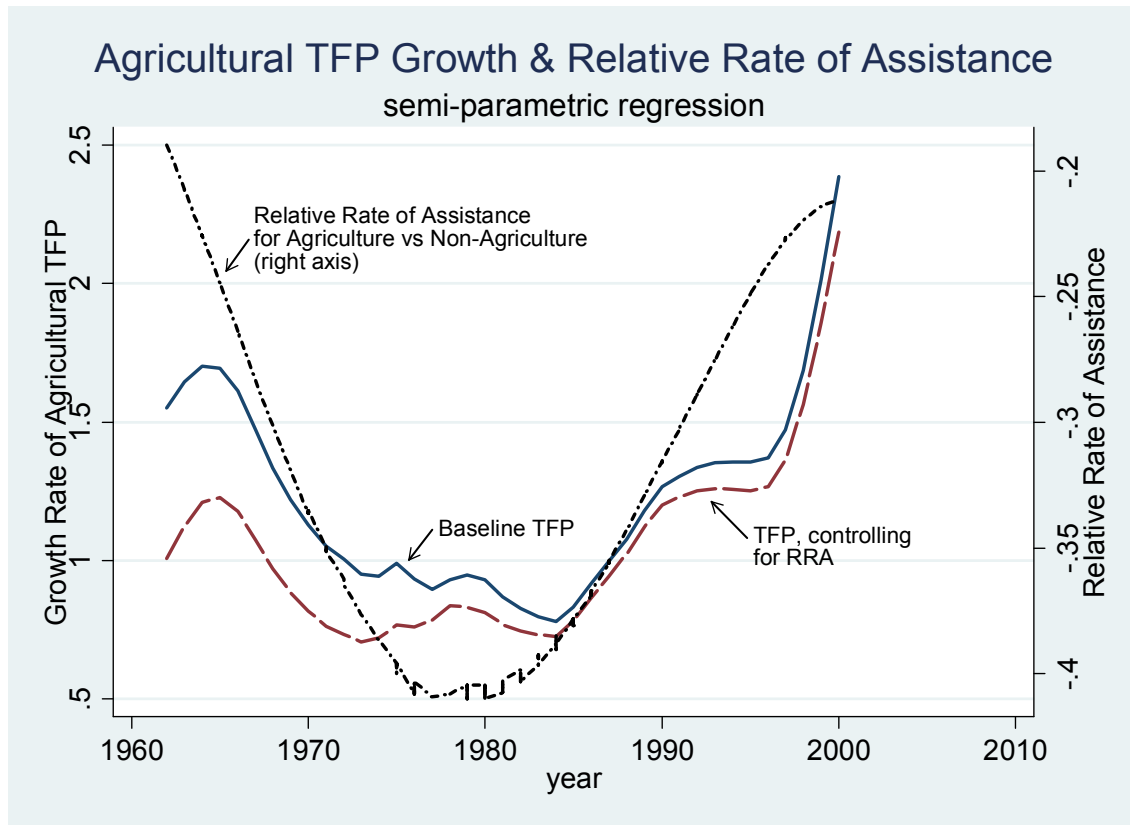
Table 1: Augmented PMG estimation; Overall sample (N=105); 1955-2007

Dependent variable: Polity IV Measure of Democracy

Long-run Coefficients	PMG 1	MG 2	Hausman Test 3
Log Income per Capita	-1.239*** (0.153)	0.390 (1.368)	1.44 [0.23]
World Democracy	0.800*** (0.029)	0.926*** (0.143)	0.80 [0.37]
World Output	3.059*** (0.547)	0.293 (2.958)	0.90 [0.34]
	Joint Hausman test		2.39 [0.50]
Error Correction Coefficient	-0.264*** (0.029)	-0.469*** (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 2: Granger causality tests

Null hypothesis	Overall sample			
	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
Null hypothesis	Sub-Saharan Africa sample			
	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
Null hypothesis	Non-Sub-Saharan Africa sample			
	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 3: 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 4. 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 5. Effect of Electoral Competition on Agricultural TFP Growth for Crop Agriculture in SSA

VARIABLES	(1) FE	(2) FE-2SLS	(3) FE-2SLS	(4) FE-2SLS	(5) FE-2SLS	(6) 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 6. Effect of Electoral Competition on RRA and Black Market Premium

VARIABLES	(1) FE	(2) FE-2SLS	(3) FE	(4) 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 7. Effect of Electoral Competition on Agricultural TFP Growth for Crop Agriculture in SSA

VARIABLES	(1) FE-2SLS	(2) FE-2SLS	(3) FE-2SLS	(4) FE-2SLS
Electoral Comp dummy	1.150** (0.485)	0.997** (0.474)	1.285*** (0.340)	1.039*** (0.345)
Relative Rate of Assistance		1.747*** (0.417)		
Log Black Mkt Premium				-0.144*** (0.0387)
Rural Pop Shr	-0.087*** (0.0335)	-0.0569* (0.0333)	-0.195*** (0.0152)	-0.195*** (0.0148)
Year Trend	-0.051** (0.0246)	-0.0573** (0.0239)	-0.101*** (0.0157)	-0.107*** (0.0152)
Civil War Dummy	-0.0400 (0.218)	-0.0432 (0.211)	-0.141 (0.153)	0.0145 (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.