

Why has Asia Succeeded While Africa has not?

A Comparative Analysis of Economic Growth:
**What Factors have Driven The Divergence of Economic Performance
Between East/SE Asia and Sub-Saharan Africa?**

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ABSTRACT

A comparison of the economies of East and Southeast Asia with those in Sub-Saharan Africa could be suspect, as countries in these two regions are at such vastly different stages of development. Observers often claim that such a comparison is akin to comparing apples and oranges. But in actuality, at the times of their respective independence movements (or at the conclusion of their principal war for the foundation of the current state), the countries in Asia and Africa were at comparable stages of economic development and displayed comparable standards of living indicators. However, in the decades that followed, the vast majority of Sub-Saharan African countries have experienced repeated development failures while many East and Southeast Asian nations have experienced robust economic growth.

The differences between the two regions are so extreme that they cannot be explained solely by the different circumstances these countries face with respect to their geography, physical environment, and culture-driven tastes and preferences. What, then, were the primary drivers of this vast divergence, and what lessons can be learned by policymakers and the international development community?

Drawing on previous studies, this paper designed an economic growth model with the intention of shedding light on the aforementioned questions. The model involves a time-series least-square regression on a basket of 5 countries from Asia and 6 from Africa, and it charts various economic, political, and demographic variables for the first 20 years post-independence. Its findings indicate that several factors contributed to the divergence of economic performance between Africa and Asia, principally among which were factors related to the two regions' respective public sector institutions, population growth, and demographic change.

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INTRODUCTION

From the early 1970s to the late 1990s, East and Southeast Asia's economic growth transfixed the world. Aggregate wealth rose, inequality shrank, and Asia's share of world trade and global influence steadily and rapidly grew. Indeed, to many Western observers, it seemed that Asian policymakers had discovered the macroeconomic touch of King Midas. This "Asian Miracle" was led by Japan, with Taiwan, South Korea, Hong Kong, Singapore, Malaysia, Indonesia, Thailand, and China (whose growth has not yet abated) following closely in tow.

The Asian Miracle is doubly remarkable when juxtaposed with the economies of Sub-Saharan Africa, whose abject poverty is among the most obdurate features of the world economy. The most reliable estimates of world and regional gross domestic product for the period 1820-1992 are those prepared by Angus Maddison (1995).¹ According to these estimates, at the beginning of this period, sub-Saharan Africa had one-third the income level of the richest region at that time, Western Europe. But by 1992, it had one-twentieth the income level of the richest region, Maddison's "Western Offshoots," which includes the United States, Canada, Australia, and New Zealand. Maddison estimates that Africa's per capita income in 1992 was approximately that of Western Europe in 1820 (in purchasing power parity 1990 dollars). While this is only a broad approximation, it does put into perspective the extent of Africa's economic plight. Table 1 summarizes the economic growth of selected regions over this time period.

¹ Maddison. *Monitoring the World Economy: 1820-1992*

Table 1. Economic Growth by Region, 1820-1992

Percent (annual rates)

<i>Period</i>	<i>West Europe</i>	<i>Western Offshoots</i>	<i>Asia</i>	<i>Africa</i>	<i>World Total</i>
1820-1869	1.0	1.4	0.1	0.1	0.6
1870-1912	1.3	1.8	0.6	0.4	1.3
1913-1949	0.9	1.6	0.1	1.0	0.9
1950-1972	3.9	2.4	3.8	2.1	2.9
1973-1992	1.8	1.4	3.2	-0.1	1.2

Source: Maddison (1995, table 3-1)

Growth is measured in GDP per capita, as measured in 1990 International Geary-Khamis dollars.

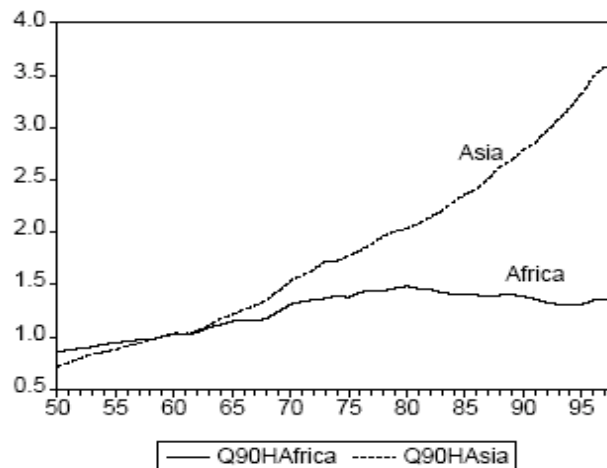
For definition of regions, see appendix G in Maddison.

These figures reveal the striking divergence between Asia and Africa in the period 1950-1972, the period during which most of the European colonies in these two regions achieved independence. Asia experienced continued growth of 3.2% annually through the period 1973-1992, while Africa's economic growth actually turned negative. This dramatic divergence between the African and Asian economies over the second half of the twentieth century is graphically depicted in Figure 1. In the late 1950s and early 1960s, GDP per capita was roughly equal, but during the 1970s Asia's growth created a widening gap between the two regions. In the early 1980s Africa's GDP per capita reached a zenith from which it began to decline, while Asia's growth continued to accelerate. Clearly, while the Asian tigers were beginning to roar, those in Africa only got poorer.

To visit the regions now is to witness extreme differences in living standards. Due to this fact that Asia and Africa are currently at vastly different stages of development, comparative analyses of the economies of East and Southeast Asia with those in Sub-

Saharan Africa are often dismissed as being akin to comparisons of apples and oranges. However, as Figure 1 illustrates, at the times of their respective independence movements (or at the conclusion of their principal war for the foundation of the current state), the colonial states in Asia and Africa were at comparable stages of economic development and displayed comparable standards of living indicators (as measured by income per capita).

Figure 1. Gross Domestic Product by inhabitant. Africa and Asia (thousands of dollars at 1990 prices and PPPs)



Source: Guisan et al. (2001)
 Regions are defined as follows: *Asia* – Bangladesh, Burma, China, India, Indonesia, Japan, Pakistan, Philippines, South Korea, Taiwan, Thailand; *Africa* – Ivory Coast, Egypt, Ethiopia, Ghana, Kenya, Morocco, Nigeria, South Africa, Tanzania, Zaire

What, then, could have driven such a dramatic divergence of economic performance? Did Asia do something that Africa did not, or did both regions do the same things with Asia simply doing those “things” better? Did the international community approach Asian development differently from that in Africa? Could policymakers and political leaders in

Africa have done a better job of encouraging and fostering growth, or was the divergence driven entirely by factors beyond their control (thus making the divergence inevitable)? In short, what lessons can be learned by policymakers and by the international development community?

REVIEW OF PREVIOUS LITERATURE

Numerous studies have investigated the economies of Asia and Africa, and the literature highlights a wide range of possible explanations of both Asia's success and Africa's failure. These proposed explanations include trade and industrial policies, technological progress, savings and capital accumulation, governance, geography and culture, and population demographics. While the findings of this study indicate that economic growth is not a monocausal phenomenon, it does show that factors related to governance, specifically public sector institutional capacity, have been the primary drivers of the divergent growth of Africa and Asia.

The year 1956 was a landmark in the study of economic growth, for it was then that Robert M. Solow first published his now famous growth model.² The Solow Model determined that long-run economic growth is a function of the per capita capital stock. Specifically, this model illustrated how the interaction of labor and capital, and how the

² $y = f(\kappa)$

$\Delta \kappa = s(y) - (n + d + g)\kappa$

where y = GDP/EL (GDP per effective unit of labor); κ = K/EL; s = savings rate; $s(y)$ = net savings; n = population growth rate; d = capital depreciation rate; g = growth rate of E; E = exogenously determined measure of labor "effectiveness"

efficacy of labor's utilization of capital determines per capita output. The per capita capital stock grows when the population saves more, thereby investing in more capital, while depreciation and population growth cause it to shrink.³ The model predicted that there exists a "steady state" towards which the capital stock will tend. Lastly, in what is perhaps the model's most important conclusion, Solow revealed how technological progress and improvements in human capital are the central factors that engender long-term increases in economic growth rates. Almost all subsequent economic growth models have used the Solow model as a central framework to which additional independent variables were added. Growth models that attempt to explain the economic performances of Asia and Africa are no exception.

Bloom, Canning, and Malaney (1999) challenged the view of population neutralism by revealing the significance of demographic change as a causal variable of Asia's economic success. This paper argued that the high ratio of working-age people to the total population drove much of Asia's performance. For, in the 1950s and 60s, many East and Southeast Asian countries experienced a significant drop in the mortality rate, which caused the populations of these countries to surge. Most Asian families responded to this decline in mortality by having fewer children, as each child was more likely to survive. This drop in mortality rates followed by a drop in fertility rates created a "bulge" in the

³ This negative effect of population growth on the per capita capital stock, combined with the typically positive effect of population growth on the size of the labor force, as well as the typically positive effect of population growth on aggregate savings (as yielded by a larger working population), led many researchers to view overall population growth as an insignificant explanatory variable of real (per capita) economic growth. This assumption was often called "population neutralism."

population. When this bulge reached working age, the ratio of workers to dependents was quite large, which led to a more productive economy that imposed fewer burdens on the public sector. Studies by Bloom and Sachs (1999), and Sachs, McArthur et al. (2004), explained how demographic factors contributed to the “poverty trap” in which Africa now finds itself, for the populations of most Sub-Saharan African nations display an hourglass shape in their age distributions (rather than a bulge), in that the ratio of workers to dependents (both child and elderly dependents) is quite small.

A 2001 study by David Dollar and Aart Kraay examined the importance of a country’s openness to trade as a driver of economic performance. Specifically, Dollar et al. sought to isolate the impact on economic growth of liberal pro-trade macroeconomic policy. To do this, the authors did not measure trade openness simply as the share of a country’s trade in its GDP, as do many contemporary trade models, because differences in countries’ trade shares reflect many national characteristics, and consequently do not effectively isolate the effects of trade policy (for example, countries that are small and close to major markets tend to trade more than countries that are large or remote). In order to eliminate the geographically determined components of trade, Dollar et al. estimated the effect of trade on growth using decade-over-decade changes in countries’ trade as shares of their GDPs. This removed the spurious effect of geography on trade and growth, because countries’ geographic characteristics do not change over time (thereby eliminating geographic characteristics as a causal factor of fluctuating GDP levels). Furthermore, to control for the effects of other contemporaneous changes in

policies and institutions that may affect growth (other than trade-related policies), the Dollar model included measures of monetary policy stability, financial development, and political instability. The results of this study of 73 developing countries over the past 25 years were unequivocal: an increase in trade as a share of GDP of 20 percentage points increases GDP per capita growth by 0.5 to 1.0 percentage points a year.

Many studies, most notably those of Nkurunziza and Bates (2004) and Humphreys and Bates (2005), have examined the role played by government institutions and political factors in African macroeconomic performance. Nkurunziza and Bates established that political stability and regime type significantly affect economic growth. As proxies for political stability, Nkurunziza et al. borrowed variables from several previous studies, such as the number of revolutions experienced by a country (Barro and Lee, 1993), the number of assassinations (Easterly and Levine, 1997), and the number of political deaths, coups, irregular regime changes, and demonstrations (Alesina et al., 1996) to compute an index of political stability using the principal component method.⁴ As a proxy for regime type, the variable DEMSCORE from Ted Robert Gurr (2000) was used. Nkurunziza and Bates found that “democracy and political stability are good for economic growth.”⁵ Interestingly however, the authors found that long-term authoritarians appear to be better for growth than democratically elected politicians who succeed in prolonging their terms

⁴ *Principal component analysis* (PCA) involves a mathematical procedure that transforms a number of (possibly) correlated variables into a (smaller) number of uncorrelated variables called *principal components*. The first principal component accounts for as much of the variability in the data as possible, and each succeeding component accounts for as much of the remaining variability as possible.

⁵ Nkurunziza and Bates. *Political Institutions and Economic Growth in Africa*. Page 23

in office. They concluded that “for a given level of democracy, there is an optimal period of tenure beyond which the incumbent leader harms economic growth.”⁶

Papers that explore the impact on economic growth in developing nations of international aid flows, such as Arne Bigsten (1998) and Burnside and Dollar (1997), have almost universally concluded that financial aid and development assistance can only have a positive effect if certain political factors are in place in the recipient countries, such as strong anti-corruption measures, reliable rule of law, sustainable fiscal policies, and pro-growth macroeconomic policies. Burnside and Dollar used a two-stage least square regression to model the interactions between aid, policy, and growth. They sought to answer whether the effect of aid on growth depends on the policy environment in the recipient country. When economic growth was regressed on international aid alone, aid was found to have no significant effect. When aid was interacted with policy variables, however, it was significant and positive. Their study showed that aid has a positive impact on growth in a good policy environment.

Other researchers have explored the possibility that Africa’s economic failures were inevitable, in that the economies in Africa face difficulties and adverse circumstances that are unique to the continent. Among the most oft cited exogenous factors in African growth models is Africa’s geography. In 1999, David Bloom and Jeffrey Sachs concluded that the root of Africa’s poverty is disadvantageous geography. They ran

⁶ *Ibid.* page 24

cross-country growth regressions⁷ that included and excluded geographic variables, and found that the models that excluded geography had highly significant African dummy variables, while the inclusion of geographic variables rendered the African dummy insignificant and increased R^2 values. In separate 1999 reviews of this paper Paul Collier, Christopher Udry, and James Stock took umbrage with the paper's central conclusions and identified several flaws in the authors' model.⁸ However, despite the ambiguity of this paper's findings, it did shed light on the fact that Africa does indeed face circumstances that are quite unique in the developing world, many of which, such as investor confidence and public perception in donor countries, cannot be accurately quantified. Thus, the vast majority of economic models include an African dummy variable that is found to have a negative and highly significant impact on economic growth.

All of these papers focused their models on either explaining historical economic performance in either Asia or Africa, or on proving the significance of a certain independent variable as a driver of growth. Consequently, their models are either created with only one region in mind (which could jeopardize the external validity of such

⁷ Their sample consisted of 77 countries: 18 African and 59 non-African (including Egypt, Morocco, and Tunisia).

⁸ For instance, Collier doubts that a large majority of Africa's growth problems come from geography rather than policy. In fact, he believes that "current African nonpolicy fundamentals are probably conducive to growth." Among other critiques, Collier points to the authors' decision to treat ethnic diversity as endogenous, for Easterly & Levine (1997) found that ethnic diversity acts as a significant disruption of the policymaking environment, which therefore leads to inappropriate and unresponsive public policies. By treating this ethnic factor as endogenous, the parameter estimates on Bloom & Sachs' policy variables are probably biased downward.

models), or they are geared towards illustrating the significance of a certain concept. Very little attention has been devoted to the study of the divergence between the economies of the two regions. In other words, none of these papers had as their central objective the explanation of why and how Asia succeeded while Africa did not.

What did Asia do that Africa failed to do? What did the international community do in regards to Asia that it did not do in regards to Africa? What policy lessons can be learned from the tremendous difference in outcomes in Asia and Africa? These are questions that have been indirectly studied, and as this literature review indicates, there are a variety of possible answers. The model created for this paper focuses specifically on a comparison of the post-independence economies of Asia and Africa.

HYPOTHESIS & RESEARCH DESIGN

The initial hypothesis of this paper was that policy decisions and public sector performance have been the primary drivers of the divergence between the Asian and Sub-Saharan African economies during the first 20 years of independence. The economic growth model presented subsequently tested this hypothesis. Specifically, the author expected that the primary driver of economic performance (for which GDP per capita serves as the proxy) is the quality and capacity of the two regions' public sector institutions. Furthermore, the macroeconomic growth policies of Asia which emphasized export promotion and integration into the global economy, when contrasted with the

macroeconomic policies of Africa which emphasized import substitution and protectionism, were expected to emerge as highly significant causal factors of the economic performance of the two regions.

This model also includes independent variables that measure international aid flows, as well as demographic and political variables. This model relies on previous research and will incorporate previously formulated explanatory variables.

In short, this paper's model can be depicted as:

$$\begin{aligned} \mathbf{GDP\ per\ capita} = & \beta_0 + \beta_{Africa\ Dummy} + \beta_{population} + \beta_{population\ growth\ rate} + \\ & \beta_{worker:dependent} + \beta_{aid\ per\ capita} + \beta_{democracy} + \beta_{institutional\ quality} \end{aligned}$$

To test these hypotheses, a time series, least-squares regression was run on data from a sample basket of 6 countries from Africa and 5 from Asia. These countries displayed comparable economic performance at the time of their independence (or at the conclusion of their principal war for the foundation of the current state), and each regional basket consists of nations with varied colonial backgrounds. The model tracks the first 20 years following this initial date for each sample country.

As Table 2 shows, independence for the Asian countries in this sample occurred in the 1950s, while African countries in this sample did not gain their independence until the 1960s. Initial GDP per capita values were very similar in Asia and Africa at the start of

this study (\$1,092.60 and \$1,019.20 respectively), but after 20 years, GDP per capita grew by 100% in Asia while in Africa, GDP per capita fell 3.7%.

Table 2. Statistical Overview of the Sample Countries

Asia				Africa			
country	initial date of study	population at initial date	GDP/capita at initial date	country	initial date of study	population at initial date	GDP/capita at initial date
Indonesia	1959	91,821,000	995	D.R.C.	1960	15,438,000	755
Malaysia	1957	7,520,000	1455	Ghana	1957	6,217,000	1241
Philippines	1951	21,131,000	1151	Senegal	1960	3,187,000	1445
S. Korea	1954	21,259,000	1013	Uganda	1962	7,034,590	694
Thailand	1951	20,042,000	849	Zambia	1964	3,507,040	996
				Zimbabwe	1965	4,375,000	984
			avg = 1092.6				avg = 1019.2
			Avg after 20 years = 2185				Avg after 20 years = 981.3

Population and GDP figures from Maddison (2003).⁹

GDP per capita is measured in 1990 international Geary-Khamis dollars (monetary units of each country converted into dollars at the purchasing-power-parity or PPP exchange rates estimated by Geary and Khamis, expressed in 1990 US dollars.¹⁰)

Dependent Variable:

- *Per capita GDP* (measured in 1990 international Geary-Khamis dollars)

⁹ Maddison. *The World Economy: Historical Statistics*.

¹⁰ Geary first developed this PPP model in 1959, and it was augmented by Khamis in 1972. For more detailed information on the Geary-Khamis method, see http://unstats.un.org/unsd/methods/icp/ipc7_htm.htm

This model involves a time-series analysis in that it will track how this value changes in each country over the course of the first 20 years following independence (or following the conclusion of war).

Per capita GDP does not capture all aspects of a country's quality of life, but it is a rather unambiguous measure of economic performance. The Solow growth model (the standard of all economic growth models) uses a slight derivation of this measure to illustrate living standards in that it uses GDP/L as its measure (GDP spread over the labor force, rather than the entire population). However, GDP per capita is a more readily available and less ambiguous statistic.

Independent Variables:

- *Capacity of the public sector and of public institutions*
 - This reflects the reliability, adequacy, and effectiveness of government institutions and services.
 - A strongly positive association was expected between this variable and the dependent variable (hereafter denoted as 'Y'). The reliability of public institutions, the quality of government services, and the effective collection and use of tax dollars affects the business and investment environment of a country. Consequently, countries that possess capable and reliable public institutions that are competently and honestly managed will, ceteris paribus,

attract more foreign investment and will better foster entrepreneurialism and encourage private sector expansion than countries that lack such institutions.

- As a proxy for institutional quality, a variable was borrowed from Humphreys and Bates (2005). Their variable *QUALITY* combines measures of the government's propensity to engage in corruption and the government's propensity to engage in expropriation. This variable was produced by weighting these two measures by the loading derived from principal components estimation.¹¹ The lower the value of this variable, the lower the quality of the country's institutions. A value of 2.0 is the best possible score (indicating the highest quality institutions possible), and -3.0 is the worst possible score. This variable will be denoted as *institutions* hereafter.
- *Population and population growth*
 - No significant association is expected between these variables and Y.
 - Several studies, including the Solow model, illustrate this.
- *Working-age population as a percentage of the overall population*
 - A moderately strong positive association is expected between this variable and Y. For when mortality rates fall, which tend to be followed by a fall in fertility, a "bulge" in the population results. When this bulge in the population reaches working age, the ratio of workers to dependents will allow per capital public spending to grow. For this study, "working age" is considered to be all

¹¹ The component data for this variable can be found at www.countrydata.com/wizard. For more detailed information on the formulation of this variable, see *Political Institutions and Economic Policies: Lessons from Africa* by Macartan Humphreys and Robert Bates, 2005

ages between 15 years old and 64 years old (this has been the measure used in previous studies).

- *Political variables*
 - *Democracy/Regime type*
 - A weak but positive association is expected between countries that possess democratic institutions and the variable Y.
 - Previous studies have indicated such a relationship, and most studies now simply incorporate this variable into a larger measure of a country's business and investment climate. And anecdotally, Indonesia, Singapore, and Hong Kong all lack many democratic freedoms, and they have experienced tremendous economic success.
 - As a proxy for "level of democracy," a variable will be borrowed from Ted Robert Gurr (2000).¹² His variable *DEMSCORE* measures the level of democracy in each country, taking integer values from 0 to 10 with 10 signifying the highest level of and commitment to democracy. This variable will be denoted as *democracy* hereafter.
- *Per capita international aid flows*
 - A significant but small association is expected between this variable and Y.
 - The problem with Africa is not that the world has not given them enough money.

¹² Gurr. *Tracking Democracy's Third Wave with the Polity III Data*. Polity III: Regime Type and Political Authority dataset

- *Africa dummy*
 - This binary variable will assume a value of 1 if the country is from Africa, and a value of 0 otherwise. This will measure the “Africa effect,” the set of attributes unique to Africa that hinder economic growth.
- *Macroeconomic policies: export promotion vs. import substitution*
 - This will reflect the economic growth strategy of a given country. Has the country pursued policies focused on protectionism, national champions, and import substitution, all of which lead to inefficient resource allocations, or has the country worked to integrate itself into the regional and global marketplace by promoting specializations in domestic comparative advantages.
 - A strongly positive association is expected between global integration and export promotion and the variable Y, because export-oriented economic strategies encourage the domestic economy to specialize in those industries in which the country possesses comparative advantages, which in turn leads to higher labor productivity. Additionally, trade promotion policies allow domestic producers to access foreign consumer markets. Moreover, such policies allow domestic markets to be more competitive, which benefits consumers and encourages private sector innovation.
 - **No acceptable proxy was found.** Several studies have assembled indices of economic freedom that measure the concepts desired by this paper. Such indices include the Global Competitiveness Index by the Heritage Foundation,

and the Economic Freedom of the World Index, by the Frasier Institute. But none of these indices contain data from the early years of this paper's study.

- As a result, this variable was not included in this model. As will be discussed in greater detail below, this represents an opportunity for future research.

Descriptive Statistics

The statistical details of the key variables for the 11 countries in this study are provided in the Appendix. As was depicted in Table 2, at the times of their respective independence movements (or at the conclusion of their principal war for the foundation of the current state), the countries in Asia and Africa displayed comparable levels of per capita income: \$1092.60 and \$1019.20 for Asia and Africa respectively.¹³ After 20 years, per capita income in the Asian countries grew by 100% to \$2,185 while in Africa per capita income fell 3.7% to \$981. For the institutional quality variable, at the beginning of this study, the average values were -0.5867 and -0.8654 for Asia and Africa, respectively. Although both variables are negative, it would seem that the Asian countries inherited higher quality institutions upon independence than did the African states, an issue that will be discussed in greater detail below. For Asia, this value grew to a positive 1.5866 after 20 years, while for Africa, the value fell to -1.377 (on a scale of 3.0 to -2.0).

For the population variables, the average level of population growth in Asia was 2.71% vs. 3.02% for Africa, and the average percentage of the population that is of working age

¹³ GDP values expressed in 1990 international Geary-Khamis dollars.

was 53.4% in Asia vs. 51.11% in Africa. The value of this demographic variable increased over the course of the study from 53.35% to 53.95% for Asia while it fell from 51.67% to 50.62% for Africa. At first glance this would seem to support the above hypothesis, but the Asian countries displayed greater standard deviation for this variable than did Africa, which will be discussed in greater detail below.

The proxy for democracy was 4.13 and 2.55 for Asia and Africa (scale of 0=autocracy and 10=liberal democracy), respectively, which indicates that the political institutions in the Asian countries are more democratic than those in the African countries. Lastly, aid per capita (measured in 2004 US dollars) was significantly higher for Africa than for Asia (9.85 to 3.66, respectfully), but the African countries displayed far greater standard deviation for this variable than did Asia.

RESULTS & DISCUSSION

Table 3 displays the results from four separate regressions. The first is a regression that pools all 11 countries together. Regression 2 is the same as the first regression except for excluding the institutional quality variable. Regression 3 displays the results of the model when run only on the 6 African countries, and regression 4 displays the results of the model when run on the 5 Asian countries.

When the model is applied to both regions (regression 1), the independent variables explain over 70% of the variation in the dependent variable, GDP per capita. This high R^2

indicates very strong predictive ability. The model shows similar predictive strength when applied to either region individually.

Table 3. OLS Results with GDP per Capita as Y

	<i>regression 1</i>	<i>regression 2</i>	<i>regression 3</i>	<i>regression 4</i>
	<i>Full Regression</i>	<i>Without Institution Variable</i>	<i>Africa only</i>	<i>Asia only</i>
Variable	Parameter Estimate Pr > t	Parameter Estimate Pr > t	Parameter Estimate Pr > t	Parameter Estimate Pr > t
institutional quality	285.02 0.00001		261.78 0.00001	290.62 0.00001
pop growth rate	-183.81 0.00001	-233.56 0.00001	-97.91 0.0005	-202.9 0.0094
democracy	55.19 0.00001	65.54 0.00001	18.67 0.0041	74.9 0.00001
worker to dependent	13.11 0.2152	24.91 0.0811	37.18 0.0009	6.58 0.7099
aid per capita	4.15 0.0156	4.95 0.0328	3.29 0.0051	-5.91 0.5496
population	-0.0000002 0.8544	-0.0000002 0.0278	-0.0000133 0.00001	-0.00000123 0.3258
africa dummy	53.21354 0.3057	-221.63 0.0007	n/a	n/a
intercept	937.06 0.1198	554.23 0.4949	-294 0.6125	1245.78 0.5674
R ²	0.7072	0.4616	0.7558	0.6857

Additional regressions were run using the annual growth rate of GDP per capita as the dependent variable. The results from these regressions established no significant

relationships, due to the very high year-to-year variability of GDP growth rates in the developing world. Additionally, tests for heteroskedasticity and auto-correlation were conducted by running Durbin-Watson tests. The Durbin-Watson statistic for the full model was 0.677, which indicates moderately strong positive auto-correlation.¹⁴ This does not imply any bias or inconsistency in the variable coefficients, but it does imply that the standard error measurements are underestimated. This, in turn, has implications for variable significance (for larger standard errors decrease the likelihood of statistical significance), but only with variables that are of marginal significance (high p-values). Because the auto-correlation detected by the Durbin-Watson test was of moderate strength, and because no variable in this model is of marginal significance, the significance measurements produced by this model can be considered accurate and reliable. Auto-correlation can be caused by missing data (or some other measurement error), incorrect functional form (such as using a linear model when a non-linear model is appropriate), or an omitted explanatory variable. As explained above, a proxy for economic freedom was not found, so this independent variable was omitted. This is the likely source of the moderate auto-correlation detected in this model.

As hypothesized, the institutional quality variable has the largest parameter estimate. According to this regression, if all other factors are held constant, a one-unit shift in the value of the institutional quality variable will engender a \$285 shift in GDP per capita.

¹⁴ The Durbin-Watson statistic measures the correlation between the error terms of a regression. A D-W statistic of 4.0 implies very strong negative auto-correlation, a statistic of 0 implies very strong positive auto-correlation, and a statistic near 2.0 implies no significant auto-correlation.

Furthermore, an examination of regression 2 reveals that the addition of this variable to the regression renders the African Dummy variable insignificant. The importance of this result cannot be overstated. For scholars have long studied the so-called “Africa effect,” a term used to describe economically disadvantageous characteristics unique to Africa. This “Africa effect” has been attributed to Africa’s unique geography, investor biases, international prejudices, and various other psychological and sociological issues that are difficult to quantify. Over the past decade, there has been an emerging chorus within development academia that the Africa effect could be attributed to institutional factors. This paper lends additional support to this view.

The difference between the capabilities of public institutions in the two regions is immediately evident when one visits the two regions. Most African societies are plagued by dysfunctional institutions, and the evidence of this dysfunction, both empirical and anecdotal, is overwhelming. In Kampala, for example, the trash is not collected from overflowing trash dumpsters three blocks from the President’s residence. Nor are many streets paved that are within eyeshot of Parliament. Automobile traffic in Harare is among the worst in the world, in large part because of the lack of traffic police. So, in Harare and in most African urban areas, when an automobile accident ensnarls rush-hour traffic, there is no government agency with the capacity to clear away the wreckage, leaving motorists to fend for themselves. Travelers in Africa are constantly exposed to the effects of government dysfunction such as these.

Dysfunctional public-sector institutions extend beyond what is visually evident. Local tax collection rates in Uganda are approximately one-third of those in the Philippines,¹⁵ for instance. These stark realities reflect an underlying lack of capacity on the part of public-sector institutions, which extends to quality control and internal management capabilities, which in turn make public accountability and transparency virtually impossible. Over the course of this 20-year study, the average value of the institutional quality variable for African countries fell from -0.8654 to -1.377 (see Table 3 in Appendix). This illustrates that African public institutions became more corrupt, more likely to engage in expropriation, and less responsive to societal conditions. The effect of this institutional deterioration on the African economies is startling, with GDP per capita falling 3.7% in Africa over the first 20 years post-independence.

While African leaders and policymakers deserve much of the credit (or blame) for this performance, many of Africa's institutional problems can be directly traced to their colonial regimes. Consequently, the limited capability of African public institutions could reflect the different motives of European colonists for the two regions. As Atul Kohli (2004) explained in his study of neo-patrimonial economies, European colonists in Africa were largely interested in resource extraction. This explains why much of the colonial-era transportation infrastructure is east-west oriented, linking the interior of the continent to the coasts. Little infrastructure was developed to link the African cities together, which

¹⁵ Effective property tax collection rate by the Kampala City Council was 27% in FY2005-2006. Property tax collection rate in Cebu City, Philippines was 64% in FY2004. Source: World Bank local government development project (LGDP) reports.

would have aided in the development of African markets. According to Kohli's study, the Europeans fostered indirect rule in their African colonies, resulting in poorly formed states. They "failed to centralize authority, to develop an effective civil service, and, relatedly, to develop the capacity to tax the population directly. [The colonial states] also failed to develop institutions that could promote socioeconomic development. [The European colonists] in Africa created countries but not effective states."¹⁶

In Ghana and Nigeria for example (or rather, in the territories that became Ghana and Nigeria), the administrative goal of the British government was to "establish territorial control," and therefore pursued policies of "subordination rather than assimilation – the opposite of what was needed to form a functioning local state".¹⁷ Kohli provides a glib but accurate summary, when he notes that the Europeans "ran their African territories on the cheap."¹⁸

In contrast, European colonists in Asia sought to create markets for European manufacturers, which gave the European colonial regimes an incentive to develop and strengthen societal institutions in Asia. According to Kohli's study, in colonial Ghana the British colonial regime employed 1 civil servant per 50,000 people, and in the rural areas there was only 1 public administrator per 100,000 people. Of this minimal civil

¹⁶ Kohli, Atul. *State-Directed Development: Political Power and Industrialization in the Global Periphery*. Page 292

¹⁷ *Ibid.* Page 301

¹⁸ Within the international development community, Britain is widely regarded to have been a more responsive and less repressive African colonist than France, Belgium, or Portugal.

bureaucracy only a fraction were Ghanaian. Conversely, in Singapore, the British employed 1 civil servant per 400 people, and a much larger percentage of the bureaucracy were native Singaporeans. Likewise, in Japanese-controlled Korea, there was 1 Japanese official per 300 Koreans. As a result, upon independence, the fledgling African governments inherited weakly developed government institutions and they lacked experienced civil bureaucrats, while most newly independent Asian governments did not face this obstacle. This is illustrated by the respective values of the institutional quality variable in Asia and Africa at the time of independence, with Asian countries having an average of -0.5867 and African countries having an average value of -0.8654.

Many African countries exacerbated their institutional problems by rapidly expanding their public sectors upon independence. Of the six countries in this study, all six adopted leftist governments within a decade of independence, and four adopted outright socialism. The negative impact this had on public sector capacity was tremendous.

Take, for example, Nigeria. At the end of World War II, of the 1,400 senior civil servants in Nigeria, only 75 were Nigerian. Moreover, as late as 1955, Nigeria had fewer than 1,000 university graduates. Yet by 1965, 5 years after independence and long after the departure of the last British administrators, the number of Nigerian senior civil servants had surpassed 3,000. In his 1969 study, I.F. Nicolson described the rapid growth of the Nigerian Federal Civil Service as “haphazard,” “confused,” and driven by considerable “political interference.” The resulting bureaucracy thus lacked “confidence, leadership,

decision, and initiative.”¹⁹ As a result, 20 years after independence, the average value of the institutional quality variable for the African countries in this study fell from -0.8654 to -1.377. For the Asian countries, this variable increased from -0.5867 to 1.5886.

The other political variable in this study was the proxy for democracy. The parameter estimate for this variable on the entire country sample was 55.19, and it was very significant. This indicates that the introduction of democratic forms of government positively affects local economies, but this impact is far smaller than that for institutional quality. This was the predicted result. However, the fact that the democracy coefficient in the Asia-only regression was over three times larger than the coefficient in the Africa-only regression was a surprise, for several Asian nations that were far from democratic experienced robust growth. This unexpected finding could be explained by the fact that several of these autocratic yet economically prosperous countries, such as Singapore, Vietnam, and China, were not included in this study. The inclusion of these nations would surely have altered the parameter estimates of the democracy variable. However, the results of this study (even without the aforementioned countries) do illustrate the importance of democracy on economic success, in that these results confirm the statement that democratic nations, *ceteris paribus*, will be more likely to experience economic growth than less democratic nations.

¹⁹ Nicolson, I.F. *Administration of Nigeria, 1900-1969: Men, Methods, and Myths*. Pages 256-300).

For both regions, the parameter estimates for population size was insignificant and the parameter estimates for population growth was large, negative, and highly significant (more significant for Africa). These results bolster the argument that population and demographic features of a country do not have neutral impacts on the economy. For the argument of population neutralism, as explained above, assumes that the negative effect of population growth on the per capita capital stock (denoted by n in the Solow model) is offset by the positive effect of population growth on the size of the labor force as well as the increase in aggregate savings yielded by a larger working population. However, in the developing world high mortality rates and short life expectancies rob developing economies of the segments of the population that are of working age. Consequently, aggregate population growth results in a growing proportion of children in the population, which is an age group that does not positively contribute to the economy. Higher mortality rates in Africa than in Asia could explain why the parameter estimate for this variable is more significant for the African countries in this study than for the Asian countries. While this study was conducted prior to the explosion of HIV/AIDS in Africa, the impact of the disease on the age distributions of African populations has undoubtedly exacerbated the negative impacts of population and demographic variables on economic performance.

The parameter estimate for the worker to dependent proxy was positive and highly significant for the Africa-only regression, which was expected, but was insignificant for the full regression and for the Asia-only regression. This would seem to refute Bloom,

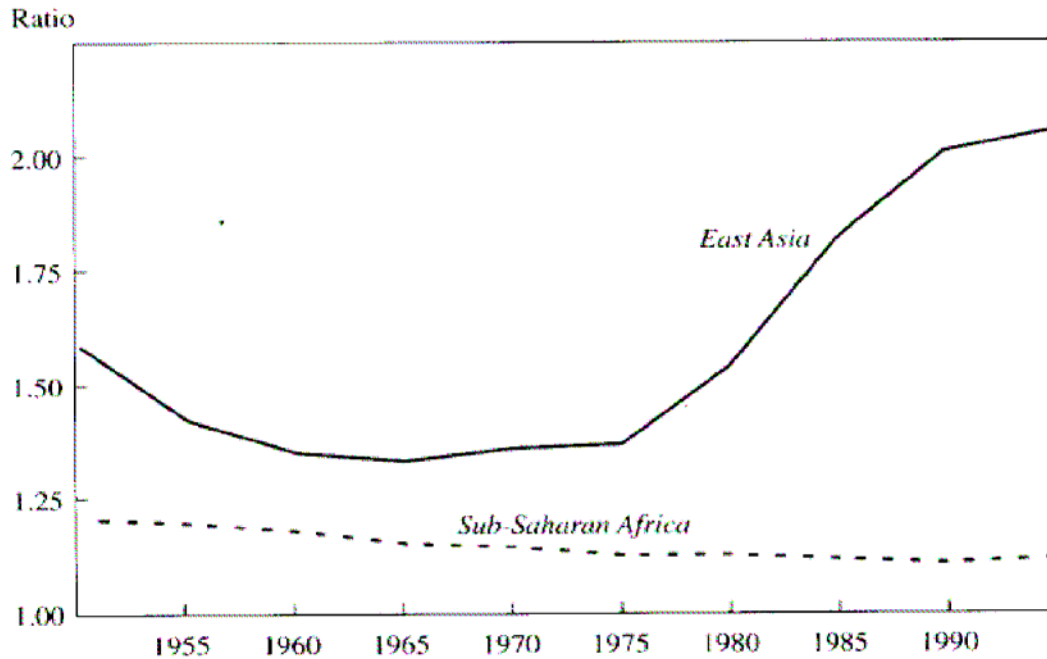
Canning, and Malaney's 1999 study that found significant linkages between workers per capita and economic growth in Asia. However, on closer examination, the Asian countries in this model did have more workers per 100 in the population than did the African countries (53.4 to 51.1), establishing a positive correlation between this variable and economic growth. Yet this variable was rendered insignificant for Asia by the relatively high variance of this variable in the Asian countries. Furthermore, Bloom et al. studied the years 1970 to 1990, which postdates this study. Over the course of this study, the average rate of population growth in Asia gradually fell and the worker to dependent ratio increased, and as Figure 2 reveals, it continued to do so in the following years that Bloom et al. studied.²⁰ In Africa, conversely, the value of this ratio fell from 51.6 to 50.6 over the course of this study. It therefore must be assumed that as the population in Asia aged, and as the percentage of working-aged people in the population increased, this demographic feature become more significant in its impact on the economy.

The aid per capita variable has a parameter estimate of 4.15 on the full regression, and is significant at the 5% confidence level but is insignificant at the 1% confidence level. This would seem to indicate that international aid has a positive impact on developing economies, but that aid in and of itself has a minor impact. The parameter estimate for the Africa-only regression is comparable in magnitude but is more significant, while the parameter estimate for the Asia-only regression is insignificant. This makes intuitive sense, for as the Asian economies grew, international aid per capita became less

²⁰ Bloom et al. *Demographic Change and Economic Growth in Asia*. Table 2

important to the domestic economies, while due to the lack of economic growth in Africa, aid remained significant. However, even in Africa, the parameter estimate for per capita aid was very small relative to the other variables, which indicates that increasing international aid will play a relatively minor role in promoting economic growth, unless that aid is associated with domestic policy and institutional reforms.

Figure 2. Ratio of Working-Age to Dependent Populations, Africa and East Asia, 1950-1995



Source: Bloom & Sachs (1999)²¹ figure 7

Working-age population is between the ages of fifteen and sixty-four, Dependent population includes all others.

²¹ Bloom & Sachs. *Geography, Demography, and Economic Growth in Africa*. Figure 7

OPPORTUNITIES FOR FUTURE RESEARCH

In post-WWII Japan, one of the central policies of the U.S.-led occupational authority was the dismantling of Japan's zaibatsu, large conglomerates run by a handful of aristocratic families, many of whom were high ranking government officials. The assets of these mega-trusts eventually became dispersed to a wide array of small privately run corporations, among which were Nissan, Fujita, and Kawasaki. By breaking up the state-run, insular conglomerates, this policy laid the groundwork for the development of a more competitive and diverse Japanese private sector. This, along with the heavy influence of the United States on Japan in these years, led many Japanese manufacturers to design their business models around exporting goods to the U.S. market. Within 15 years, exports represented a larger share of Japan's GDP than any other industrialized nation. Most Asian economies soon adopted Japan's model of export promotion and international market integration.

The policy choices of much of Africa could not be more different. As stated earlier, four of the six countries in this study had adopted some form of socialism within a decade of independence. Most of these nations pursued policies of import-substitution and protectionism in an attempt to spur domestic production. However, the internal domestic markets of these African economies were too small to support a viable manufacturing base. Moreover, both in Africa and elsewhere, policies aimed at limiting competition run the risk of creating inefficiencies, creating powerful domestic interests opposed to reduced protectionism, and the reliance of large sectors of the economy on a small group

of firms that, without government support, would not be viable. Additionally, these statist policies led to a growth and dominance of the state as an economic actor. Between 1960 and 1979, public consumption as a percentage of GDP rose from 11% to 27% in Zambia, and 11% to 20% in Kenya.²² Consequently, instead of fostering the development of a diverse, competitive, and dynamic private sector, these statist policies crowded out private activity.

The beneficial impacts of economic liberalization are well documented, as are the respective economic policy decisions of Asian and African nations. However, indices such as the Heritage Global Competitiveness Index must be expanded to include previous decades so that the impact of economic freedom (or the lack thereof) on economic performance can be quantified.

CONCLUSIONS & POLICY IMPLICATIONS

What can these results teach the international development community? What can domestic policymakers in the developing world learn from this study? This results of this study clearly indicate that the largest causal factors for economic performance are unbalanced population growth and public sector capacity and quality.

Sustained development cannot be achieved without institutional reform. In Africa, civil bureaucracies grew too rapidly as policymakers extended the reach of the public sector

²² World Bank, *World Development Report, 1981*. Table 5

into numerous issue areas. This resulted in, as Dr. Nicolson described, a civil service that was “haphazard” and “confused.” In such an administrative environment, it is no small wonder that African societies are plagued with inadequate, unresponsive, obtuse, and corrupt public institutions. Domestic policymakers in Africa would be well served to reduce the scope of their public sectors and to have fewer government agencies in fewer issue areas. This would allow African leaders to focus public resources on key areas of need, such as primary education and clean water delivery. Moreover, and more pertinent to this study, having a smaller civil bureaucracy would facilitate internal management and quality control.

Public sector retrenchment has long been advocated by the World Bank and the IMF, and over the past 20 years several such initiatives have been undertaken throughout the developing world, the results of which have been mixed at best.²³ One of the principle problems with public sector retrenchment programs is that they are often politically unpopular. For in countries where needs are numerous and acute, populist political messages that promise more government assistance and more public programs can be very persuasive. However, if implemented properly and if marketed strategically, retrenchment programs could be politically viable.

²³ For more discussion on prior retrenchment efforts, please see a report by Ilan Kapoor (1995) for the Canadian International Development Agency

For a retrenchment program to be implemented effectively, and for it to engender the desired results, it cannot simply be motivated by cost-reduction, but rather, it must have broader and further reaching objectives that include enhancing efficiency and improving internal management and quality control. From a political standpoint, such programs must be marketed as attempts to increase the quality of public services and to re-deploy resources to primary education and clean water delivery. For what could better improve the reputation of an elected official in the eyes of his or her constituents than the construction of schools and the provision of clean water in communities that have never had either?

Institutional development must also be the top priority of the international development community. This study showed that aid, in and of itself, will have minor impacts on economic performance. International assistance must be tied to institutional capacity building and administrative reform. Development and donor organizations should employ experienced public sector bureaucrats and managers, not only for their issue expertise, but also for their knowledge of bureaucratic functionality. The academic community could also be a valuable resource. Scholars such as James Q. Wilson and Patrick Wolf are recognized experts in bureaucratic theory and public management.

By reducing and focusing the scope and resources of the public sector, African policymakers could more effectively implement accountability and transparency initiatives; they could allow the reach and breadth of government programs to grow in

lockstep with increased bureaucratic and administrative capacity; and they could more aggressively target the most crucial needs of their societies, namely primary education and clean water delivery. This, in turn, would allow policymakers to target another key determinant of economic performance: population growth.

As stated above, the effect of population growth on economic performance was found to be very negative and highly significant. Policymakers must include modern sexual education and family planning instruction in primary education curricula. For as Bloom et al. (1999) found, reducing fertility can help lead to a “virtuous cycle of cumulative causation,” in which a decline in fertility helps to engender economic growth, which “tends to increase life expectancy and reduce fertility, leading to further economic growth.”²⁴

The Asian Miracle, in which real per capita income tripled over the course of a single generation, is one of the most extraordinary economic phenomena ever witnessed. Never before in the modern world has income per capita grown so rapidly in such a large group of countries for such a prolonged period. Several economies in East and Southeast Asia that began this period as low-income, third-world countries are now genuine industrial leaders. Africa, in stark contrast, is mired in a level of abject poverty that few in the West could comprehend. Improving the living standards in the world’s poorest and least developed region ranks among the paramount moral obligations of the world, and the

²⁴ Bloom et al. *Demographic Change and Economic Growth in Asia*. Page 13

international development community is armed with the knowledge of how to do it. But without African political leaders who are willing to make difficult and painful decisions that are in the best interest of their people, namely, reducing the scope of the public sector in an attempt to improve its quality, development in Africa will continue along at a glacial pace. In the words of former US Treasury Secretary Paul O'neil, "we in the developed world must support African leaders who are creating the conditions for success -- ruling justly, encouraging economic freedom, and investing in their people. And we must ourselves take a leadership role in demanding results."²⁵

²⁵ United States Treasury Secretary Paul O'neil in remarks to the Carnegie Endowment for Peace in Washington, DC. June 5, 2002

APPENDIX

Table 4. Statistical Table for the Sample Countries

	mean	std dev	min	max
South Korea				
GDP per capita	1487.75	565.245	1013	2841
institutional quality	0.762	0.6417	0.1	1.981
pop. Growth rate	2.438	0.644	0.945	3.349
democracy	3.55	3.1	0	10
workers to dependents	54.69	0.856	53.47	57.04
aid per capita	9.83	2.7	6.11	16.93
Philippines				
GDP per capita	1499.55	182.41	1151	1764
institutional quality	-0.2577	0.8346	-1.2227	0.9316
pop. Growth rate	3.028	0.069	2.872	3.149
democracy	5.8	0.61	4	6
workers to dependents	51.61	0.818	49.55	52.34
aid per capita	1.44	0.71	0.25	2.85
Indonesia				
GDP per capita	1220.55	270.93	930	1715
institutional quality	-0.3303	1.1105	-2.0054	1.3384
pop. Growth rate	2.291	0.134	2.029	2.468
democracy	1.3	0.47	1	2
workers to dependents	55.14	0.62	53.84	56.48
aid per capita	2.798	1.82	0.39	5.22
Malaysia				
GDP per capita	1960.6	446.34	1413	2910
institutional quality	0.6537	0.5584	0.0579	1.8238
pop. Growth rate	2.734	0.349	2.184	3.403
democracy	10	0	0	10
workers to dependents	51.89	1.24	50.63	54.76
aid per capita	2.91	1.84	1	8.18
Thailand				
GDP per capita	1106.5	361.09	1100	1694
institutional quality	0.5505	0.718	-0.5501	1.8687
pop. Growth rate	3.069	0.2556	2.147	3.381
democracy	0	0	0	0
workers to dependents	53.66	3.02	50.78	58.01
aid per capita	1.33	0.38	0.87	2.08
All Asia				
	mean	std dev	Avg value at start	avg value at end
GDP per capita	1464	464.52	1092.6	2184.8
institutional quality	0.2756	0.912	-0.5867	1.5866
pop. Growth rate	2.712	0.468	2.475	2.424
democracy	4.13	3.82	3.8	3.4
workers:dependents	53.4	2.11	53.35	53.95
aid per capita	3.66	3.58	1.97	4.23

Ghana	mean	std dev	min	max
GDP per capita	1354.55	85.85	1178	1491
institutional quality	-0.1964	0.422	-0.9031	0.3321
pop. Growth rate	2.681	0.793	1.751	4.61
democracy	1.8	2.01	0	6
workers to dependents	51.83	0.07	51.7	51.96
aid per capita	4.37	3.44	0.31	12.68
Uganda	mean	std dev	min	max
GDP per capita	767.2	92.6	577	881
institutional quality	-1.1481	-0.6109	-3.0105	-0.7958
pop. Growth rate	3.312	0.811	2.455	4.572
democracy	1.95	3.02	0	7
workers to dependents	50.26	0.35	49.68	50.74
aid per capita	3.46	2.25	1.45	10.34
Zimbabwe	mean	std dev	min	max
GDP per capita	1258.25	163.08	967	1432
institutional quality	-0.2956	0.3468	-0.7982	0.0602
pop. Growth rate	3.362	0.259	2.875	3.866
democracy	7.25	0.44	7	8
workers to dependents	48.93	0.804	48.17	50.77
aid per capita	7.51	12.56	0.06	35.9
Zambia	mean	std dev	min	max
GDP per capita	1022.1	92.32	828	1167
institutional quality	-0.5911	0.6046	-2.0057	-0.0199
pop. Growth rate	3.084	0.229	2.681	3.503
democracy	2.2	1.51	1	4
workers to dependents	50.42	1.47	48.06	52.09
aid per capita	19.84	17.7	2.89	55.49
Senegal	mean	std dev	min	max
GDP per capita	1432.15	65.9	1315	1511
institutional quality	-0.3283	0.1117	-0.469	-0.0226
pop. Growth rate	2.748	0.135	2.532	2.921
democracy	1.45	0.76	1	3
workers to dependents	52.61	0.42	51.94	53.51
aid per capita	17.05	14.09	0.003	57.13
D.R.C.	mean	std dev	min	max
GDP per capita	754.75	60.51	620	842
institutional quality	-1.3903	0.4835	-2.9144	-0.9144
pop. Growth rate	2.943	0.199	2.652	3.343
democracy	0.7	0.48	0	1
workers to dependents	52.6	0.66	51.3	53.24
aid per capita	6.85	2.96	3.82	15.37
All Africa	mean	std dev	avg value at start	avg value at end
GDP per capita	1098.17	287.64	1019.17	981.3
institutional quality	-0.6583	0.6421	-0.8654	-1.377
pop. Growth rate	3.022	0.549	3.035	2.919
democracy	2.55	2.7	3.67	3
workers:dependents	51.11	1.55	51.67	50.62
aid per capita	9.85	12.28	2.62	26.57

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