

Linking Infrastructure with Future FDI, Income, and Growth in Sub-Saharan Africa

Gordon G. Mosley, Troy University, USA
gmosley@troy.edu

David K. Amponsah, Troy University, USA
damponsa@troy.edu

This study extends a study (Mosley and Amponsah 2007) that demonstrated Hunt's (2002) resource-advantage theory of competition with 2005 data in countries of Sub-Saharan Africa. Specifically, it investigates the relationship between infrastructure in the economic, political-legal, cultural-social, and technological areas in these countries and their income, growth rates, and rates of FDI. The results generally show that infrastructure more favorable to businesspeople is positively related to higher income, growth rates, and FDI, providing support for Hunt's theory. This study tests these relationships in two additional time periods—1985 and 1995. Further, it was found that infrastructure from one time periods was related to the FDI per capita a decade later. This information was used to predict FDI performance in 2015 using 2005 infrastructural data.

INTRODUCTION

Hunt's (1997, 2002) resource-advantage (R-A) theory of competition recognizes that both firms and countries have heterogeneous resources, institutions, and policies that affect economic performance. Countries compete as locations for industrial activity and for industrial investments. In location decisions, firms consider the natural and human resources of a country as well as other variables that may affect risk and profitability. These situational variables include competition and the national infrastructure in which businesses operate—economic, political-legal, cultural-social, and technological environments. Countries wishing to attract foreign investment should work to make these natural and human resources and other situational variables more attractive to investors. Further, R-A theory recognizes that the role of management is to plan and implement a strategy from the available alternatives.

A country's economy may have a certain strategy for economic development, such as import substitution or establishing a comparative advantage based on natural resources, inexpensive labor, or superior technology. Based on these differences, R-A theory recognizes the competition dynamic illustrated in Exhibit 1. R-A theory also recognizes that this relationship may contain other moderators, including societal resources, societal institutions, and public policies (Hunt 1997, 2002).

Exhibit 1. The Dynamic of the Resource-Advantage Theory.



According to R-A theory, a country that could establish a comparative advantage based on resources (including infrastructure) would be better able to gain a competitive advantage in the marketplace for FDI. The traditional inputs for business success have been land, labor, and capital (and more recently managerial skills), and any of these may be a basis for comparative advantage. Businesses have also noted that there are forces outside the direct business environment that affect performance. They recognize the infrastructure as being composed of the uncontrollable environments in which they operate. Among these environments are the economic, political-legal, cultural-social, and technological environments (Perreault and McCarthy 2002). Together, these environments are the major part of a country's infrastructure. Previous studies have shown these to be useful organizing concepts in the Sub-Saharan African setting (Mosley 2006, Mosley and Amponsah 2004, 2006, 2007).

The purpose of this study is to extend the developed measures of the infrastructure (Mosley 2006, Mosley and Amponsah 2004, 2006, 2007) to other years and to test the association with the income, economic growth rate, and FDI rate for the years 1985 and 1995 in the nations comprising Sub-Saharan Africa. Further, this study attempts to develop predictions based on the countries' current infrastructure.

HYPOTHESES

With cognizance of the previous discussion of Hunt's R-A theory of competition, it could be predicted that the infrastructure composed of the economic, political-legal, cultural-social, and technological environments that is more favorable to businesspeople would lead to greater FDI, higher income, and more rapid economic growth than those environments that are less favorable to businesspeople. It may also be possible to create models to predict income, growth, and FDI based on the infrastructure. Hence the following hypotheses, represented graphically in Exhibit 2, are offered.

Hypothesis 1: For 1995 and 1985, the countries in Sub-Saharan Africa with a higher rate of growth have infrastructure with (a) economic, (b) political-legal, (c) cultural-social, and (d) technological environments more favorable for investors than countries with a lower rate of economic growth.

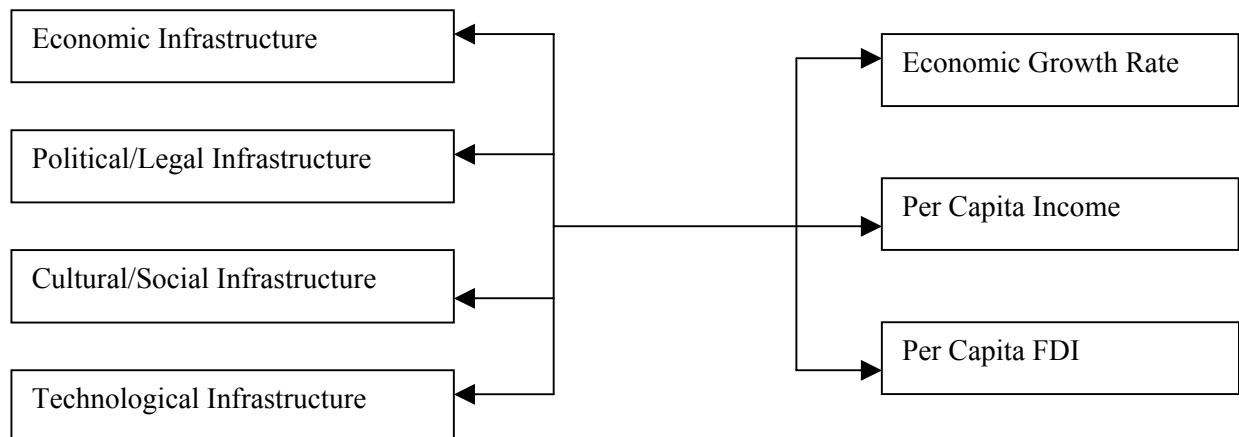
Hypothesis 2: For 1995 and 1985, countries in Sub-Saharan Africa with a higher per capita income have infrastructure with (a) economic, (b) political-legal, (c) cultural-social, and (d) technological environments more favorable for investors than countries with a lower per capita income.

Hypothesis 3: For 1995 and 1985, countries in Sub-Saharan Africa with a greater per capita FDI have infrastructure with (a) economic, (b) political-legal, (c) cultural-social, and (d) technological environments more favorable for investors than countries with a lower per capita FDI.

Hypothesis 4: The infrastructure composed of (a) economic, political-legal, cultural-social, and technological environments from 1995 will predict the economic growth rate, per capita income, and per capita FDI for 2005, and (b) the same independent variables from 1985 will predict the same dependent variables in 1995.

Hypothesis 5: Infrastructure scores from one decade can be useful for predicting which countries will be successful in economic growth rate, per capita income, and per capita FDI for the next decade.

Exhibit 2. Model of Hypothesized Relationships.



METHOD

The Population

The population studied includes forty-four of the forty-nine nations in Sub-Saharan Africa (World Bank 2006). South Africa and Mauritius were excluded because they were outliers (scores $> 3z$ and/or scores $< -3z$) for many of the measured variables, and Mayotte, Sao Tome and Principe, and Seychelles were excluded because of missing data for most of the infrastructural variables. See Appendix A for a list of the countries of Sub-Saharan Africa included in this study. The number of other countries with some missing data can be inferred from the number of countries reported in Table 1.

Dependent Variables

The dependent variables for 2005 were: *Economic growth rate*—the average annual percentage growth in gross domestic product from 2003 – 2006 inclusive (World Bank 2008), *income*—the 2005 GNI per capita stated in purchasing power parity (World Bank 2006), and *FDI*—the average annual FDI per capita for the 2003 – 2006 period inclusive (World Bank 2008). The dependent variables for 1995 and 1985 were the same statistics as used for 2005 adjusted for the different decades (World Bank 2008).

Independent Variables

Previous work with these (and similar variables) has shown that using single items as indicators of the infrastructure leads to mixed results (Mosley 2006, Mosley and Amponsah 2004, 2006, 2007). Although virtually all indicators vary in the hypothesized direction, many of the differences among the nations of Sub-Saharan Africa are not large enough to reach significance. In this study, as in Mosley and Amponsah (2007), a variety of items have been selected to represent the infrastructure composed of the environments discussed below and mentioned in the preceding hypotheses. From these items, four scales were created to represent each of the infrastructural environments. The intent in item selection was to represent the variety of each environment without making each scale unwieldy or sensitive to too much missing data.

Independent Variables—2005

Economic environment. A scale was created from the nine variables listed below to represent the economic environment. Descriptive statistics were developed for each of these variables with their values recorded as their z score. The items included in the scale were; *exports as a percent of GDP*, *imports as a percent of GDP*, *gross capital formation as a percent of GDP*, *FDI as a percent of GDP*, *mean FDI per capita (2000-2003 inclusive)*, *weighted mean import tariff [R*]*, *merchandise export*, *average GDP growth rate from 2000-2004*, and *GNP per capita [purchasing power parity]* (World Bank 2006, 2008).

When the dependent variable was GDP growth rate, FDI, or GNI, the items in the scale based on these variables were removed. If there were missing data on a minority of items, the average value for that nation across the other variables was substituted for that missing value(s). This procedure made slightly different economic environment scales for each of the dependent variables. A separate coefficient alpha was calculated for each of these three scales. The coefficient alpha for the economic environment in the growth, income, and FDI analyses were .83, .81, and .76 respectively. Each of these indicators is above the .70 level recommended by Nunnally (1978) for exploratory research.

Political-legal environment. In a manner similar to the economic environment scale described above, a scale was created to represent the political-legal environment from the items listed below. The coefficient alpha for this scale was computed as .89. These items were; *time to enforce contracts* (World Bank 2006) [R*], *economic freedom* (Gwartney and Lawson with Gartzke 2005), *political rights, civil liberties, and press freedom* (Freedom House 2006) [R*], and *corruption* (Transparency International 2005).

Cultural-social environment. In a similar manner, a scale was also created from five variables to represent the cultural-social environment (World Bank 2006). These items are the 2005 statistics for: *annual health expenses per capita, physicians per 10,000 people, child mortality* [R*], *percent of the GDP the government spends on education, and literacy.* The coefficient alpha was calculated at .79.

Technological environment. Nine items from 2005 were selected to create the technological environment scale in a fashion similar to the other scales (World Bank 2006). The number of *telephone mainlines, mobile telephones, personal computers, Internet users, secure computer servers, and television sets per 1,000 people* were used in this scale along with the *percent of households with television sets.* The amount of *energy used per capita* as well as the *per capita electric consumption* were also used as items for this scale. The coefficient alpha achieved by this scale was .93.

* R = item reversed

Independent Variables—1995 and 1985

Similar to the 2005 methodology, scales were also created for 1995 and 1985. These scales used some slightly different items to minimize missing data. The coefficient alpha scores ranged from .69 to .90.

Weighted Average Infrastructure Score

A summated score for the total infrastructure (economic environment, political-legal environment, cultural-social environment, and technological environment) was made for 1985, 1995, and 2005. The weights for each environment were determined by computing the mean of the adjusted R square statistic obtained from a simple regression analysis of each of the environmental variables related to each of the outcome variables (GNI per capita, GDP annual growth rate, and FDI per capita) for each of the three years considered (1985, 1995, and 2005). For the economic environment, none of the component variables were dropped from this scale. Each environment was standardized and weighted as follows: economic = 34.6%, political-legal = 4.9%, cultural-social = 29.2%, and technological = 31.3%. These weighted averages were used in the regression analysis described herein. Further, each country was classified as being in the first, second, third, or fourth quartile as reported in Appendix A.

Because of the construction of the weighted average environmental score, higher scores indicate countries with an infrastructure more conducive to business activity *relative* to the other countries included in the study. As conditions change in Sub-Saharan Africa, a country that maintains past conditions will fall in the ratings, while those that improve are improving relative to other countries.

Procedure

Regression analysis was performed to determine if the infrastructure could be associated with differing levels of income, growth, and FDI in the nations of Sub-Saharan Africa for the 1985 and 1995 time

periods. The results of the regression analyses are reported in Tables 1 and 2. Regression analysis was also performed testing independent variables from 1985 against dependent variables from 1995, and testing independent variables from 1995 against dependent variables from 2005.

RESULTS AND DISCUSSION

Environmental correlations and simple regression

Multicollinearity may cause difficulty in interpreting the relative importance of the infrastructural variables' relationships with the dependent variables (Neter, Wasserman, and Kutner 1990). For this reason, a series of simple regression analyses was performed relating each independent variable of the infrastructure to each dependent variable. The results of these simple regressions are reported in Table 1. Using simple regression, three of the environments studied had a significant association with *GNI per capita* and three of the environments were also significant for *FDI per capita*. Only two of the environments (economic and cultural-social) had a significant association with the *GDP growth rate*. These results provide support for hypotheses 2 [except 2 (b)] and 3 [except 3(b)].

Multiple regression

Income. Only one environment was a significant predictors of GNI per capita for 1985 (economic) and 1995 (technology) in a multiple regression equation with adjusted R squares reported of .690 and .395. respectively. This provides support for hypothesis 2 (a) and (d), but not for 2 (b) and (c).

Growth rate. The economic environment was found to be a significant predictor of growth as reported in Table 2, but with adjusted R squares of only .207 for 1995 and .169 for 1985.

FDI. Again, only the economic environment was a significant predictor of FDI per capita. The adjusted R square statistics were .310 for 1995 and .411 for 1985. Results are summarized in Table 2.

Table 1. Simple Regression of Infrastructure and Growth, Income, and FDI.

Dependent Variables → Independent Variables ↓		GNI per capita			GDP Growth			FDI per capita		
		2005	1995	1985	2005	1995	1985	2005	1995	1985
Economic Environment	Adjusted R square	.179	.068	.682	.023	.177	.095	.445	-.024	.443
	Significance	.004	.055	<.001	.179	.003	.030	<.001	.762	<.001
	Based of n =	39	40	35	37	41	39	38	39	36
Political-Legal Environment	Adjusted R square	.141	.023	.017	-.004	.050	-.002	-.022	.058	.043
	Significance	.009	.172	.218	.364	.081	.341	.659	.066	.109
	Based of n =	40	40	34	37	42	39	38	42	38
Cultural-Social Environment	Adjusted R square	.606	.252	.352	.027	.047	.147	.168	.032	.169
	Significance	<.001	<.001	<.001	.164	.089	.009	.006	.129	.006
	Based of n =	39	40	34	37	41	39	38	42	37
Technological Environment	Adjusted R square	.645	.436	.396	.028	-.022	.005	.266	-.023	.183
	Significance	<.001	<.001	<.001	.160	.346	.279	.001	.849	.004
	Based of n =	38	40	34	37	42	39	37	43	38

Significant regression relationships are reported in **bold**.

Table 2. Multiple Regression Results for GNI per capita, GDP Growth Rate, and FDI per capita.

Dependent Variable	Constant	Independent Variables				Adjusted R ²
		ECON Beta	POLI Beta	CULT Beta	TECH Beta	
GNI per capita-2005	-9468 ($<.001$)	.204 (.029)	n.s.	.369 (.008)	.461 (.001)	.738
GDP growth rate-2005	3.373 (.307)	.462 (.012)	n.s.	n.s.	-.469 (.011)	.167
FDI per capita-2005	-123.5 ($<.001$)	.610 ($<.001$)	-.243 (.032)	n.s.	.338 (.006)	.591
GNI per capita-1995	1357 ($<.001$)	n.s.	n.s.	n.s.	.602 (.002)	.395
GDP growth rate-1995	3.004 ($<.001$)	.523 (.004)	n.s.	n.s.	n.s.	.207
FDI per capita-1995	8.814 (.001)	.680 (.002)	n.s.	n.s.	n.s.	.310
GNI per capita-1985	889.9 ($<.001$)	.689 ($<.001$)	n.s.	n.s.	n.s.	.690
GDP growth rate-1985	2.269 ($<.001$)	.399 (.064)	n.s.	n.s.	n.s.	.169
FDI per capita-1985	4.715 ($<.001$)	.565 (.003)	n.s.	n.s.	n.s.	.411

ECON = Economic environment. POLI = Political-legal environment. CULT = Cultural-social environment. TECH = Technological environment. Figures in parentheses indicate the significance of the reported statistic above it. n.s. = not significant.

Relating infrastructure from one decade with outcome variables from the next decade

Table 3 reports the results of using environmental variables to predict income, GDP growth, and FDI for the following decade. The economic and technological environments proved valuable in predicting income and FDI, while none of the tested environments predicted GDP growth.

Table 3. Predicting GNI per capita, GDP Growth Rate, and FDI per capita from 10-year old Infrastructural Data Using Multiple Regression.

Dependent Variables	Constant	Independent Variables				Adjusted R ²
		ECON Beta	POLI Beta	CULT Beta	TECH Beta	
Predicting GNI per capita-2005 with 1995 infrastructure	2001 ($<.001$)	.455 (.003)	n.s.	n.s.	.322 (.082)	.378
Predicting GDP growth rate-2005 with 1995 infrastructure	3.852 ($<.001$)	n.s.	n.s.	n.s.	n.s.	-.013
Predicting FDI per capita-2005 with 1995 infrastructure	19.32 ($<.001$)	.376 (.047)	n.s.	n.s.	.470 (.011)	.449
Predicting GNI per capita-1995 with 1985 infrastructure	1621 ($<.001$)	n.s.	n.s.	n.s.	.666 ($<.001$)	.655
Predicting GDP growth rate-1995 with 1985 infrastructure	3.084 ($<.001$)	n.s.	n.s.	n.s.	n.s.	-.094
Predicting FDI per capita-1995 with 1985 infrastructure	8.989 (.006)	n.s.	n.s.	n.s.	n.s.	.080

ECON = Economic environment. POLI = Political-legal environment. CULT = Cultural-social environment. TECH = Technological environment. Figures in parentheses indicate the significance of the reported statistic above it. n.s. = not significant.

Predicting More Successful and Less Successful Countries Using the Summated Scores

Simple regression was used to relate the weighted summary infrastructural scores with the selected outcome variables for the next decade (Table 4). The 1985 summated scale was related to 1995 outcomes and the 1995 summated scale was related to 2005 outcomes. No significant relationship was found for the rate of economic growth. A strong relationship was found between the scores and GNI per capita (adjusted R square statistics of .582 and .409). However, simply relating GNI per capita from one decade with GNI per capita for the next provided better adjusted R square statistics (.740 and .864). Hence, the scale had no real value for predicting growth or future income. A weak—but significant—relationship was found between the summated scale for one decade and the FDI per capita for the following decade (adjusted R square statistics of .083 and .087, significance = .034 and .049). The summated scale was a better predictor of future FDI per capita than was past FDI per capita, which achieved R square statistics of only -.026 and -.025, and did not approach statistical significance (.789 and .891). In the regression equations, then, the *current* summated scale was positively related to *future* FDI. Hence, countries wishing higher future FDI would be well advised to take actions which increase their summated scores.

Table 4. Predicting GNI per capita, GDP Growth Rate, and FDI per capita from 10-year old Summated Infrastructural Scores Using Simple Regression.

Independent Variables	Adjusted R square Scores for Dependent Variables		
	GNI per capita	GDP growth rate	FDI per capita
1985 Summary Infrastructural Score	.582 (<i><.001</i>)	-.024 (.707)	.083 (.049)
1995 Summary Infrastructural Score	.409 (<i><.001</i>)	.029 (.144)	.087 (.034)
The 1985 score was related to 1995 dependent variables, and the 1995 score was related to 2005 dependent variables. Figures in parentheses indicate the significance of the reported statistic above it. Adjusted R square statistics in bold are considered statistically significant.			

The R-A theory of competition predicts that better resources will lead to advantages that can be converted into better results. The infrastructure composed of economic, political-legal, cultural-social, and technological environments can be viewed as a resource with which countries compete among themselves for FDI. There is evidence, then, that those nations in Sub-Saharan Africa with environments that are preferable to businesspeople (higher in economic and political freedoms, more socially advanced, and with higher levels of available technology) have higher growth rates, higher incomes, and higher FDI. Indeed, as demonstrated in the above tables, all of the hypotheses tested achieved partial support.

In this study, the selected environments proved useful as indicators for the relative growth, income, and FDI of the nations in Sub-Saharan Africa. Further, there is some evidence that the tested environments have some predictive power for future levels of income and FDI. The hypotheses were largely supported with only six of the sixteen tested relationships having no support in the statistics presented in this study.

CONCLUSIONS AND IMPLICATIONS

These findings provide evidence that there is a positive relationship between a nation's resource advantage in social, political, economic, and technological infrastructure and its levels of financial performance as measured by national income per capita and foreign direct investment per capita. There is a similar (though smaller) relationship between this infrastructure and the economic growth rate. This study's evidence, then, supports Hunt's R-A theory of competition at the level of nations' competing for FDI and infrastructural improvements.

Implications for governments in Sub-Saharan Africa

When the governments in Sub-Saharan Africa consider how to improve their countries' income, FDI, and growth rates, development of the environments studied here (economic, political-legal, cultural-social, and technological) should be strongly considered. Government officials—both politicians and civil service employees—need to keep in mind that, like it or not, they are competing for business investments with many other countries. Those organizations with the power to invest or not invest will be more likely to provide capital, create jobs, and help enhance a nation's economic growth rate if the infrastructural components studied here are improved. The government functionaries need to place a high priority on the development of these environments to attract the outside investors they want.

Implications for businesses in Sub-Saharan Africa

Business executives and entrepreneurs in Sub-Saharan nations would be well advised to encourage their governments and politicians to develop economic, cultural-social, and political-legal policies and environments that promote political rights and civil liberties, press freedom, reducing corruption, and accelerating the growth of technology. These actions, as shown in this study, could be expected to give a particular country a resource advantage over other nations that are competing for the same FDI to advance their economic growth and national income.

Implications for organizations considering investing in Sub-Saharan Africa

Organizations with the choice to invest in other countries have many factors to consider. It is important that the underlying infrastructure of the host country be desirable, and be improving at a rapid rate. While organizations may be attracted to host countries by tariff preferences or other tax abatements, it is also important that the reason for doing business in a certain country makes sense after the special arrangements end. The greater stability associated with the optimism of a growing economy and improving political, social, and technological environments should be key factors in an organization's choice of location.

Predictions for FDI in Sub-Saharan Africa for 2015

Since the 1985 environment has been found to be related to the level of 1995 FDI, and the 1995 environment has been found to be related to 2005 FDI, the 2005 environment may be indicative of FDI for 2015. *Ceteris paribus*, it could be expected that those countries in the top quartile of 2005 environmental scores would be best poised to attract FDI in the 2015 time frame. Conversely, those countries in the lowest quartile in environmental scores would seem to be least likely to attract such FDI. As can be seen in Appendix A, the top quartile includes Botswana, Gabon, The Gambia, Ghana, Lesotho, Mauritania, Namibia, Swaziland, and Zimbabwe. The lowest quartile includes Benin, Burkina Faso, Burundi, Central African Republic, Democratic Republic of Congo, Ethiopia, Niger, Rwanda, and Sierra Leone. A number of countries in Sub-Saharan Africa were not included in these predictions. An inspection of Appendix A shows the countries that were not rated either because they were outliers or had incomplete data—Cape Verde, Comoros, Djibouti, Equatorial Guinea, Liberia, Mauritius, Mayotte, Sao Tome and Principe, Seychelles, Somalia, and South Africa.

It should also be noted that five countries have remained in the top quartile of the environmental measure for each of the three decades measured—Botswana, Gabon, Lesotho, Swaziland, and Zimbabwe. Four countries have been in the lowest quartile for each of these decades—Burundi, Ethiopia, Niger, and Sierra Leone. Further, only one country has shown constant improvement—Ghana. Ghana was in the third quartile for 1985, the second quartile for 1995, and the top quartile for 2005. These predictions, of course, are based on “all other things being equal,” and this is rarely the case. For example, our statistics show Zimbabwe as being consistently in the top quartile, but the statistics report past accomplishments and do not reflect the turmoil of the post 2005 period. A current assessment of Zimbabwe's environments would lower its scores considerably.

LIMITATIONS AND FUTURE RESEARCH

This study was hampered by missing data from several of the nations included in this study. Missing data problems were more serious for the older data. Further, this region of the world has been plagued by wars and political instability over the years for which data was obtained. The effect of this instability undoubtedly had some effect on the countries involved and their infrastructures, but was ignored for the purposes of this study. Quite simply, if the sample were reduced by removing nations that suffered from this instability, it would become too small for meaningful analysis. The results of this study, although showing relatively weak relationships overall, do show that some useful results can be produced in spite of the missing data and the political instability in the region. Twenty-nine indicators were used to create scales for the four environments involved in this study. Many more variables from a variety of additional sources (e.g., United Nations, United States Department of Commerce) could be tested for their predictive and practical usefulness in future studies. The problem of missing data was more serious than it would have been had a more developed area of the world been selected for study. Much data was simply unavailable. The method of creating the scales used in this study, however, helped to ameliorate this problem.

REFERENCES

- Ali, Abbas J. (2005), "Foreign Direct Investment and Development," *Competitiveness Review*, 15 (1), preceding page 1.
- Fraser Institute, retrieved December 30, 2009 from http://oldfraser.lexi.net/publications/books/econ_free/tables/a1-2.html.
- Freedom House (2006), *Freedom in the World 2006*, retrieved March 14, 2006 from <http://www.freedomhouse.org/>
- Freedom House (2008), retrieved December 30, 2009 from <http://www.freedomhouse.org/uploads/fop/historical/SSAfrica.xls> and http://www.freedomhouse.org/uploads/fow08/FIW_AllScores_Countries.xls.
- Gwartney, James and Robert Lawson with Erik Gartzke (2005), *Economic Freedom of the World: 2005 Annual Report*, Vancouver, B. C., Canada: Fraser Institute, retrieved March 14, 2006 from <http://www.fraserinstitute.ca/admin/books/chapterfiles/EFW2005complete.pdf#>
- Hofstede, Geert (1984), *Culture's Consequences*, Beverly Hills, CA: Sage Publications.
- _____ (1991), *Culture and Organizations—Software of the Mind*, New York: McGraw-Hill.
- Hunt, Shelby D. (1997), "Resource-Advantage Theory and the Wealth of Nations: Developing the Socio-Economic Research Tradition," *Journal of Socio-Economics*, 26 (4), 335 – 357.
- _____ (2002), *Foundations of Marketing Theory: Toward a General Theory of Marketing*, Armonk, NY: M. E. Sharpe.
- Mosley, Gordon G. (2006), "Using Marketing's External Environments to Attract Foreign Direct Investment in Sub-Saharan Africa," *Society for Marketing Advances Proceedings 2006*.
- _____ and David K. Amponsah (2004), "The Effects of the Economic, Political-Legal, Cultural-Social, and Technological Environments on Long Term Growth Rates in Sub-Saharan Africa: An Empirical Study," *TSU System-Wide Symposium Proceedings 2004*.
- _____ and _____ (2006), "Marketing's Uncontrollable Environments as Antecedents for National Income and Economic Growth in Sub-Saharan Africa," *International Academy of African Business and Development*.
- _____ and _____ (2007), "The Association of Marketing's Uncontrollable Environments with National Income, Economic Growth, and Foreign Direct Investment in Sub-Saharan Africa," *International Academy of African Business and Development Conference Proceeding—2007*, London, England, UK, May 29 – June 2, 2007.
- Neter, John, William Wasserman, and Michael H. Kutner (1990), *Applied Linear Statistical Models*, 3rd Edition, Burr Ridge, IL: Irwin.

- Netemeyer, Richard G., Srinivas Durvasula, and Donald R. Lichtenstein (1991), "A Cross-National Assessment of the Reliability and Validity of the CETSCALE," *Journal of Marketing Research*, 28(August), 320-327.
- Nunnally, Jum C. (1978), *Psychometric Theory*, 2nd Edition, New York: McGraw-Hill.
- Perreault, William D. Jr. and E. Jerome McCarthy (2002), *Basic Marketing: A Global-Managerial Approach*, 14th Edition, Boston: McGraw-Hill Irwin.
- Transparency International (2005), *The 2005 Transparency International Corruption Perceptions Index*, retrieved March 24, 2006 from <http://www.transparency.org>
- Transparency International (2008), retrieved December 30, 2008 from http://www.transparency.org/policy_research/surveys_indices/cpi/previous_cpi__1/1998
- Triandis, Harry C., Christopher McCusker, Hector Betancourt, Sumiko Iwao, Kwok Leung, Jose Miguel Salazar, Bernadette Setiadi, Jai B.P. Sinha, Hubert Touzard, and Zbignew Zaleski (1993), "An Etic-Emic Analysis of Individualism and Collectivism," *Journal of Cross-Cultural Psychology*, 24(3) 366-383.
- World Bank (2006), *World Development Indicators 2006*, Washington: The World Bank.
- World Bank (2008), *World Development Indicators Data Query*, retrieved December 16, 2008 from <http://www.worldbank.org/>

APPENDIX A: The countries of Sub-Saharan Africa

<i>Repositioning African Business and Development in the 21st Century</i> <i>Simon Sigué (Ed.)</i>	Country	Population (in billions)	Infra-structure 1995*	Infra-structure 2005*
		2005		
1. Angola	16	2	3	2
2. Benin	8.5	3	3	4
3. Botswana	1.8	1	1	1
4. Burkina Faso	13.9	3	4	4
5. Burundi	7.9	4	4	4
6. Cameroon	17.8	2	3	2
7. Cape Verde	.51	n.a.	1	n.a.
8. Central African Republic	4.2	3	4	4
9. Chad	10.1	3	4	3
10. Comoros	.60	2	2	n.a.
11. Dem. Rep. of Congo	58.7	3	4	4
12. Republic of Congo	3.6	1	1	2
13. Cote d'Ivoire	18.6	2	2	3
14. Djibouti	.80	n.a.	2	n.a.
15. Equatorial Guinea	.48	2	1	n.a.
16. Eritrea	4.5	n.a.	2	2
17. Ethiopia	75.2	4	4	4
18. Gabon	1.3	1	1	1
19. Gambia	1.6	2	1	1
20. Ghana	22.5	3	2	1
21. Guinea	9	3	3	3
22. Guinea-Bissau	1.6	2	4	3
23. Kenya	35.6	1	2	2
24. Lesotho	2	1	1	1
25. Liberia	3.4	n.a.	n.a.	n.a.
26. Madagascar	18.6	4	2	3
27. Malawi	13.2	3	2	3
28. Mali	11.6	4	3	3
29. Mauritania	3	1	2	1
30. Mauritius	1.2	Excluded from the study		
31. Mayotte	.18	Excluded from the study		
32. Mozambique	20.5	4	3	3
33. Namibia	2	n.a.	1	1
34. Niger	13.3	4	4	4
35. Nigeria	141.4	2	3	2
36. Rwanda	9.2	3	4	4
37. Sao Tome and Principe	.15	Excluded from the study		
38. Senegal	11.8	2	2	2
39. Seychelles	.0802	Excluded from the study		
40. Sierra Leone	5.6	4	4	4
41. Somalia	8.2	4	n.a.	n.a.