

TRADE FINANCE AND ECONOMIC DEVELOPMENT IN SUB-SAHARAN AFRICA

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As much of the world moves toward increased economic development and improved standards of living, many African countries are being left behind. One important reason may be Africa's trade policies as evidenced by the poor performance of the African trade sector, and the declining level of Africa's share of world trade. The objective of this paper is to extend the existing literature on economic development in developing nations, by focusing on the link between the financing of trade in sub-Saharan Africa and the trade performance of each country. The results may assist policy makers in the formulation of policy better directed towards rebuilding Africa's declining trade outcomes.

The link between the scale and scope of a developing nation's trade sector and the level of economic prosperity has been extensively researched in the economic development literature. This literature suggests that a number of factors are important determinates of the level of the trade sector in developing nations. More specifically, the African research has established that internal policy and microstructure factors such as tariffs and the quality of port facilities (Lamb 1996), the type of exchange rate regime (Ikoba, Nyatepe-Coo & Owaye 1996), environmental factors (Ghura 1995), the level of foreign direct investment (Singh & Jun 1995), and the degree of regional co-operation (Wright 1996), all have implications for the contribution the trade sector has to economic prosperity.

In addition to these largely macroeconomic factors, at the microeconomic level, effective foreign trade also requires a need for financing to make the purchase of imports and the production of exports a reality. While there is extensive empirical evidence of a “pecking order” describing how firms make their financing decisions in developed countries (Myers 1984), in practice information asymmetries, agency costs and transaction costs may impede this decision making process. Also these costs and asymmetries may be greater for African firms because of their perceived greater risk. Consequently this paper provides a first step towards understanding the dynamics of this process in the African context by investigating the relationship between the availability of various forms of finance and the level of trade in Sub-Saharan African economies at the aggregate level.

The approach adopted is to examine these relationships for 22 Sub-Saharan African nations using annual data from 1992 to 1995 (66 observations). Standard regression techniques were used to test the relationship between the size of the trade sector as measured by the level of exports and imports to Gross Domestic Product (GDP), and a number of variables including: real economic growth; GDP per capita; country risk; and the degree of access by each country to various sources of finance. One feature of this paper is that it decomposes each country’s access to financing into four major sources: bank finance; long and short-term; international and syndicated; and forfeiting. This approach is consistent with other African studies which have adopted a time-series or pooled cross-sectional approach (Ghura 1995; Ikoba, Nyatepe-Coo & Owoye 1996).

The paper is broadly set out in three sections: the next section establishes the economic context of this paper by providing a policy perspective on the economic problems confronting Sub-Saharan African nations, and the nature of foreign trade and finance in the region; then, the economic and financial structures

of each of the 22 Sub-Saharan African nations are categorized. A hypothesis is then formally developed and regression procedures used to test the relationship between the size of the trade sector and the economic and financing variables. The final section allows for some concluding remarks and recommendations.

KEY ISSUES CONFRONTING AFRICAN NATIONS

Economic growth occurred in Africa, albeit unevenly, throughout the 1970s and 1980s. On the one hand, some countries in Africa have sufficiently developed politically and economically to increase trade with other countries in their region and with the rest of the world. On the other hand, many governments mismanaged fiscal and monetary responsibilities leading to sustained poverty rather than to sustained development. High government debt levels, high inflation, trade and foreign exchange restrictions, investments in state-owned and -run companies, insufficient investment in education, political instability, and other destabilizing practices left these countries behind the rest of the world in economic development.

These and other factors caused many developing African countries to earn insufficient foreign exchange to support the importation of enough goods and services to transform and develop their economies. This inability to finance trade, especially the import and input products, restricted growth. As external debt levels rose, foreign exchange obtained was required to repay existing foreign debt. The inability to “grow” their economies led governments to rely on increased foreign borrowing or renegotiation of existing debt since Western aid to Africa has also been in decline. Western aid has also been linked to broader political agendas of supranational institutions (*e.g.*, World Bank, International Monetary Fund (IMF)), which emphasize foreign aid

in exchange for “the fostering of democracy and pragmatic economic policy” (Lyster 1996).

Many African countries are struggling to accomplish structural adjustments in the hopes of improving economic conditions. They can not expect to see much improvement in quality of life for their people without carrying through such structural adjustments, and thereby creating a climate conducive to foreign investment. The lack of economic diversification in exports limits the ability of most economies to react to adverse conditions that may arise in export markets. For example, prices on agricultural products fell during the 1980s, leaving agricultural exporting countries with deteriorating terms of trade and increasing debt levels.

Oppressive debt levels also burden much of Africa. The World Bank and the IMF have helped with debt restructuring, as have developed countries and financial institutions. However, Government spending remains high relative to gross domestic product (GDP) in many countries (as shown in Table 1). In Kenya, for example, government spending amounts to nearly 50 percent of GDP. High levels of government spending may also contribute to a “twin deficit” problem, since budget deficits contribute to current account deficits in developing countries (Ikoba, Nyatepe-Coo & Owoye 1996), and ultimately sustained currency depreciation.

Currently, the shortage of funds is a serious problem that limits production at least as much as trade barriers. In the developed world, government agencies and the private sector provide adequate financing to businesses, with trade being a major part of the effort. In developing countries, businesses may not have as broad an access to trade finance, or instruments, as do their counterparts in developed countries, but there are always some government agencies and financial institutions that actively make trade finance available. Even the least developed African countries have financial institutions that can assist in trade finance, and the

Table 1: Country Conditions *

	Principal Financial Institution in Trade Finance	GDP (Billions US\$)	Real GDP Growth Rate %	GDP per Capital (US\$)	Spending % GDP	Infl %	External Debt (Billions US\$)	Total Merch. Exports (Billions US\$)	Total Merch. Import (Billions US\$)	Foreign Exchange Reserves (Billions US\$)
Tier One Countries										
South Africa	about 60	121.9	2.3	3004	6.4	9.0	17.1	24.9	21.2	3.1
Cote D'Ivoire (est)	41	6.7	1.7	500	32	32.2	20.7	2.83	1.9	<0
Ghana	8	5.4	3.8	430	22.3	34	5.0	1.227	1.724	n.a.
Kenya	41	7.05	3.0	278	48.6	28.8	n.a.	1.912	2.569	506
Zimbabwe	>20	5.6	4.0	491	9.0	23	4.522	1.707	1.584	700
Tier Two Countries										
Nigeria (est)	>100	40.1	n.a.	42.1	n.a.	57.0	29.4	9.4	.5	1.658
Botswana	4 (major)	.122	4.0	2691.4	31.5	9.8	.470	1.846	1.634	4.4
Burkina Faso	7	.7	1.0	na	n.a.	27	n.a.	n.a.	N.a.	345 (1992)
Cameroon	7	6.6	3.3	532	19.8	48.4	N/A.	1.5	.808	N/A.
Gabon	11	4.185	N/A.	4185	N/A.	35	35.74	2.367	.700	63.3
Lesotho (1993 est)	4	.757	6.5	398	31	14	.450	.104	.970	.305
Namibia	5	8.827	3.6	1,465	30.9	10.7	N/A.	1.514	1.60	N/A.
Senegal	8	4.3	2.3	506	29.5	36	N/A.	.744	1.04	N/A.
Swaziland	4	.988	2.6	1,124	42.1	13.8	N/A.	.674	.884	225

	Principal Financial Institution in Trade Finance	GDP (Billions US\$)	Real GDP Growth Rate %	GDP per Capital (US\$)	Spending % GDP	Infl %	External Debt (Billions US\$)	Total Merch. Exports (Billions US\$)	Total Merch. Imports (Billions US\$)	Foreign Exchange Reserves (Billions US\$)
Tier Three Countries										
Congo (est)	2 (weak)	1,519	-7.0	586	46	40	N/A.	872	540	.012
Ethiopia	3 (est)	3,225	6.6	60.3	33.8	24.2	N/A.	228	423	.200
Guinea (1993)	6	3,206	4.0	439	N/A.	4.9	N/A.	590	837	N/A.
Madagascar	5	2,938	0.2	220	19.9	18	4,081	318	444	919
Malawi	10	1,290	-12.4	129	44.1	34.6	.024	365	226	.038
Mali	6	1,290	5	146	48.4	N/A.	1,787	249	402	N/A.
Mauritania	N/A.	1,060	5.6	480	N/A.	4	1,820	419	384	N/A.
Mozambique	5	1,000	5.7	61.7	69.2	40	5,157	165	1,096	N/A.
Niger	4	1,71	-36.8	201	16.2	42	1.41	.604	188	N/A.
Togo	5 major	981	N/A.	252	N/A.	40	N/A.	254	238	N/A.
Uganda	17	3,924	5	170.1	21.1	9	176	196	524	3.8
Tanzania	6	3,326	4.1	135.4	31.5	20	7,416	519	1,500	.220
Zambia	4	2,500	-6.9	280	15.4	35.1	N/A.	1,152	1,063	.194

* (1994, except where noted)

Data Source: National Trade Data Bank, International Trade Administration, 1995.

World Bank and the IMF are possible international funding sources, if the countries show consistent evidence of economic and political stability.

COUNTRY SPECIFIC ANALYSIS

Prior to the statistical analysis conducted in the next section, a more comprehensive analysis of individual African states is appropriate since the use aggregate numbers often mask the good performance of some countries and hide the dismal performance of others. (For instance the World Bank reports that Africa experienced a decline in the growth of gross domestic product (GDP) between 1978 and 1994 from 2.0 to 1.9 percent, while consumer prices rose overall by 15.9 percent from 1978 to 1982, and by 25.6 percent 1989 to 1994).

Of course, not all countries have developed equally. We will analyze three tiers of African development. Almost all of the countries in the study are under structural adjustment agreements with the IMF and World Bank. Tier One countries, however, are stronger and more committed toward improving the economic conditions and less dependent on a few, or even one, export products than are countries in Tiers Two and Three. Tier Two countries can continue to move ahead, but many have a short way to fall to become Tier Three countries, some of the poorest in the world.

Tier One involves countries like South Africa and Ghana, which have an adequate banking system and capital markets to support trade finance, at least for medium-to large-size projects. In these countries, the medium-to-large borrowing companies seem to have little problem finding necessary trade finance and working capital loans. In fact, commercial banks and venture capitalists appear to compete vigorously for financing such projects.

Tier two countries are less developed or are politically unstable, but have some large foreign and domestic banks that are active in lending and support of trade. In these countries, the issue may not be the amount of trade finance, but of having sufficient projects to fund. Ethiopia is a struggling example. In other countries, support for trade finance has not been adequately developed.

The third tier are the countries that are the least developed. These countries have some exports, but mostly they must import basic necessities, such as food products. This category includes a broad range of countries, from the Congo to Zambia.

Tier One Countries

Funds are more readily available to countries that show diligence toward improving economic policies and stability in government, especially effective legal systems. With stability, capital flows in as investors can confidently entrust their investment funds to borrowers. As readily shown in [Table 1](#), there are a large number of financial institutions active in five of the most economically developed and stable countries. South Africa is far out in front, with about sixty international and domestic institutions, followed by Cote d'Ivoire, Ghana, Kenya, and Zimbabwe. Nigeria could be included in this group, except that political unrest has made investments there less trustworthy.

South Africa has the most extensive financial network and is highlighted because it has the largest number and variety among all African countries, and thus shows the scope of what is possible. Rapid, stable growth and development have attracted a multitude of foreign and domestic financial institutions to South Africa. Governments around the world, and donor agencies, such as the World Bank, the IMF, and the US Agency for International Development (USAID) are finding ways to encourage finance of trade in goods and services in South Africa, by developing

programs specifically for that purpose. Export/import banks, acting primarily through commercial banks, guarantee performance of the parties involved and lend money for businesses to carry out trade transactions. These institutions act as providers of guarantees, documentation, and information in transactions, although they also extend credit to exporters and importers. Development banks, such as the African Development Bank or the South African Development Bank, have programs specific for increasing trade.

There are approximately 40 large European, Asian, and US commercial banks that are active in this market. Key areas of business for foreign banks include trade finance, letters of credit, foreign exchange activities, and services to offshore investors. These and other financial institutions are in place to assist exporters and importers in funding transactions, gaining assurances of payment, while protecting their customers and themselves against political and exchange rate risk.

Tiers two and three

These same financial services are available to and in other countries, but in more limited quantity and quality. Political and economic instability is so severe in certain countries as to discourage lenders from providing funds to sorely needed areas. Exporters selling to these countries guard payments by demanding alternatives to letters of credit, *e.g.*, cash in advance, or confirmed and irrevocable letters of credit.

There are nine countries with significant forms of trade in Tier Two, as shown in [Table 1](#). These countries have some infrastructure for development, but generally have high government debt burdens, and reliance on few products for export. This dependence has led to neglect of other productive sectors in which a country might develop a comparative advantage. Cameroon is an example. Long dependent on oil to spur growth, poor economic policies led to extensive external borrowing that

dragged the economy into a crisis from which the country is still trying to recover.

The need for a strong legal climate can not be questioned. The instability created by a poor or unenforced legal regime is disturbing to any potential investor or financial institution. Disputes involving foreign companies and their Cameroonian partners are commonplace. During 1994 and 1995, there were a number of cases where American companies were defrauded by their business partners or harassed by the courts and administrative authorities.

Tier Three countries are the poorest. Some are recovering from wars, draughts, famines, and other plights. These countries have some exports, and those are mostly raw materials whose export does little or nothing to build economic infrastructure within the country. Mostly, they must import basic necessities, such as food products. This category includes a broad range of countries, from the Congo to Zambia.

HYPOTHESES DEVELOPMENT

Our central hypothesis is that the size of the trade sector (as measured by the combined level of exports and imports to GDP) is a function of a number of key factors including both macroeconomic and financing variables. These include:

- (a) *The size of the trade sector is associated with the level of economic growth*

A number of authors (Ghura 1995; Fosu 1990; Skinner 1987; and Wheeler 1984) have already established a clear linkage between export growth and economic growth in less developed countries. It appears that outward oriented trade strategies promote external competitiveness, facilitating both export expansion and growth. An interpretation by Ghura (1995), of the neoclassical

growth models proposed by [Romer \(1986\)](#) and [Lucas \(1988\)](#), was that the policy environment and the correct mix of trade policy country can affect long-run economic growth through its effects on both physical and human capital. The alternate hypothesis that there is not an association may be due to lags in the influence of economic growth on growth in the trade sector, or that the earlier empirical findings are not universally applicable.

(b) *The size of the trade sector is associated with the level of individual wealth*

In the economic development literature, the savings-investment gap has long been identified as providing an obstacle to the achievement of a satisfactory rate of economic growth ([Root 1990](#), p. 522). Simply stated, countries with high levels of individual wealth have a greater capacity to both save and finance export and wealth generating investment, or spend on domestic or foreign manufactured items. The alternate hypothesis that there is not an association may be due to insufficient variation in the range of incomes to account for differences in the size of each countries trade sector.

(c) *The size of the trade sector is associated with the level of country risk*

The risk-return relationship is well established in the finance literature. In the international context, country risk is regarded as the key measure since it provides the basis for adjusting the multinational firm's cash flows for risk. The country risk variable is essentially a proxy for [Ghura's \(1995\)](#) macro-instability and political instability variable. Macro-instability is detrimental to investment growth and may hinder the efficient allocation of resources. Political instability adds a premium to the rate of return expected from investment, and thereby may discourage investment and growth. The alternate hypothesis that

there is not an association may be due to inefficiencies in the determination of country risk, or that risk is not a significant factor in influencing the level of trade.

- (d) *The size of the trade sector is associated with the degree of access to finance*

Funds may be made available to developing countries from a number of sources including: banks using bank loans or short-term trade instruments, such as documentary credits or letters of credit; syndicated international markets; borrowing using receivables as collateral, which occurs on forfeited or factored invoices. Ghura's (1995, p. 762) model, which linked economic growth and export volume growth, may be expressed in terms of export growth, and the impact of a country's variation in access to financial infrastructure represented by the range and quantity of financing options available to each country. In this context it is expected that developing countries have fewer financing options available to them and that this situation may impede trade.

This hypothesis is supported by recent economic theories concerning the rationing of loanable funds to some classes of borrowers (such as small business). These theories suggest that under conditions of uncertainty credit may be distributed using forces other than interest rates (see Basu 1989). Also to the extent that finance is not available within a country due to factors such as low savings rates, then firms in developing nations will need to rely heavily upon external funds to finance the growth of new assets, and also trade (Singh 1995). The alternate hypothesis that there is not an association may be due to insufficient variation in the range of financing options to account for differences in the size of each countries trade sector.

These relationships may be formally described as the degree of openness to trade for each the country at time (t) using the following functional relationship:

$$\text{EIGDP}_{it} = f(\text{GDPG}_{it}, \text{GDPPC}_{it}, \text{CRisk}_{it}, \text{TAF}_{it})$$

where: EIGDP_{it}	=	Exports plus Imports to GDP
GDPG_{it}	=	Real GDP Growth
GDPPC_{it}	=	GDP per Capita
CRisk_{it}	=	Country Risk (a measure of economic and political stability)
TAF_{it}	=	Total access to finance

A country's total access to finance may be decomposed into the following four variables (ABF_{it} , ASTF_{it} , AICM_{it} , ATDF_{it}), where:

ABF_{it}	=	Access to Bank Finance
ASTF_{it}	=	Access to Short-Term Trade Finance
AICM_{it}	=	Access to Finance from International and Syndicated Loan Markets
ATDF_{it}	=	Access to and Discount on Forfeiting or Factoring

This relationship may be tested using a modification of the general linear model of [Ghura \(1995\)](#) for testing cross-sectional effects:

$$\text{EIGDP}_{it} = \beta_{0it} + \beta_{1it}\text{GDPG}_{it} + \beta_{2it}\text{GDPPC}_{it} + \beta_{3it}\text{CRisk}_{it} + \beta_{4it}\text{ASTF}_{it} + \beta_{5it}\text{AICM}_{it} + \beta_{6it}\text{ATDF}_{it} + u_{ijt}$$

The expected empirical signs on these variables are all positive. The variable ABF captures a variety of largely short-term financing available for both the production and financing of trade. ASTF is generally for government-supported export transactions and would tend to be larger in monetary terms than those items financed through ABF. AICM would also tend to be government-supported financing, although larger corporations would also have access to international bond issues or syndicated lending. Forfeiting generally occurs for invoices with a face value greater than US\$500,000.

DATA AND METHODOLOGY

Data

Economic data was sourced from the US National Trade Data Bank, US International Trade Administration (US ITA 1996) and the International Financial Statistics of the International Monetary Fund (IMF 1996). Country risk and financing data was obtained from *Euromoney* (various issues 1992-1996). Twenty-two countries were considered since data was not available for some smaller countries. These countries included Botswana, Burkina Faso, Cote d'Ivoire, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Senegal, South Africa, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

The macroeconomic variables used were:

- (i) EIGDP = Merchandise exports plus
merchandise imports to GDP
- (ii) GDPG = GDP real growth
- (iii) GDPOP = GDP per capita

The country risk (CRisk) variable was *Euromoney's* (1992-1995) assessment of country risk and was based upon the weighted score calculated from three broad groups (analytical, debt and market indicators) with nine categories. The total score (100%) has a possible range from zero to 100. Low risk, highly developed western countries tend to have scores above 90, while riskier less developed countries have scores around 30. The categories were analytical (economic performance (25%) and political risk (25%)), debt indicator (debt levels and service ratios (10%)) debt in default or rescheduled (10%), credit ratings (10%: since only South Africa had a sovereign rating, this score was not considered in the later analysis). The remaining 20% comprised four separate measures of access to finance.

These four measures, each with a maximum value of 5% were:

- (i) Access to bank finance (ABF) based upon disbursements of private, long-term guaranteed loans as a per cent of GDP;
- (ii) Access to short-term trade finance (ASTF) from organizations such as the US export-import Bank;
- (iii) Access to international bond and syndicated loan markets (ACM), and reflects the ease with which a country would be able to issue bonds and other loans;
- (iv) Access to and discount on forfeiting (DOF) which reflects the average maximum tenor available and forfeiting spread over riskless countries such as the US. The score is the maximum tenor minus the spread (see [Euromoney](#) April 1995, p. 150).

Methodology

The general linear model with the form:

$$\text{EIGDP}_{it} = b_{0it} + b_{1it}\text{GDPG}_{it} + b_{2it}\text{GDPPC}_{it} + b_{3it}\text{CRisk}_{it} + b_{5it}\text{ASTF}_{it} + b_{6it}\text{AICM}_{it} + b_{7it}\text{ATDF}_{it} + u_{ijt}$$

was tested using standard multiple regression procedures, with the null Hypothesis $H_0: \beta_{nit} = 0$ for $n = 1$ to 7 , against the alternate Hypothesis H_a : at least one of $\beta_{in1} \neq 0$, for $n = 1$ to 7 . The multiple regression procedures involved the application of Ordinary Least Squares (OLS) techniques. Log values were used in the regression analysis to adjust for extreme variations in the observations. The regression was robust to the standard diagnostics for regressions using cross-sectional data including tests for heteroscedasticity, adjusted coefficient of determination (AR^2), and general misspecification due to lack of functional form. Multicollinearity between the variables was low (all variables had variance inflation

factors less than 3) despite some significant correlation between the variables.

EMPIRICAL RESULTS

The results are presented in three sections:

- (i) Simple description of the data (Table 2)
- (ii) Pearson rank correlation between variables (Table 3)
- (iii) Multiple regression of the linear model linking the size of the trade sector to the macroeconomic and financing variables (Table 4, Table 5 and Table 6)

(i) *Descriptive Statistics of African Variables*

Table 2 displays the descriptive statistics for the 22 Sub-Saharan African countries over the three-year period from 1992 to 1995. The extreme variation in economic performance is evident from the coefficient of variation (standard deviation/mean) of real GDP per capita of 2.456. There is also greater variation between the countries in their access to bank finance (coefficient of variation of 2.56) and forfeiting (1.947), than the other finance variables.

The plight of some countries is to have no access at all to the four forms of finance considered. Mali, Mauritania and Togo all have zero scores in all four categories and are all tier 3 countries. On the other hand there were 5 countries with very good access to finance including South Africa; Cote d'Ivoire; Botswana; and Kenya. However these countries have very different levels of economic performance and wealth with only South Africa and Botswana having a GDP per capita near US\$2000.

Table 2: Descriptive Statistics

Variable	N	Mean	Median	Tr Mean	St Dev.	SE Mean
EIGDP	66	0.7604	0.6554	0.7308	0.3806	0.0469
GGDP	66	0.2410	0.1965	0.2139	0.2622	0.0323
GDPPPOP	66	647	97	545	1075	132
CRISK	66	31.44	29.63	31.01	10.23	1.26
ABF	66	0.330	0	0.194	0.845	0.104
ASTF	66	0.862	0.585	0.762	1.045	1.29
ACM	66	0.856	1	0.762	0.964	0.119
DOF	66	0.453	0	0.344	0.882	0.109

Variable	Minimum	Maximum	Q1	Q3
EIGDP	0.2529	2.1921	0.4933	0.9511
GGDP	0.2056	1.6020	0.0898	0.3337
GDPPPOP	42	3570	42	438
CRISK	10.406	60.25	24.60	37.5
ABF	0	4.965	0	0.119
ASTF	0	3.830	0	1
ACM	0	4.5	0	1.5
DOF	0	3.39	0	0.390

(ii) *Correlation Analysis of African Variables*

The correlation matrix of the various variables employed is displayed in Table 3. The high positive correlation between GDP per capita and country risk (correlation of 0.431) suggests that GDP per capita is an important indication of the level of country risk in an African nation. Generally the country risk variable was positively correlated with all the four financing variables. This was expected since the country risk variable is partly composed of the individual financing variables. The size of the trade sector (EIGDP) was also highly correlated with GDP growth (0.412), which is consistent with the economic development literature. The two financing variables, access to capital markets and discount on forfeiting, were positively correlated with the scale and scope of

the trade sector, and were also positively linked to per capita wealth (GDPOP to ACM was 0.49).

Table 3: Correlation (Pearson)

	EIGDP	GDPPPOP	GGDP	CRISK	ABF	ASTF	ACM
GDPPPOP	0.412 0.001						
GGDP	-0.455 0.000	-0.491 0.000					
CRISK	0.177 0.155	0.431 0.000	-0.327 0.007				
ABF	0.134 0.282	0.288 0.019	-0.240 0.052	0.340 0.005			
ASTF	-0.051 0.684	0.182 0.144	-0.246 0.046	0.541 0.000	0.402 0.001		
ACM	0.400 0.001	0.485 0.000	-0.378 0.002	0.576 0.000	0.338 0.005	0.413 0.001	
DOF	0.245 0.047	0.455 0.000	-0.339 0.005	0.663 0.000	0.332 0.006	0.574 0.000	0.677 0.000

Cell Contents: Correlation and P-Value

(iii) *Multivariate Analysis of African Trade, Economic and Financing Variables*

The multivariate regression results are presented in Table 4, the analysis of variance is presented in Table 5 and a stepwise regression of the significant coefficients is presented in Table 6. The regression was statistically significant with an adjusted R-squared value of 28.1%, and an F-statistic of 3.23 (a rejection of the null hypothesis that the coefficients are zero at the 99% level).

The overall result suggests that the level of exports and imports in the economy was positively linked to the rate of growth of GDP but not significantly to the quantity of wealth available to individuals in an economy (as measured by GDP per capita), or the level of country risk. Since the variable for GDP growth was the logarithm of a ratio, then the negative sign on the regression

coefficient of -0.24439 will have a positive influence on the level of trade. Consequently some nations with low levels of per capita wealth, high debt and debt service ratios, political risk (the principle components of country risk) still managed to maintain levels of trade. The lack of significance of the variable for per capita wealth may also be a consequence of the heterogeneous nature of income distribution in many African nations.

Two of the four financing variables were statistically significant at least at the 5% level (ASTF, ACM). However the sign of the ASTF coefficient was negative. This suggests that successful trading nations are not dependent upon access to short-term finance from US-based trade financing organizations (*e.g.*, export-import Bank), but are more likely to use international markets for financing trade-related activities.

Table 4: Multivariate Regression Analysis

The regression equation is

$$\text{EIGDP} = 0.762 + 0.0306 \text{GDPPPOP} - 0.244 \text{GGDP} - 0.154 \text{CRISK} + 0.066 \text{ABF} - 0.550 \text{ASTF} + 0.565 \text{ACM} + 0.108 \text{DOF}$$

Predictor	Coefficient	St. Dev.	T	P	VIF
Constant	0.7621	0.5584	1.36	0.178	
GDPPPOP	0.03059	0.02957	1.03	0.0305	1.7
GGDP	0.24439	0.09089	2.69	0.009	1.4
CRISK	0.1539	0.4037	0.38	0.705	2.1
ABF	0.0657	0.2690	0.24	0.808	1.3
ASTF	0.5497	0.2569	2.14	0.037	1.8
ACM	0.5647	0.2737	2.06	0.044	2.1
DOF	0.1085	0.3297	0.33	0.743	2.6

S = 0.3228; R-Sq = 35.8%; R-Sq(adj) = 28.1%

Table 5: Analysis of Variance

Source	DF	SS	MS	F	P
Regression	7	3.3739	0.4820	4.63	0
Residual Error	58	6.0430	0.1042		
Total	65	9.4169			

Source	DF	Seq SS
GDPPPOP	1	1.5964
GGDP	1	0.7908
CRISK	1	0.0174
ABF	1	0.0006
ASTF	1	0.3552
ACM	1	0.6022
DOF	1	0.0113

Table 6: Stepwise Regression

Response is EIGD on 7 predictors, with N = 66

STEP	1	2	3	4
Constant	0.5326	0.4800	0.5392	0.5444
GGDP	-0.333	-0.260	-0.283	-0.244
T-Value	-4.08	-3.04	-3.45	2.76
ACM		0.48	0.68	0.58
T-Value		2.28	3.18	2.54
ASTF	0.55	0.54	-0.55	-0.54
T-Value			-2.66	-2.58
GDPPPOP				0.031
T-Value				1.13
S	0.342	0.331	0.316	0.315
R-Sq	20.67	26.73	34.21	35.56

CONCLUSIONS

The results suggest that the following variables were associated with the level of the trade sector:

- (i) Access to short term finance from supranational organizations and access to international bond and finance markets
- (ii) GDP growth

The regression results presented in the paper were robust to all standard diagnostics including multicollinearity. We conclude that since access to bank finance is an important factor associated with high levels of trade, then strategies which foster the development of bank finance may be key to sustained economic development and improvement in the standard of living of many African nations.

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