

MACROECONOMIC DETERMINANTS OF PRIVATE INVESTMENT IN THE ECONOMIC COMMUNITY OF WEST AFRICAN STATES (ECOWAS)

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This study investigates the impact of macroeconomic factors on private investment in the Economic Community of West African States (ECOWAS) sub-region of Africa during the period 1986-2006. The study employs panel data techniques of analysis covering 15 ECOWAS countries. The problem of endogeneity in model specification was addressed by constructing an alternative GMM estimator that combined the level and first difference specifications using lagged levels of variables as instruments. Empirical results indicated that macroeconomic instability hindered private investment in the ECOWAS. There is evidence that inappropriate macroeconomic policy management (fundamentals-real exchange and interest rates) contributed significantly to the poor investment performance. In the same vein, external debts constrained private investment in this African sub-region. The study concludes that progress towards macroeconomic stability, reduction of external debts and increased government investment would play a major role in stimulating private investment in the sub-region.

I. Introduction

The major features of most developing countries [including those in the Economic Community of West African States (ECOWAS)]¹ in the mid-1980s were macroeconomic policy reforms. Such reforms were made in exchange rate regimes, international trade, monetary, fiscal and macroeconomic policies. These reforms were geared towards enhancing both the macroeconomic and microeconomic environment with a view to stimulating economic growth. After about two decades of such experiments in reform, ECOWAS countries have shown some signs of

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¹ ECOWAS is a regional group of fifteen countries founded on May 28, 1975 with the signing of the Treaty of Lagos. Its goal is to promote economic integration in West Africa. The countries in ECOWAS include: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire (Ivory Coast), Ghana, Guinea, Guinea-Bissau, Mali, Niger, Nigeria, Senegal, Sierra Leone, Liberia, Gambia, and Togo.

economic recovery. For example, real GDP growth that averaged 0.91 per cent in 1980-85 rose to 2.78 per cent in 1986-2004. Similarly, per capita GDP growth improved moderately from -0.23 per cent to 0.03 per cent during the same period. However, this recovery has not been too impressive when compared with similar growth rates in other continents. For example, the 2.78 per cent GDP growth rate achieved by ECOWAS countries in 1986-2004 does not compare favourably with the 4.22 per cent and 5.53 per cent in East Asia and South Asia, respectively. Besides, such growth rates are lower than the sub-Saharan African average of 3.28 per cent.

Various attempts have been made to explain Africa's poor economic performance [Collier and Gunning, (1999), Bloom and Sachs, (1998), Easterly and Levine, (1992)]. The consensus of these studies is that the low investment rate is a key factor behind the poor economic performance of many countries in the region. Low investment rates are a major concern for policy makers because of its significance for growth. Studies on the determinants of investment reveal that the behaviour of investment is closely related to the growth rate of an economy and income per capita [Ben-David (1998), Barro (1991), Khan and Reinhart (1990), De Long and Summers (1993), Levine and Renelt (1992) and Guncavdi et al. (1999)]. The possible increase in the vulnerability of the countries with low investment rates is another basis for concern for policy makers in the African continent.

But what factors account for the low investment rates in African countries in general and ECOWAS in particular? Some authors have pointed at macroeconomic factors [Serve (1998), Kumar and Mlambo (1995) and Oshikoya (1994)]. For instance, Bigsten, (1999), showed that standard macro-policy variables, such as exchange rates and trade policy, fiscal and monetary policies, and public service provision explain a substantial part of the weak investment performance of African countries. No specific attempt has been made to analyse the determinants of private investment in the ECOWAS sub-region that consists of some of the least developed countries in the African continent.

This study investigates the effect of macroeconomic factors on private investment in the ECOWAS sub-region of Africa during the period 1986-2006.

II. Overview of Recent Economic Performance in ECOWAS

The economic performance of the ECOWAS sub-region vis-à-vis sub-Saharan Africa and the Asian continent (the fastest growing economies) is shown in Table 1. The table reveals a decline in the total investment rate in ECOWAS from 17.46 per cent of GDP in the 1980-85 period to 17.23 per cent in the 1986-2004 period. Similarly, the savings rate dropped from an average of 8.5 per cent to 6.91 per cent. Despite the negative developments in investment and savings, there was positive

TABLE 1Economic Performance of ECOWAS
Compared with other Regions

	1980-85	1986-2004	2005	2006	2007
<i>ECOWAS</i>					
GDP growth (per cent)	0.914	2.78	3.21	4.12	4.5
Savings (per cent of GDP)	8.5	6.91	7.31	7.88	7.17
GDP per capita growth (per cent)	-0.23	0.032	0.11	1.12	2.11
Investment (per cent of GDP)	17.46	17.23	18.45	18.62	17.9
<i>Sub-Saharan Africa</i>					
GDP growth (per cent)	3.828	3.286	3.97	4.49	4.55
Savings (per cent of GDP)	9.861	8.089	10.23	10.92	11.2
GDP per capita growth (per cent)	0.93	0.718	0.99	10.3	11.3
Investment (per cent of GDP)	20.239	20.068	22.12	21.89	22.2
<i>East Asia</i>					
GDP growth (per cent)	5.159	4.221	4.96	5.71	5.59
Savings (per cent of GDP)	2.97	2.521	33.5	35.0	40.8
GDP per capita growth (per cent)	21.897	22.62	4.49	5.31	5.20
Investment (per cent of GDP)	27.401	26.452	9.65	4.66	6.13
<i>South Asia</i>					
GDP growth (per cent)	3.816	5.534	7.4	6.9	5.7
Savings (per cent of GDP)	1.6	3.071	44	5.0	2.5
GDP per capita growth (per cent)	9.954	19.296	17.5	18.4	12.2
Investment (per cent of GDP)	17.524	25.019	29.3	31.4	31.2

Source: World Bank, World Development Indicators, 2008.

growth in GDP from 0.914 per cent to 2.78 per cent during this period. This, coupled perhaps with declining population especially in the war torn countries such as Liberia and Sierra Leone, resulted in an improvement in the GDP per capita from -0.23 per cent to 0.032 per cent.

Comparing economic performance in ECOWAS with sub-Saharan Africa and Asia, the indications are that ECOWAS' performance has been relatively poor. For instance, investment, a major driver of growth, is much lower in ECOWAS than in sub-Saharan Africa and Asia. Similarly, the growth in GDP and per capita GDP are lowest in ECOWAS.

The distribution of real GDP of the ECOWAS countries in 2004 and 2006 is shown in Table 2. It can be gleaned from the table that Nigeria generated the largest share of real GDP in ECOWAS in 2004. Specifically, over half of the region's

TABLE 2
ECOWAS' Real GDP
(Constant 2000 US\$ and Share in per cent)

Countries	2004 (constant 2000 US\$ million)	Share of group GDP (%) in 2004	2006 (constant 2000 US\$ million)	Share of group GDP (%) in 2006
Nigeria	51,692	56.3	60,413	58.9
Cote d'Ivoire	10,261	11.2	10,468	10.2
Ghana	6,033	6.6	6,357.2	6.2
Senegal	5,247	5.7	5,520.7	5.4
Guinea	3,495	3.8	3,621.2	3.5
Burkina Faso	3,182	3.5	3,334.4	3.2
Mali	3,105	3.4	3,294.1	3.2
Benin	2,678	2.9	2,753.7	2.7
Niger	2,108	2.3	2,183.5	2.1
Togo	1,461	1.6	1,502.4	1.5
Sierra Leone	833	0.9	1,203.3	1.2
Cape Verde	639	0.7	677.4	0.7
Gambia, The	498	0.5	508.5	0.5
Liberia	421	0.5	444.2	0.4
Guinea-Bissau	210	0.2	213.4	0.2

Source: World Bank, World Development Indicators, 2008.

GDP emanated from this country. The huge gap between Nigeria and the next country (Cote d'Ivoire) is evident from the table. The explanation for this can be anchored on the fact that Nigeria is a major oil producer. Cote d'Ivoire generated only 11.2 per cent of the total GDP. At the bottom of the ladder are Cape Verde (0.7 per cent) and Guinea Bissau (0.2 per cent).

The Gross Domestic Product (GDP) is not a sufficient indicator for the judgment of the economic performance of any country. Since the countries have varying population, it is necessary to consider the per capita GDP. This is shown in Table 3. From the table, it is clear that even though Cape Verde is one of the least contributors to the overall ECOWAS GDP, the country has the highest per capita GDP (US\$1915), as a result of its low population. This is followed by Cote d'Ivoire (US\$860), Senegal (US\$707) and Nigeria (US\$559). The remaining countries had less than US\$500 per capita in 2004.

TABLE 3

ECOWAS'S Per Capita Nominal GDP in US\$

	2004 (US\$)	2006 (US\$)
Cape Verde	1915	1337
Cote d'Ivoire	860	577
Senegal	707	474
Nigeria	559	459
Benin	509	385
Guinea	430	335
Gambia	415	326
Ghana	403	287
Mali	374	252
Burkina Faso	371	244
Togo	344	244
Niger	237	218
Sierra Leone	215	156
Liberia	164	135
Guinea-Bissau	140	135

Source: World Bank, World Development Indicators, 2008.

III. Review of Relevant Literature

There is a dearth of empirical evidence to show that various macroeconomic factors influence investment levels in Africa and the ECOWAS in particular. Some of the related studies are reviewed below.

Iyoha (2000) posited that low income and savings in many African countries have widened the 'investment-savings gap, which can be financed by development assistance or by the active participation of foreign private investment. Identifying the main determinants of the flow of investment to developing countries, Pfeffermann and Madarassy (1992), Serven and Solimano (1992); examined a number of factors including the size of domestic markets, capacity utilisation, fiscal deficits, inflation, exchange rate volatility, interest rates, macroeconomic policies and institutional factors. In the same vein, Emenuga (1996), identified these same factors and subsumes all of them under what he called the 'environment'. He pointed out that a conducive environment is a factor germane to the flow of foreign private investment, especially in developing countries. Similarly, Ekpo (1997), Iyoha [(1998) and (2000)], and Magbagbeola (1998), who examined the determinants of foreign private investment in Nigeria; and foreign authors such as Serven and Solimano (1992), Meieir (1995), Fernandez-Arias and Montiel (1996), who carried out similar studies in developing countries, all supported the idea that the main determinant of the flow of foreign private investment is a stable policy environment. Athukorala and Sen (1995), examined the determinants of private corporate investment in India with emphasis on the implications of the policy reforms initiated in 1991. The results suggest that adverse impact of the decline in public investment has been outweighed by the positive effects of the decline in the cost of capital and favourable changes in investor perception brought about by the reforms.

Ibarra (1995) assessed whether the programme of trade liberalisation undertaken by Mexico in the post-1985 period was undermined by a lack of credibility. He provided an empirical counterpart to some of the credibility issues that have been discussed in the literature, and proposed a methodology based on the estimation of a probit model, to measure the probability of trade policy reversal due to the likelihood of the occurrence of a balance of payments crisis. He reported that the probability of trade policy reversal reduced the rate of capital accumulation during the first years of the reform. An empirical analysis of the impact of the practice of trade policy and its credibility on private investment in Nigeria was conducted by Busari and Omoke (2006). Firm level data of 67 Nigerian firms over the period of 1980 to 2003 were estimated using panel regression estimation techniques. Their results underscored the link among private investment, trade policy, and macroeconomic uncertainty. Many of the trade and volatility measures in their study showed a strong negative association with private investment. The results also showed that

the practice of trade policy in Nigeria has deterred investment by raising the cost of importing which invariably affected firms with high import intensity. The study recommended the need to liberalise international capital movement in Nigeria and drastically reduce the cost of importing capital goods.

External debt affects private investment through two main channels. First, the resources deployed to service the debt crowds out public investment, which because of the complementarity between public and private investment, discourages private investment. Second, the external debt ratio could be indicative of a "debt overhang", whereby the presence of high debt ratios leads economic agents to anticipate future tax liabilities for its servicing [Borensztein (1990), and Eaton (1987)]. The effects of fiscal policy on economic activity are also ambiguous in the theoretical and empirical literature. In a broad sense, fiscal policy encompasses stabilisation, growth and distributional objectives and entails tax measures, expenditure measures that directly affect economic activity and encourage the development of the private sector through investments in physical and social infrastructure, etc. The empirical literature has focused on the overall budget deficit with higher deficits crowding out the private sector as a result of lower access to bank credit. Government investment has also been used as a direct proxy for the government's contribution to capital accumulation. The relationship between public investment on infrastructure and private investment has been found to be complementary [Blejer and Khan (1984), Serven and Solimano (1992), Greene and Villanueva (1991)]. Public investment that engenders higher fiscal deficits may crowd-out private investment through high interest rates, credit-rationing and so on. The Nigerian case, which is fraught with poor quality service in energy, communication and transport, is a confirmation of this [Ariyo and Raheem (1991)].

The direction of the effects of inflation on private investment is ambiguous in the theoretical literature. According to the Tobin-Mundell effect, higher anticipated inflation leads to a lower real interest rate and causes portfolio adjustments away from real money balances toward real capital; hence higher anticipated inflation would be expected to lead to higher real investment. But in the case of developing countries with underdeveloped capital and financial markets, the portfolio adjustments would most likely be from real money balances to real assets. Thus, higher anticipated inflation in these countries is expected to result in lower private investment. Further, inflation serves as an indicator of the credibility of the authorities' commitment to a stable macroeconomic environment in the context of developing countries. The presence of high and variable inflation rates is expected to lower the credibility of the authorities' vis-à-vis the private sector and reduce the returns on private investment. Thus, higher rates of inflation are expected to lower private investment. In addition, inflation and volatile exchange rates have negative effects on foreign direct investment. According to Ariyo (1998) high and rising inflation

rates raise expectations of currency devaluation, which heightens fears of a rise in the cost of inputs. He further asserted that unstable exchange rates also create foreign exchange risks and an uncertain investment climate.

An important characteristic of the ECOWAS countries is the large involvement of the public sector in economic activities. Public investment in these countries is used to promote the twin objective of employment and economic growth. Theoretically, there are two opposing points of view regarding the effects of public investment on the private sector. According to the positive view, in a country where the goods markets are imperfect and the financial markets are not well developed, appropriate forms of public investment may help to make product and factor markets work more efficiently and to generate spillover effects on the private sector. The negative point of view, however, suggests that public investment competes with private investment for available funds; this may be especially disadvantageous where the investment is undertaken by heavily subsidised and inefficient state-owned enterprises. In addition, with a repressed financial system, the crowding out effects of the financing of public capital expenditure through external and internal borrowing is likely to be particularly severe.

Exports are implicitly taxed by an overvalued exchange rate while imports are subsidised, thereby resulting in a trade deficit. The essence of devaluation, therefore, is to correct an overvaluation, thereby improving external competitiveness by inducing a real depreciation. The theoretical literature is ambiguous on the effect of the real exchange rate on private investment. On the one hand, a real depreciation raises the cost of imported capital goods, and since a large component of investment goods is imported in developing countries, domestic investment would be expected to fall with real depreciation. On the other hand, real depreciation, by raising the profitability of activity in the tradable goods sector, would be expected to stimulate private investment in this sector.

The crucial role played by financial deepening in increasing the rate of domestic saving, and thus in lowering the cost of borrowing and stimulating investment has been emphasised by McKinnon (1973) and Shaw (1973). In addition, if financial deepening contributes to an increase in the expected profitability of capital, it would also be expected to encourage investment. It is a standard empirical finding that financial factors, such as the availability of credit for private firms, may influence private investment. This is particularly relevant to ECOWAS countries where financial liberalisation, as an integral component of economic reforms, is aimed at relaxing the stringency of credit constraints on the corporate sector so as to increase investment.

IV. Theoretical Framework and Empirical Methodology

a) *Theoretical Framework: Determinants of Private Investment*

Significant attention has been given to investment behaviour in both the theoretical and empirical literature. However, the literature is yet to provide a full-fledged model of investment applicable to the context of developing countries. Conventional models such as the flexible accelerator model, the expected profits model, the neoclassical model, Tobin's Q model and uncertainty models proved quite successful in explaining aggregate investment in industrial countries. The main assumptions of these models (such as perfect capital markets, absence of liquidity constraints and abstraction from role of government) however, are not realistic in the context of developing economies, thereby hampering the full scale application of these models to these countries [Ndikumana (2000)]. Nonetheless, a few important elements of some of these models are quite relevant in explaining the behaviour of private capital formation in developing countries [Sundararajan and Thakur (1980)]. Therefore, this study explores the neoclassical investment model to develop an estimation model.

Modeling private investment in this study begins with a theoretical model which follows the neoclassical argument that the investment expenditure of a firm is a function of two broad elements: the accelerator and the user cost of capital elements [Athukorala and Sen (1996), and Busari and Omoke (2006)]. The accelerator principle captures the link between changes in capital stock (capital accumulation) and the rate of change of output. On the other hand, the user cost of capital shows the degree of substitutability between capital and other inputs.

Employing a two-factor model of investment behaviour in the convention of neoclassical theory; capital and labour, the firm maximises profit subject to technology that can be represented by a Constant Elasticity of Substitution (CES) production function:

$$Y = \gamma (K^\rho + L^\rho)^{\nu/\rho} \quad (1)$$

where γ is the efficiency parameter, ρ is the substitution parameter, and ν is the returns to scale parameter. Based on the first order conditions, the desired capital stock can be expressed as follows:

$$K^* = A(Y)^\phi (\omega_k/p)^{-\sigma} \quad (2)$$

where K^* denotes the desired capital stock; Y represents the real output; ω_k is the user cost of capital; p is the output price; σ is the elasticity of substitution between capital and labour; ϕ is the elasticity of the optimal capital with respect to output,

and A is a scale factor. The user cost of capital can be presented as:

$$\omega_k = P_k [(r-\pi / (1+\pi) + \delta-k-\tau z) / (1-\tau)] \quad (3)$$

where P_k is the purchase price of a unit of new capital; r is the nominal financial cost of capital, usually a weighted average of the external and internal cost of funds; π is rate of inflation; δ is the rate of depreciation of the capital stock; τ is the rate of corporate income taxation; k is the rate of investment tax credits; and z is the present value of tax depreciation allowance.

When we take the differential of the logarithmic transformation of equation (1), and introduce adjustment cost with the aid of a distributed lag function of the Koyck type, we can obtain an expression that connects current investment level (I/K_{t-1}); (a) to past investment (I_{t-1}/K_{t-2}); (b) to rate of change in output (ΔY_t); and (c) to rate of change in the relative price of capital [$\Delta(\omega_k/p_t)$]. In order to transform these mathematical expressions into an economic model of investment behaviour, the actual rates of changes of output and the relative price of capital need to be replaced by their expected forms. Thus, equation (4) below presents the basic model of investment behaviour [Ibarra (1995), Athukorala and Sen (1996) and Busari and Omoke (2006)]:

$$I/K_{t-1} = k_0 + k_1 [I_{t-1}/K_{t-2}] + k_2 E_t [\Delta \ln(Y_t)] + k_3 E_t [\Delta \ln(\omega_k/p_t)] \quad (4)$$

$$K_1, k_2 > 0; k_3 < 0$$

$E_t(\bullet)$ denotes the expectation operator applied to the information set available at the beginning of time, t usually proxied by an autoregressive process. Equation (4) shows that the conventional determinants of investment are rate of change of output and relative price of capital. It should be noted that investments are of various forms (private, public, domestic, foreign, etc). The concern of this paper is private investment (which could be enhanced or hindered by either public or foreign investment or debt).

b) Empirical Methodology

1. Model Specification

Arising from the foregoing theoretical framework and the review of past literature presented earlier, we came up with an extended model of determinants of private investment which covers both conventional factors [those in equation (4) above-rate of change of output and relative price of capital], and new factors (emerging factors) identified in the empirical literature such as uncertainty and policy fac-

tors (inflation rate, exchange rate, public investment, external debt, and credit). Since the focus of this paper is private investment, we therefore denote I/K_{t-1} in the equation (4) above as $prinv$, and the equation to be estimated is presented as follows:

$$prinv_{it} = f(x_{it}) + \mu_{it} \quad (5)$$

where $prinv$ is the log of private investment rate, x is a set of conventional and emerging factors determining private investment and μ is a random disturbance, and the subscripts $i=1, \dots, N$ and $t=1, \dots, T$, respectively refer to the cross-section and time-series dimension of the data.

Among the x variables are the growth rate of the GDP, to capture the conventional accelerator effect; real interest rate to capture the user cost of capital. However, in view of the pervasive role of interest rate controls and non-price rationing mechanisms in developing country financial markets – that may render observed interest rates uninformative as to the true marginal cost of funds, the specification of a measure of the overall tightness of credit markets, namely the flow of credit to the private sector relative to GDP is included; this is expected to have a positive effect on private investment; the real exchange rate captures the exchange rate policy of the governments; the variable is expected to have a negative effect on private investment; inflation adversely affects private investment while public investment could crowd-in or out private investment.

2. Estimation techniques and sources of data

Empirical implementation of equation (5) using cross-country time-series data raises some methodological issues. A major one is the likely correlation between the country specific disturbances and the determinants. Another complication arises from the possibility of the determinants being jointly determined with investment. The standard approach to addressing these problems involves differencing the equation to remove the time-variant disturbance. This requires the use of the instrumental variable procedure to correct for the endogeneity of the columns of x . However, this approach has its drawbacks. First, differencing the equation removes the long-run (cross country) information present in the levels of the variables. Second, if the columns of x display persistence over time, their lagged levels will be poor instruments for their difference. These problems are overcome by constructing an alternative GMM estimator that combines the level and first difference specifications. Thus, using lagged levels of the variables as instruments for the first difference specification overcomes these problems

Empirical analysis was conducted for the panel of ECOWAS consisting of 15 countries, namely: Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gabon, Gambia,

Ghana, Guinea, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo. An important advantage of using panel data is that they capture both time series and cross section variations in investment and its determinants. Odedokun, (1996), found that panel data estimation yields more robust results.

The data for the study covering 1986-2006 were extracted from international sources. Specifically, data on private investment, government investment, external debt, and inflation were obtained from the World Bank African Database, (2008). The World Development Indicators of the World Bank, [WDI, (2008)] provided data on the real interest rate and the growth rate of the Gross Domestic Product while data on the real exchange rate and credit to the private sector were derived from the International Financial Statistics of the International Monetary Fund, [IFS, (2008)].

V. Empirical Results

Before presenting the results of the analysis, some basic descriptive statistics of the data employed in the analysis are presented in Table 4. The average private

TABLE 4

Descriptive Statistics of Data
(average of each variable over the period of study)

Variables	ECOWAS
Private Investment (per cent GDP)	8.41
Government Investment (per cent GDP)	9.90
Inflation Rate (per cent)	13.19
External Debt (per cent GDP)	45.28
Real Exchange Rate (per cent)	109.53
Credit to Private Sector (per cent GDP)	15.62
Real Interest Rate (per cent)	4.13
Growth in RGDP(per cent)	3.41

Source: Author's estimates based on data obtained from the World Bank Data Base, [CD ROM, (2008)].

investment rate in the ECOWAS sub-region for the period under focus is 8.41 per cent. About 13 per cent of the sampled countries have private investment rates less than this average while the remaining 87 per cent had private investment rates greater than the ECOWAS average. It is also important to note that most of the countries had single digit private investment rates. Specifically, about 67 per cent of the countries had investment rates less than 10 per cent, implying that only 33 per cent had investment rates greater than 10 per cent. The low private investment rate in a large number of the ECOWAS countries would have important implications for growth in specific countries and the ECOWAS as a group.

The results of the pooled estimates of the basic model are presented in Table 5. The first column reports OLS estimates, which ignore the potential endogeneity of the regressors as well as the possible presence of country-specific effects. The coefficients are in general very small and accord largely with theoretical expectations. The signs of the coefficients on the standard investment determinants appear reasonable. Credit to the private sector and public investment has a positive effect on private investment in the ECOWAS, while the opposite applies to the real interest rate, real exchange rate and inflation. However, only the real exchange rate is found to significantly explain private investment.

The second column reports fixed-effect estimates. In short panels, fixed-effect estimates are considered inconsistent. Nevertheless, the results are presented. The results appear generally better than those of the OLS. A number of the coefficients which were insignificant under the OLS such as public investment, external debt, credit to the private sector and growth in GDP were significant.

The third and fourth columns of Table 5 report the difference and system GMM estimates respectively, that attempt to correct for both endogeneity and unobserved country-specific effects. The regressions assume that all the explanatory variables are endogenous, and consequences all instrumented. The lagged values of the variables were used as instruments.

The difference-GMM estimates in column 3 show a trend mostly similar to column 2, except that the magnitudes in the former are larger. Precision is poor and only the real exchange rate and public investment are significant.

Unlike the estimates in columns 2 and 3, which utilised only the time-series dimension of the data, the system-GMM estimates in column 4 exploit the cross-section dimension as well. On the whole, the system estimates are quite precise. The conventional investment determinants have the expected signs and their magnitudes are relatively higher than those of preceding estimation methods.

A remarkable point is that both the coefficients of credit and the real interest rate are significant, suggesting the simultaneous presence of price and quantity effects on private investment stemming from financial markets. Public investment complements private investment in concord with Blejer and Khan (1984), Greene and Villanueva (1991), and Wai and Wong (1982), for a diverse group of developing

TABLE 5

Pooled Estimates of Investment Equation for ECOWAS

Equation	1	2	3	4
Estimation Method	OLS	Fixed Effects	First Difference GMM	System GMM
Constant	0.005 (1.453)	-0.010 (1.653)	0.072 (1.453)	-1.821** (2.314)
Inflation	-0.011 (0.198)	-0.002 (1.332)	-0.054 (1.568)	-1.605** (2.015)
Real exchange rate	-0.032* (2.705)	-0.098** (2.425)	-0.749** (2.024)	-0.431 (2.321)
Public investment	0.073 (1.456)	0.222** (2.380)	0.402** (2.367)	0.821** (2.452)
External debt	-0.227 (1.276)	-0.435** (2.333)	-0.150 (1.795)	-0.754** (2.543)
Credit to private sector	0.241 (1.669)	0.449* (1.856)	1.052 (1.689)	2.154** (2.354)
Real interest rate	-0.253 (1.543)	-0.253 (0.978)	-0.441 (1.254)	-0.521** (2.541)
Growth in GDP	0.081* (1.987)	0.241* (1.987)	0.729 (1.541)	1.765** (2.856)
Wald test of joint significance (p-value)	0.000	0.000	0.000	0.000
Time effects (p-value)	0.001	0.001	0.003	0.000
Sargan test (p-value)	NA	NA	0.412	0.762
1 st -order autocorrelation (p-value)	NA	NA	0.003	0.001
2 nd -order autocorrelation (p-value)	NA	NA	0.132	0.156
Number of observations	207	207	207	207

Notes: One (*) and two (**) stars denote statistical significance at the 10 and 5 per cent level respectively. The figures in parentheses are t-statistics.

countries. Thus, government investment by providing positive externalities, fosters private capital accumulation and by extension, growth.

Inflation significantly constrains private investment in the sub-region which is in conformity with findings in the literature [Greene and Villanueva (1991), and Ozler and Rodrik (1992)]. Inflation makes it difficult to extract the correct signals from relative price movements, thereby resulting in an inefficient allocation of economic resources, including capital. In addition, it dampens the morale of investors by signaling the non-commitment of the government to a stable macro-economy required for profitable investment purposes. The results suggest that macroeconomic stability plays an important role in stimulating private investment in the concerned sub-region. Thus, private investment is enhanced in an environment where the rate of inflation is low.

The results of the effects of external debt are consistent with the debt-overhang hypothesis. Increase in the external debt ratio dampens private investment, confirming similar results for private investment by Borensztein (1990a) and (1990b), Greene and Villanueva (1991), and Oshikoya (1994).

VI. Conclusions

The analysis of this paper has demonstrated that the poor performance of ECOWAS countries since the mid-1980s has stemmed primarily from differences in the policies pursued by individual countries or country groups, particularly in the context of a deteriorating external environment.

The empirical results with actual data during 1986-2006 have indicated that macroeconomic stability and structural reforms help to boost investment. The evidence suggests that inappropriate macroeconomic policies were the second largest contributory factor to the poor investment performance. Progress towards macroeconomic stability and increasing government investment play a major role in stimulating private investment.

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