CAPITAL MARKETS: ROLES AND CHALLENGES\textsuperscript{*}

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ABSTRACT

Globally, the evolution of capital markets in the last two decades has been dichotomous, in the sense that the markets have experienced integration as well as segmentation. The dichotomous evolution poses important challenges for the roles that these markets can play in emerging economies. This paper aims to examine the roles and challenges of capital markets, with special focus on Africa. The paper draws on economic theory to assess the potential role of capital markets, in terms of consumption, investment and economic growth; more specific roles with respect to corporate financing, asset pricing and corporate governance are highlighted. It is argued that the macroeconomic policy environment is critical in influencing the performance of capital markets and hence the extent to which the market may be able to play its role. The status quo of the markets is analysed in terms of stock market capitalisation, number of companies listed, liquidity, returns and volatility of the 20 capital markets in Africa. The main institutional challenges are considered in the light of market microstructure evidence on how the frontier capital markets in Africa are responding to revitalisation and reforms. The paper concludes by pointing out some unresolved issues, undiscovered territory and the future of capital markets in Africa.

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1. Introduction: the market for capital finance

Capital markets are markets for trading long term financial securities, including ordinary shares, long term debt securities such as debentures, unsecured loan stock and convertible bonds. Government bonds and other public sector securities such as Treasury bills and gilts-edged stocks are also traded on capital markets.

The structure of a global capital market has three components, as shown in Figure 1. The first is the primary capital market, for new capital issues by firms and other institutions, including governments. The second is the secondary market, for the exchange of existing securities. The third is the derivative market, which serves the exchange of securities created by the exchange and whose value is derived from the underlying securities. Hence, it may be argued that, by functional classification, capital markets play three main roles. First, long term funds can be raised by companies from those with funds to invest, such as financial institutions and private investors; in fulfilling this role, they act as primary markets for new issues of equity and debt. Second, capital markets provide a ready means for investors to sell shares and bonds they own, or to buy additional ones to increase their portfolios; in fulfilling this role, the capital markets act as secondary markets for trading existing securities. Third, the markets provide mechanisms for trading future and contingent claims, based on the values of the underlying assets; hence the derivatives market.

[Figure 1 about here]

An important part of the structure in Figure 1 is the complementarity between capital markets and financial institutions. The evidence uncovered by Demirgüç-Kunt (1992) is that the existence of an active stock market increases the debt capacity of firms; in this context, equity markets and financial intermediaries complement one another so that an active stock market results in increased volumes of business for financial intermediaries. In addition, it has been argued that the development of stock markets facilitates reforms in the banking sector (Murinde, 1996). It is noted that most problems in the banking sector stem from unbalanced capital structures in the company sector, especially where equity markets are non-existent (Dailami and Atkin, 1990). Similar conclusions are reached by Demirgüç-Kunt and Vojislav (1996), who investigate the view that stock market development tends to reduce the volume of bank business. Further, it is shown that initial improvements in the functioning of a developing stock market produce a higher debt-equity ratio for firms making more business for banks. One main lesson from integration of financial markets and institutions in Europe is that the financial system may converge on a bank-based system or on a capital-market based system, as show by Murinde, Agung and Mullineux (2004).

Globally, however, the evolution of the emerging capital markets in the last two decades has been dichotomous, in the sense the markets have experienced both integration and segmentation. On the one hand, some emerging capital markets have recorded a dramatic increase in foreign investment due to an expansion in privatisation listings, the use of bond instruments in international debt settlements and some successful implementation of economic stabilisation programmes. The inflows of foreign capital to the mature capital markets have enabled these markets to become more integrated with global markets. On the other hand, some very small, less developed capital markets, which are defined as ‘frontier markets’ by the International Finance Corporation / Standard & Poors’ Emerging Market Database, have not received much of the foreign inflows. The markets have become consequently segmented from global markets. The dichotomous patterns of integration and segmentation have important consequences for the roles that these markets will play in emerging economies, particularly in Africa.
This paper aims to examine the roles and challenges of capital markets, with special focus on Africa. The paper draws on economic theory to assess the role of capital markets in terms of consumption, investment and economic growth; it then evaluates the corpus of relevant evidence on African markets. It is argued that the macroeconomic policy environment is critical in influencing capital market and hence the extent to which the market may be able to play its role. The status quo and main institutional challenges are considered in the light of market microstructure evidence on how the frontier capital markets in Africa are responding to revitalisation and reforms. The paper concludes by pointing out some unresolved issues, undiscovered territory and the future of capital markets in Africa.

2. Capital Markets, Consumption, Investment and Economic Growth

2.1 Capital Markets, Consumption and Investment

A simple theoretical underpinning of the role of capital markets is offered by Copeland, Weston and Shastri (2005), which is an adjusted version of the seminal work by Fisher (1930), Hirshleifer (1970) and Fama and Miller (1972). To illustrate the theoretical exposition, we compare an economy without capital markets to one with capital markets and show that in the latter case, no one is worse off and that at least one individual is better off. We consider a simple model, in which all outcomes from investment are known with certainty, there are no transaction costs or taxes and decisions are made in a one period context. Individuals are endowed with initial income, \( y_0 \), at the start of the period and they have income \( y_1 \) at the end of the period. Individuals must decide how much to consume now, \( C_0 \), and how much to consume at the end of the period, \( C_1 \). The marginal utility of consumption is always positive but decreasing i.e. individuals prefer more consumption to less, but the increments in utility become smaller and smaller. The utility of end-of-period is \( U(C_1) \) while the utility at the start of the period is \( U(C_0) \).

The trade off between consumption today and consumption tomorrow is given by the marginal rate of substitution (MRS):

\[
MRS_{C_0}^{C_1} = \frac{\partial C_1}{\partial C_0} \bigg|_{U=\text{const.}} = -(1 + r_i).
\]

Where, \( MRS_{C_0}^{C_1} \) is the marginal rate of substitution between consumption today and end-of-period consumption; \( \left[ \frac{\partial C_1}{\partial C_0} \right]_{U=\text{const.}} \) is the slope of a line tangent to an indifference curve given constant total utility; \( -(1 + r_i) \) is the individual’s subjective rate of time preference.

We extend the theory by introducing productive opportunities that allow a unit of current savings or investments to be turned into more than one unit of future consumption. An individual with a resource bundle \( (y_0, y_1) \) that has utility \( U_1 \) can move along the production opportunity set that he achieves the maximum attainable utility. However, in the absence of capital markets, there are no opportunities to exchange intertemporal consumption among individuals such that the individual starts with the bundle \( (y_0, y_1) \) and compares the marginal rate of return on a dollar of productive investment with her subjective time preference. Different individuals may choose different production, consumption and investment patterns because they have different indifference curves.

We now introduce capital markets, to allow for intertemporal exchange of consumption bundles and transfer of funds between lenders and borrowers, at a market interest rate. Lending and borrowing opportunities occur along the capital market line \( W_0^*AW_1^* \). Hence, the future value, \( X_1 \), is equal to the principal amount plus interest earned:

\[
X_1 = X_0 + rX_0, \quad X_1 = (1 + r)X_0.
\]
The present value, \( W_0 \), of the initial endowment \((y_0, y_1)\) is the sum of current income, \( y_0 \), and the present value of our end-of-period income, hence:

\[
W_0 = y_0 + \frac{y_1}{(1+r)}. \tag{3}
\]

Hence, the present value of the consumption bundle is equal to our current wealth:

\[
W_0 = C^* + \frac{C^*}{(1+r)}. \tag{4}
\]

This can be rearranged to give the equation for the capital market line:

\[
C^*_1 = W_0(1+r) - (1+r)C^*_0 \tag{5}
\]

And since \( W_0(1+r) = W_1 \), we have

\[
C^*_1 = W_1(1+r)C^*_0 \tag{6}
\]

Hence, the capital market line has an intercept \( W_1 \) and the market interest rate is given by the slope of \((-1(1+r))\).

Hence, in Figure 2, given the family of indifference curves of \( U_1 \) for initial endowment, \( U_2 \) for production alone and \( U_3 \) for production and exchange, we aim to maximise utility by starting at point A and moving along the production opportunity set or along the capital market line. We would stop at point D if we did not have capital markets. At D our level of utility has increased to from \( U_1 \) to \( U_2 \). We start borrowing at point D because the borrowing rate, represented by the slope of the capital market line, is less than the rate of return on marginal investment, represented by the slope of the production opportunity set point D. We continue to borrow, invest and produce more until the marginal return on investment is equal to the borrowing rate, which is at point B. At point B, we enjoy production \((P_0, P_1)\) and the present value of our wealth is \( W_0^* \) instead of \( W_0 \). Also, we can reach any point on the capital market line \( W_0^*W_1^* \), in order to reach the highest indifference curve at U3. Hence, with capital markets, we are better off, given that \( U_3 > U_2 > U_1 \).

Moreover, the capital market plays an important role in consumption, investment and production through a decision process that involves two distinct steps (i.e. Fisher Separation Theorem): first, the investment decision, by which the optimal production decision is chosen by taking on projects until the marginal rate of return on investment equal the market rate; second, the consumption decision, by which the optimal consumption is chosen by borrowing or lending along the capital market line to equate time preference with the market rate of return. In addition, the capital market makes it possible for investors to delegate investment decisions to managers, such that in equilibrium, the MRS for all investors is equal to the market interest rate, and hence to the MRT for productive investment.

2.2 Capital Markets and Economic Growth

The theory suggests that the capital market impacts on aggregate demand particularly through aggregate consumption and investment. In this context, Fama (1991) argues that the stock market is not only a single leading indicator of the business cycle but it is also a predictor of economic activities, given that changes in stock prices reflect expected changes in economic activities and also changes in the perceived riskiness of stock cash flows. The
evidence to support these arguments is found in the study by Aylward and Glen (2000), who investigate the relationship between stock prices and other economic variables in 23 emerging and developed markets (Argentina, Australia, Brazil, Canada, Chile, Columbia, France, Germany, Greece, India, Israel, Italy, Japan, Korea, Mexico, Pakistan, Peru, Philippines, South Africa, Taiwan, UK, Venezuela, and US).

To extend the analysis to the relationship between the financial sector and economic growth, a simplified theoretical framework is offered by some related models. For example, Pagano (1993) and Murinde (1996) use a simple (AK) endogenous growth model defined as:

\[ Y_t = AK_t \]  

where \( Y \) is the aggregate output; \( K \) is the aggregate capital stock. The model assumes stationary population growth, and production of one good that is used either for consumption or investment. Gross investment is defined in terms of incremental capital stock as \( I_t = K_{t+1} - (1 - \sigma)K_t \), where \( K_t \) is physical and human capital; \( \sigma \) is the depreciation rate. The model assumes a closed economy with no government, but with costs of intermediation such that capital market equilibrium is achieved when gross savings (excluding transaction costs) equal gross investment. By defining growth at \( t+1 \) as:

\[ g_{t+1} = (y_{t+1}/y_t) = ((k_{t+1}/k_t)) \]

then a steady state is defined as:

\[ \sigma(1 - \phi) = A \phi S - \sigma \]  

The model predicts that financial development will affect economic growth through savings rate \( s \), proportion of savings channelled for investment \( \phi \), and the social marginal productivity of investment \( A \). Defining \( (1 - \phi) \) as the commission and fees that are charged by securities, brokers, and dealers, the model suggests the need to reduce transaction costs. However, Pagano (1993) points out that the relationship between stock market development and economic growth could be ambiguous depending on the channel of interaction.

An extension of the basic AK model is offered by Atje and Jovanovic (1993) and Greenwood and Smith (1997) by incorporating insights from the model by Mankiw, Romer and Weil (1992). The model assumes technology and population growth are exogenously determined. The model predicts that the capital market enhances economic growth because it increases the amount of savings used for investment.

These models also incorporate financial development theory by predicting a positive relationship between stock market development and economic growth, mainly because the stock market mobilizes long-term finance and facilitates efficient allocation of resources. See Caprio and Demirgüç-Kunt (1998), Boyd and Smith (1997) and Levine and Zervos (1998).

Moreover, recent studies on emerging capital markets find evidence to support the contribution of the stock market in the development process. For example, Levine and Zervos (1998) find a significant positive relationship between stock market development and long-run economic growth using the following model:

\[ \text{Growth} = \beta X + \lambda (\text{stock}) + \mu \]  

where \( \text{Growth} \) is measured as real per capita growth rate averaged over the relevant period; \( X \) is a set of control variables including initial income (log of initial real per capita GDP), initial education (log of initial secondary school enrolment rate), a measure of political instability (number of revolutions and coups); ratio of government consumption expenditure to GDP, inflation rate, and the black market exchange rate premium; \( \text{stock} \) is the index for growth of the stock market; \( \beta \) is a vector of coefficient on variable \( X \); \( \lambda \) is the estimated coefficient of stock market growth; \( \mu \) is an error term.

Similarly, Poterba and Samwick (1995) find significant results by analysing the relationship between stock market development and economic growth from the consumption
side. It is argued that stock market changes impact on economic growth through their predictive effect and wealth effect. The predictive effect implies that stock prices rise in anticipation of strong economic activity including consumer spending. To capture the wealth effects, the study examines whether stock returns forecast changes in consumption across different bundles. However, the study finds little evidence of wealth effects on consumption.

In addition, the relationship between the stock market and economic growth may work through savings, as noted by Bonser-Neal and Dewenter (1999). The following model is estimated on a sample of 16 emerging capital markets, covering the period 1982-1993:

\[ S_{ij} = \alpha + \beta Z_{ij} + cSMD_{ij} + e_{ij} \]  

(10)

where \( S_{ij} \) = private gross savings; \( Z_{ij} \) = economic factors determining savings, real interest rate, real GDP growth, dependency ratio, per capita income, current account surplus, and budget surplus; \( SMD_{ij} \) = stock market development: defined as the overall market size (the ratio of market capitalisation to GDP), liquidity measure of the market relative to the size of the economy (the ratio of value traded to GDP), and, the turnover ratio (the ratio of value traded to market capitalisation). The results show a significant positive relationship between gross private savings and stock market size and liquidity. Also, it is found that the impact of the stock market on savings depends on its effect on the savings return, riskiness of savings and response of individuals to these changes in return and risk. However, the effect of a change in the rate of return on savings is ambiguous due to the substitution effect and income effect. Hence, in general, the evidence supports the key argument that there is a positive relationship between stock market development and economic growth.

All in all, a well regulated and properly functioning capital market clearly plays many roles and offers many benefits. Capital markets allow the efficient transfer of funds between borrowers and lenders. Households and investors who are short of funds to take up profitable investment opportunities that yield rates of return higher than the market are able to borrow funds and invest more than they would have done without capital markets. Consequently, all borrowers and lenders are better off than they would have been without capital markets. In the long term, a stock market fosters economic development by promoting efficient resource allocation over time. In addition, market determined stock prices and yields provide a benchmark against which the cost of capital for and returns on investment projects can be judged, even if such projects are not in fact financed through the stock markets. As stock markets are forward looking, they also provide a unique record of the shifts in investors’ views about the future prospects of companies as well as the economy. In many respects, therefore, a capital market is a vast information exchange, which efficiently reduces transaction costs (Green, Maggioni and Murinde, 2000).

However, to play the above roles and attain these ideals, a capital market needs to be effectively organised and operated, with a continuous flow of orders around the equilibrium prices. Few of the new stock markets in Africa live up to this ideal. Many are characterised by intermittent trading of relatively few stocks, often held by a relatively small group of investors. Thin markets are characterised by imperfections and asymmetric information and hence they cannot adequately perform their information processing and signalling functions. They may be excessively volatile; and at the extreme, are vulnerable to price manipulation by a small group of insiders. Indeed, there is abundant evidence that stock markets are inefficient in certain key respects and may be subject to “excess volatility” and to speculative “bubbles” (Green, Maggioni and Murinde, 2000).

3. The Macroeconomic Policy Environment Does Matter

The macroeconomic policy environment is critical in influencing the performance of capital markets and hence the extent to which the market may be able to play its role. For example, most developing economies have embarked simultaneously on revitalizing their stock
markets as well as implementing financial liberalization policy programmes, including interest rate and exchange rate liberalization. We review the theory and evidence.

3.1 Equilibrium asset models

The insight from equilibrium asset models is that the macroeconomic environment is an important determinant of capital market performance. The most widely used equilibrium asset model is the APT model by Ross (1976). The model postulates that stock returns are defined by systematic risk, which includes macroeconomic policy variables; individual stock returns are assumed to respond differently to these variables. It is assumed that stock returns can be decomposed into expected returns and unexpected returns while the later can further be decomposed into systematic and unsystematic news (see Roma and Schliter, 1996).

\[ r_i = E(r_i) + \beta_i f_i + \ldots + \beta_i f_k + \mu_i \]  

where \( f_i = (F_i - E(F_i)) \) such that \( f_i \) is the systematic risk where \( F_i \) is a vector of macroeconomic factors; \( E \) is the expected value operator; \( \epsilon_i \) is the unsystematic risk.

Given that the model does not explicitly identify the macroeconomic variables to be included in the \( F_i \) vector, empirical analysis identifies the risk factors using factor analysis or principal component technique (see Oyama, 1997). Extensions of the standard APT model include the specification of multifactor equilibrium asset models to derive a relationship among stock returns, exchange rate risk and interest rate risk (see Thorbecke, 1997).

The main findings from these models suggest that macroeconomic factors such as real growth rate, inflation, interest rates, exchange rates, and money supply are important determinants of the risk-return structure of assets traded in capital markets.

3.2 Share valuation models

In addition, important insights about the macroeconomic policy environment can be gained from share valuation models. The share valuation model expresses stock prices as the present value of a stream of expected dividends; then the model is used to identify possible macroeconomic factors that influence stock prices. For example, Chen, Roll and Ross (1986), Roma and Schlitzer (1996) and Oyama (1997) use the valuation model to predict the main macroeconomic determinants of stock prices. It is hypothesized that stock prices are influenced by the spread between long term and short term interest rate (as a leading indicator of economic activities), expected and unexpected inflation (a test for the Fisher hypothesis and proxy for risk factor), industrial production (a proxy for corporate earnings) and the spread between the high and low grade bonds.

In general, the evidence from share valuation models indicates an indirect link between stock returns and economic variables through stock return fundamentals. Changes in stock prices are explained by changes in expected dividend and change in the discount factor; in turn, unexpected movements in both real and nominal forces like expected level of real production, changes in expected inflation, and changes in nominal interest rates influence changes in expected dividend. Hence, the share valuation model justifies the use of a wide range of variables, which reflect economic activities, risk factors and corporate earnings.

3.3 Monetary policy and capital market behaviour

A useful explanation of the impact of monetary policy on capital market performance is offered by the monetary portfolio hypothesis, which predicts that a change in the money supply results into a change in the equilibrium position of money, in relation to other assets
in the portfolio. Investors respond by adjusting the proportion of the asset portfolio held in money balances. However, because all money balances must be held, the system does not adjust until changes in the prices of various assets lead to a new equilibrium. See for example, Dhakal, Kandil and Sharma (1993). The relationship can also be explained through the credit channel of monetary policy. For example, Thorbecke (1997) observes that monetary policy affects stock returns by influencing the credit position and investment level of the firm. Tight monetary policy increases interest rates, worsening the cash flow, net of interest, and therefore the balance sheet position of the firm. As a result, creditworthiness of the firm is reduced, creating a credit constraint and reducing investment. Consequently, the firm’s value goes down and stocks are no longer attractive.

However, in order to tease out some causality issues, most empirical studies tend to investigate the impact of monetary policy on stock prices by specifying a simple equation consisting of the stock price index as well as expected and unexpected changes in monetary policy variables. Some studies show evidence of both unidirectional and bi-directional causality in both developed and emerging markets (Ngugi, Murinde and Green, 2005). While narrow money shows unidirectional and bi-directional causality, broad money mainly reflects bi-directional causality. Further, the unidirectional causality is from narrow money to stock prices. For example, Moorkejee and Yu (1997) find bi-directional causality for Singapore market with both M1 and M2 for the period October 1984-April 1993. In an earlier study, Moorkejee (1987) shows similar results for Italy and Japan. Cornelius (1991) finds bi-directional causality with M1 for Korea and with M2 for Thailand.

Analyses of long run relationships also show mixed results (Ngugi, Murinde and Green, 2005). For example, the hypothesis for a long-run relationship between stock prices and monetary aggregates is rejected for the Malaysian market by Habibullah and Baharumshah (1996) using data for the period January 1978-September 1992. The results imply that the market is efficient as stock prices incorporate all information in money supply and output. However, Moorkejee and Yu (1997) obtain evidence for Singapore which shows that stock prices and monetary aggregates are cointegrated, for the period October 1984-April 1993. In addition, regression results using the anticipated and unanticipated variables show that the current and lagged anticipated M1 significantly influence stock prices while M2 is insignificant in both anticipated and unanticipated forms.

Hence, while in general the empirical studies on emerging capital markets are ambiguous regarding the direction of causality and the significance of anticipated and unanticipated changes in monetary policy, most studies report unidirectional causality from monetary policy variables to stock prices, suggesting that monetary policy is important in influencing capital market behaviour. However, further research is necessary to specify more precise models and apply more recently developed testing procedures (such as impulse response testing) to shed further light on the impact of monetary policy on the stock market.

3.4 Fiscal policy and capital market behaviour

The impact of fiscal policy on capital market behaviour tends to occur indirectly through transaction costs and directly through taxes. Brean (1996) notes that taxation and other government fees raise the new issue barriers by increasing the transaction costs for new listings in the stock market in South Africa. In addition, discriminatory tax policies, including personal income taxes, tax on dividends, tax on firm profits as well as on different financial assets, render inefficient the mobilization of domestic savings through the capital market. Further, Amihud and Murgia (1997) show that higher tax on dividends is a necessary condition for dividends to signal company value. Green, Maggioni and Murinde (2000) find that stamp duty and other tax measures tend to increase transaction costs and thus serve the purpose of ‘throwing sand in the wheels’ of the stock market.
Specifically with respect to emerging capital markets, there seems to be clear causality from fiscal policy to capital market behaviour. For example, Evans and Murinde (1995) use the BVAR method and find that both unanticipated and anticipated monetary and fiscal policies influence capital market behaviour in the Pacific Basin countries. However, it has been argued that the impact of taxation on the capital market depends on the stage of market development (Brean, 1996). In a well-developed market, asset pricing reflects factors that affect profitability and risk, including taxation. But when the market is not well developed, effects of taxation that would otherwise be reflected in returns or costs of capital fail to be properly priced and allocative effects of taxation fail to work through the mechanisms that link savings to interest rates or investment to expected return on investment.

In general, therefore, while although the evidence on the relationship between fiscal policy and stock prices seems to suggest that fiscal policy may adversely as well as positively affect capital market behaviour, there are no clear lessons for African economies on how fiscal policy may be deployed to stimulate capital market development, given the stage of market development in most economies. Clearly, further research is necessary.

3.5 The exchange rate and capital market behaviour

Most emerging economies, including Africa, have adopted flexible exchange rates such that the nominal exchange rate is not an active policy instrument, as would be the case of devaluation under fixed exchange rates. Our focus, therefore, will be on the relationship between market-induced exchange rate changes and changes in capital market behaviour.

The theory predicts an indirect relationship between the exchange rate and the stock market; see Bodnar and Gentry (1993) and Bartov and Bodnar (1994). The argument is that profitability and the value of firms increase (decrease) with unexpected depreciation (appreciation) of the currency because of the impact on cash flows. It is also argued that exchange rate movements are felt by altering the domestic currency value of foreign currency denominated fixed assets and liabilities. Another channel is through spillover effects for firms not involved in international trade or through the impact on foreign currency denominated inputs. Bodnar and Gentry (1993) note that appreciation of home currency induces a shift of resources from traded to non-traded industries as long as capital is more sector specific than other production inputs. Such reallocation causes the market value of capital in non-traded goods industries to rise relative to market value of traded good industries, such that there is a positive relation between the value of non-traded goods industries and appreciation of foreign exchange.

However, existing empirical studies do not show significant evidence on the contemporaneous relationship between stock returns and exchange rates, as noted in Table 8. The studies tend to estimate the following model:

$$ [R_{it } - rf_t ] = \beta_{0i} + \beta_{1i} [R_{mt } - rf_t ] + \beta_{2i} PCXR_t + \epsilon_{it} \quad (12) $$

where $R_{it}$ is the return on industry portfolio $i$ in month $t$; $rf_t$ is the risk free rate of return in month $t$; $R_{mt}$ is the return to national stock market in month $t$; $PCXR_t$ measures the percentage change in the trade weighted nominal exchange rate in month $t$; $\beta_{0i}$ is the industry’s exposure to changes in the overall stock market index, while, $\beta_{2i}$ measures the industry’s exposure to exchange rate fluctuations. The results indicate that 20-35% industries had significant foreign exchange exposure. In addition, foreign dominated assets show a significant negative exposure to exchange rate changes. These results indicate that freely available public information on past changes in exchange rates is useful in explaining abnormal future stock price performance. Investors were thus seen to underestimate the impact of exchange rate change in every period, which was corrected with availability of additional information.
However, some macro studies show a negative relationship between stock prices and exchange rate. For example, Solnik (1987) estimates a multivariate regression (SURE) model on several countries by regressing the change in the real exchange rate \( (Ds_t) \) on real stock returns \( (DRS_t) \), as indicators of changes in economic activity, and the change in the interest rate differential \( (Di_t) \) as follows:

\[
DRS_t = a + b Ds_t + c Di_t + e_t
\]  

The results show a negative relationship, which implies that a real appreciation of the exchange rate is bad for domestic firms because it reduces their competitiveness, while real exchange rate depreciation stimulates the economy in the short run. The results are consistent with those obtained by Ma and Kao (1990), who show a negative relationship between exchange rate and stock prices using a two-step regression procedure. Specifically, it is found that while currency appreciation reduces the competitiveness of export markets, it has a negative effect on the domestic stock market; high exchange rate levels are associated with favorable stock price movements.

In addition, some studies allow for the feedback effects between exchange rate changes and changes in stock prices. For example, Abdalla and Murinde (1996) examine the relationship between exchange rates and stock prices for the emerging capital markets of India, Korea, Pakistan and the Philippines and find uni-directional causality from exchange rates to stock prices in all the sample countries, except the Philippines. Taking a wider market scope, Johnson and Soenen (1998) analyse the stock price reactions of 11 Pacific Basin stock markets to exchange rate changes with respect to the US dollar and Japanese Yen for the period January 1985-June 1995 and find a significantly strong positive relationship.

Hence, most of the empirical studies show a negative relationship between the exchange rate and stock prices, which implies that a real appreciation of the exchange rate is bad for domestic firms because it reduces their competitiveness, while real exchange rate depreciation stimulates the economy in the short run. However, some studies have uncovered a positive relationship, while most of the studies on emerging stock markets tend to show bi-directional causality and are thus inconclusive.

A promising way forward is to integrate the capital market into a general macroeconomic framework following Blanchard (1981) and Gavin (1989). The Blanchard-Gavin model used a modified version of a conventional IS-LM framework. In the goods market it is assumed that total spending is influenced by the stock market value, current income, fiscal policy and the real exchange rate. It is assumed that the stock market value has a wealth effect and therefore influences consumption and determines the value of capital relative to its replacement costs. In the asset market, the model assumes no arbitrage between short-term bonds and shares such that share value is equated to return on bonds. The model is then analyzed for anticipated and unanticipated changes in monetary and fiscal policy assuming fixed and flexible prices. The analysis indicates that a stable set of fiscal policies play an important role in reducing volatility of real exchange rates and equity prices.

### 3.6 Capital Markets and Capital Inflows

Most emerging markets have relaxed capital controls as part of the revitalization process, and have subsequently seen an upsurge of capital inflows. Despite the expectation that the inflow of capital would increase the liquidity of local stock markets (Litman, 1994; Aitken, 1998), the experience of emerging markets indicate that booms were shortly followed by bust. Richards (1996) attributes the experience to investment-fund managers’ panic in fear of mass redemption, while Aitken (1998) attributes the response to herd like behaviour in investment decisions portrayed by foreign investors.
Some studies, notably by Kim and Singal (2000), have questioned the argument, which favours foreign investors in ESMs. It is argued that opening up to foreign investors exposes the domestic market to external shocks and this could increase stock price volatility and consequently raise the cost of capital, as shareholders demand higher risk premium. Most empirical results fail to show that foreign investors participation in emerging markets was characterized by market volatility (see Table 9). For example, Richards (1996) and Kim and Singal (2000) find no evidence that volatility has increased, rather results indicate that volatility has fallen. In addition, Chan et al. (1998) find no evidence of rational speculative bubbles following the 1997 crises in Asian markets (Hong Kong, Japan, Korea, Malaysia, Thailand, and Taiwan). Moreover, Kim and Singal (2000) and Aitken (1998) report efficiency gain in some markets.


4.1 The Capital Markets in Africa

There are 20 stock exchanges in 19 African countries; these are Casablanca Stock Exchange (CSE) in Morocco; Tunis Stock Exchange (TSE) in Tunisia, Cairo and Alexandria stock exchanges in Egypt (ESE); Zimbabwe Stock Exchange (ZSE) in Zimbabwe; Nairobi Stock Exchange (NSE) in Kenya; Nigeria Stock Exchange (NISE) in Nigeria; Mauritius Stock Exchange (MSE) in Mauritius; Botswana Stock Exchange (BSE) in Botswana; Ghana Stock Exchange (GSE) in Ghana; Swaziland Stock Exchange (SSE) in Swaziland; Namibia Stock Exchange (NASE) in Namibia; Khartoum Stock Exchange (KSE) in Sudan; Lusaka Stock Exchange (LUSE) in Zambia; Malawi Stock Exchange (MASE) in Malawi; Tanzanian Stock Exchange (TASE) in Tanzania; Uganda Stock Exchange (USE) in Uganda; and Maputo Stock Exchange (MPSE) in Mozambique. In addition, there is a regional market (BRVM)\(^1\) for eight countries. Some of the markets are classified by the IFC as emerging stock markets, while others are classified as frontier markets.

The development of stock markets in Africa tends to show an evolutionary process with various stages characterized by type of regulatory system, trading method and the scope for market participation. In general, most of the main markets in Africa started with no formally laid down rules and regulations; trading activities were based on interpersonal relationship. Formal markets were then established, driven either by the desire of traders to diversify sources of investment funds or by the need of governments to establish a formal market to float their debt stocks. Formalization and revitalization process saw changes in the regulatory framework, trading system and composition of market investors.

Appendix Tables A1-A5 present the main metrics for measuring the characteristics and status quo of capital markets in Africa, namely the market capitalisation, liquidity, number of listed companies, the value traded or liquidity, efficiency and volatility. The performance, in terms of return and cost of capital are presented in Appendix Tables A6-A8.

It is shown that almost all of the capital markets in Africa, except the Johannesburg Stock Exchange, which is by far the largest and most developed, are characterised by low levels of market capitalisation. However, in the last decade, some countries have exhibited some improvements; for example, Botswana, Kenya, Tanzania and Malawi. Zambia, however, has experienced a downward spiral.

It is also noted that during the last decade or so, specifically in the period 1992-2002, the number of companies listed on local stock exchanges was generally low. Low levels of

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\(^1\) The origin of the regional market dates back to 1973 when UMOEA members signed a treaty for the creation of a regional market. A regional council for public savings and financial markets was formed in October 1997 after extensive negotiations between member countries. The regional market, with headquarters in Abidjan, now includes Benin, Burkina Faso, Cote d’Ivoire, Guinea-Bissau, Mali, Niger, Senegal and Togo.
listing are particularly found in Swaziland and Namibia, and extremely low for Algeria, Malawi, Tanzania, Uganda and Zambia, Uganda, even as recent as 2005. Botswana, Ghana, Mauritius, Morocco, Tunisia and Zimbabwe fared a little better than the before mentioned, ranging from 10-60 companies listed. The only exception was South Africa, which recorded 683 new companies during this period and Egypt which recorded 656 companies.

In terms of liquidity of the markets, measured by the value traded, it is shown that these markets have experienced low levels of liquidity, in some instances zero values have been recorded (see, for example, Swaziland, Tanzania, Namibia and Uganda). The exception is the Johannesburg stock exchange which has the highest levels of liquidity with a liquidity ratio of 0.7499 or 7769 in 1992 to a liquidity ratio of 0.42 or 76,792 in 2002. It is not clear, however, to what extent these capital markets have had impact on new finance for manufacturing or overall economic development.

In terms of efficiency, some of the markets are weak-form efficient, in the context of Fama (1970, 1991), as shown in Appendix Table A4. In addition, the markets seem to exhibit high levels of volatility (risk), compared to their developed counterparts. Egypt and Botswana have scored the highest in the Risk and Qualitative scores. However, the market sensitivity statistics shows that Mauritius has the lowest volatility at 4.1% while Egypt has the highest volatility at 9.1%.

Moreover, most of these markets do not seem to attract international investors despite the fact that stock markets in Africa and other emerging markets seem to have higher returns than developed stock markets (Appendix Table A8). It would appear, therefore, that the main impediments to sustained growth of the capital markets in Africa include low liquidity, low capitalisation, low number of listed companies and an unattractive risk-return trade-off.

To enhance their performance, most African countries have revitalised their capital markets in terms of key institutional reforms, namely revitalization of the regulatory framework, modernization of trading systems, and relaxation of restrictions on foreign investors. We examine these reforms below.

4.2 Reform of Capital Market Regulation

Most capital markets in Africa established or empowered existing market regulators during the revitalization process (e.g. NSE and ESE). The regulators were charged with the responsibility of facilitating the development of an orderly and efficient capital market. To achieve this objective market authorities targeted to maintain surveillance over the security market, ensure fair and equitable dealings, undertake the licensing of members and protect investors against abuse of insider traders.

At initial stages establishment of a legal entity some stock exchanges borrowed rule and regulations from established stock markets, which enhanced their credibility. Self-regulatory rules were introduced in the context of Rules and Regulation of Stock Exchange. For example, stockbrokers in the NSE borrowed rules and regulations from the London Stock Exchange (LSE) to facilitate the establishment of a legal entity. The LSE recognized the NSE as an independent overseas stock exchange and the exchange was finally established in 1954 adopting the ‘Rules and Regulations of NSE 1954’ that embodied the self-regulatory rules.

In Botswana, the BSE initially operated under interim regulations 1989-1995, which were applied with assistance from the ZSE in Zimbabwe, until it gained a legal status in November 1995. JSE initially adopted rules and regulations for the conduct of share dealing and listing of companies, deciding on commission fees and selling members from Transvaal Share and Claim Exchange in Barberton. New rules and regulations were adopted later following those of the LSE amended to suit local circumstances. For GSE, the established Exchange in October 1990 was recognised as an authorized stock exchange under the Stock Exchange Act of 1971(Act 384).
As a first step toward government involvement in the operation of the market, some markets in Africa set up Capital Issue Committees (CIC) to monitor issues in the primary markets; for example NSE and NISE. Market regulators were then established to act as conduits through which the government would monitor the activities of the stock market. For example, in NSE following the recommendations of IFC/CBK study report in 1984, the government set up a Capital Market Development Advisory Council whose role was to work out modalities necessary to establish Capital Market Authority (CMA) in November 1988. CMA was constituted in January 1990 after the Bill (Capital Market Authority Act cap 485 A) was passed by Parliament in November 1989. For the NISE, a market regulator was established before the mounting of reform program. The SEC Degree No. 71 established a regulator in 1979, abolishing the CIC. In GSE, Security Industrial Law 1993 recognized the Security and Securities Commission as the apex regulatory body for securities in the stock market. ESE enacted a new Law (Law 95/1992) in June 1992, which provided CMA established in 1980 with legal authority and status necessary to implement the needed regulation in the securities markets. The CMA then issued executive regulation in April 1993 and the Law came into force in 1994.

JSE is a self-regulatory organization governed by a set of rules drawn up by the JSE Committee. The Registrar of Stock Exchanges approves JSE rules, which must comply with the requirement of set out in Stock Exchange Control Act (SECA). SECA of 1947 gave the JSE own self-regulatory rules forces of law that were not enjoyed previously; the Act was amended in 1985. In the reform process, the Act was amended spelling out a new structure for JSE. In 1992, JSE Committee formed a research sub-Committee to research an appropriate future structure for JSE. The sub-Committee presented a 500-page report to the Committee in 1994 and the proposed amendments were approved by Parliament in September 1995. The proposed restructuring impacted on membership, trading principle and systems, clearing and settlement, transfer and registration, capital requirements of member firms and the financial structure of the JSE. The reforms were designed to end JSE reputation as one of the world illiquid market.

4.3 Reforms in the Trading System

In the initial days of the old stock markets in Africa, trading was carried out by phone; in most cases, stockbrokers met to exchange prices over a cup of coffee. Trading was based on gentleman’s agreement where standard commissions were charged while clients were obliged to honor their contractual commitment of making good delivery and settling relevant costs of trading. Gradually, or as part of the reform process, trading forums shifted from coffeehouses to the trading floor and screen trading. For example, NSE shifted to floor trading in 1991 phasing out the coffeehouse forum. Some markets have gradually expanded the number of trading floors; for example, NISE had six trading floors by 1990 having opened Kaduna (in 1978), Port Hartcourt (in 1980), Kano (in 1989), Onista (in 1990) and Ibadan (in 1990).

Only a few markets in Africa have adopted the modern trading technology gradually phasing out the manual trading cycle. See Appendix Table A5. The main objective of the reform has been to reduce the transaction period and increase market liquidity. JSE gradually phased out open outcry trading floor for three months starting March 1996 and finally closed the floor in 7th June 1996 replacing it with fully automated electronic trade in respect of all listed securities on JSE Equities Trading (JET) system. ESE introduced a computerized trading system in February 1995 allowing automatic matching between buyers and sellers; this also allowed the increase in trading hours by 50%. NISE introduced the computerized

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2 The Capital Market Law (Law 95/1992) allowed for the lifting of restrictions on foreign investment and abolition of capital gains taxes and taxes on dividends. Also the Law established an Arbitration Board to address grievances raised by investors.
central security clearing settlement depository and custodian system in April 1997. In January 1997 MSE established electronic clearing and settlement system, which facilitated the shift from three days trading to five days or daily trading in November 1997. In 1998, the Central Depository System was implemented allowing delivery versus payment on a T+5 day rotating basis. NSE is in the initial stages of introducing electronic central depository system. GSE commenced a manual centralized clearing and settlement system in 26th April 1996. The system operates within a set of rules approved by GSE Council and the SEC and it has allowed the minimization of trade failure and strengthened the level of coordination between brokers and the registrar.

In general, however, trading days and duration vary across the markets in Africa. The average trading period is two hours a day while the transaction period ranges from T+7 to T+3. Stockbrokers acting as agents, rather than principals, dominate trading activity. Only JSE allow stock-broking firms the choice of dealing in single or dual capacity, following the Stock Exchange Amendment Act, 1995. With dual capacity a member acts as either an agent on behalf of or deals as a principal with a client. Stockbrokerage is fully negotiable with clients unlike markets where the Stock Exchange spells out the brokerage commission for clients as a regressive rate to the amount traded.

In some markets, the stockbrokerage activities are restricted to local firms, while in other markets the size of the stockbrokerage industry is restricted. For example, while initially stockbrokerage in the JSE was limited to South African citizens, in November 1995 the Stock Exchange Control Act opened stockbrokerage membership to non-citizens and foreign corporate. For the NSE, the number of stockbrokers remained constant at six till 1994 when new brokers were licensed. The range of assets traded is very narrow; only on the JSE and the NASE are derivatives traded. The majorities of the markets deal in shares, government bonds and corporate bonds.

4.4 Free Entry and Exit of Foreign Investors

There are variations on the level of participation of foreign investors in the stock markets in Africa. The opening of portfolio investment to foreign investors was part of the reform process, which saw relaxation of capital controls. Stock markets established during the colonial days saw a period of foreign domination during the initial stages, but after political independence efforts were made to encourage the participation of local investors and to restrict the participation of foreign investors. Later, during the reform process regulations were relaxed to allow unrestricted participation by foreign investors.

Initially, in 1972, the Nigerian Enterprise promotion Decree obliged some foreign companies to sell part of their holdings to domestic investors. Foreign companies operating in Nigeria were expected to extend equity participation to the wider public. The Nigerian Investment Promotion Commission Decree No. 16 of 1995 allowed up to 100% foreign ownership of any Nigerian company. A legislation-captioned foreign exchange (monitoring and miscellaneous provision) No.17 Jan 16 1995 further eased the mechanism for foreign investment flows by providing easy movement of capital especially the foreign portfolio investors. This repealed the exchange control of 1962 allowing establishment of autonomous foreign exchange market, free transactions in foreign exchange at market rate and permitted unrestricted import and export of foreign exchange.

For NSE market, the government adopted indigenisation policy after independence in 1963, to allow the local citizens take control of economic activities while the government protected the interests of the foreign investors by passing the Foreign Investment Protection Act (1964). Capital controls were relaxed in 1995 and this allowed the foreigners up to 20% of the equity for inward portfolio investment, and then revised to 40% in June 1995.

In the ZSE, a set of investment guidelines was announced in April 1993 to encourage the inflow of foreign portfolio investors. Currently, there are no prior exchange control
approvals necessary for foreign investors’ participation in ZSE. However, inward transfer of foreign currency through normal banking channels finances foreign investors. The participation of foreign investors has now increased to 40% and 10% respectively. In case where foreign investors exceed the 10% limit, the investor is directed to sell the excess shares within 60 days. There is 100% after tax remittance; free remittance of capital and capital gain subject to control approval for importation of capital; and freedom to register shares in their name or names of nominees companies. Foreign investors may also bring in hard currency to invest up to a maximum of 15% of their assets in primary issues of bonds and stocks.

The MSE opened to foreign investors in 1994 with the abolition of exchange controls and the Stock Exchange (Investment by foreign investors) Rules 1994. Foreigners subscribe to new issues of shares of company listed in stock exchange and also invest in unit trust. Foreign investors do not need approval to trade shares unless the investment is for the purpose of legal or management control of a Mauritius company. The only restriction is that the foreign investors cannot have individual holdings of more than 15% in a Sugar Company.

In the BSE, foreign investors are not allowed to own more than 10% of issued capital of a publicly quoted company and foreign ownership of the free stock of a local company trading on the exchange not to exceed 55%. There are restrictions on the repatriation of funds where amounts up to P100m can be repatriated immediately, and amount exceeding this requires to be repatriated over a specified period.

Ghana Investment Promotion Center Act 478 1994 allows free investment by non-residents through stock exchange without prior approval by government. However, there are restrictions where a maximum of 10% equity is allowed in a single quoted company for non-residents portfolio investors. For a single equity, foreign investors may hold up to a cumulative total of 74%. These limits exclude trade in Ashanti Goldfields shares. There is full foreign exchange remittance of initial capital, capital gains and other forms of earnings.

The newly created Tanzanian Stock Exchange does not allow foreigners to operate in the market. In the TSE, foreigner can buy up to 10% of listed company and 30% of unlisted companies. In August 1995, the stock exchange issued a decree simplifying the purchase of shares by foreign investors.

Overall, the capital markets in Africa are faced with a lot of challenges, especially in terms of resource mobilisation. Currently, there are 21 markets which improved. Some markets have opened their doors to foreign participation in the brokerage activities, which were previously dominated by local participants. In addition, efforts have been made to reduce transaction costs including taxation of share trading earnings where for example, capital gain tax has been suspended. Relaxation of capital controls and participation of foreign investors in portfolio investment vary across the markets. However, some capital markets are still constrained by outdated practices, inefficient trading mechanisms, lack of skilled manpower, legal and regulatory framework and inadequate market information.

5. How Have African Capital Markets Responded to the Institutional Reforms?

To provide a tractable framework for studying the response of the emerging stock markets in Africa to the institutional reforms, it is useful to invoke market microstructure theory (see Ngugi, Murinde and Green, 2003). The theory predicts the response of the microstructure characteristics of emerging stock markets in Africa (i.e. market efficiency, volatility and liquidity) to the three main institutional reforms that have underpinned the reform process in these markets, namely changes in the trading system, establishment of market regulator, and entry of foreign investors.

First, in theory, the shift in the trading system from a call to an open outcry floor trading is expected to increase market liquidity and enhance transparency, thus reducing

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3 Evidence supports foreign bank entry in Africa (Murinde and Ryan, 2003; Lensink and Murinde, 2006b).
microstructure costs and volatility (Pagano and Röell, 1996). The literature also shows the call auction market to be more efficient than the continuous auction markets; the former is also shown to enhance liquidity and reduce market volatility (Madhavan, 1992). This is because the call auction imposes an effective mechanism for dealing with asymmetric information problems, where the imposed delays in execution of trades forces traders to reveal information through their order placements (Comerton-Forde, 1999).

Second, with respect to the entry of the market regulator, the theory stipulates that this should signal strengthening of the legal and regulatory frameworks, which act to promote market efficiency by providing transparency, immediacy and equal access in the disclosure of information; information symmetry also reduces market volatility. This also increases liquidity by enhancing investors’ confidence to commit their resources to the stock market (see Röell, 1992; Demirgüç-Kunt and Levine, 1996; Khambata, 2000).

Third, the entry of foreign investors in emerging markets is theoretically expected to enhance stock price stability, increase liquidity of the market, promote efficiency and lengthen investor’s horizon (Aitken, 1998; Richards, 1996). However, if the market is thin, and has low quality and small capitalisation shares, this would reduce the market capacity to absorb foreign capital inflows and would thus subject the market to excess volatility or cause overheating in the domestic economy. In addition, opening the market exposes it to foreign factors such that volatility in foreign prices may cause domestic prices to be volatile (Kim and Singal, 2000). Consequently, shareholders ask for higher risk premium, thus increasing the cost of capital and reducing investment (Amihud, Mendelson and Lauterbach, 1997).

Table 1 summarizes the above theoretically expected responses of the revitalization reforms on microstructure characteristics of the emerging stock markets in Africa. Almost all the hypothesized effects are unambiguous, except the effect of the entry of foreign investors on volatility, which may be positive or negative depending on market size.

Ngugi, Murinde and Green (2003) study a sample of ten stock exchanges for analysis, namely the JSE, NISE, ZSE, NSE, MSE, CSE, ESE, TSE, BSE and GSE for the period 1988:01-1999:12 and consider gains in efficiency by comparing the period ‘before’ and ‘after’ the reforms. It is found that for the NSE, the expansion of brokerage industry failed to sustain the immediate gains realised from change in trading system. However, for the NISE and JSE, although changes in trading system show gains in efficiency, further gains are realised when regulatory system is tightened to protect the right of investors. Comparing MSE and JSE, similar results are found in the ‘after’ period though the ‘before’ periods are different; MSE shows short run predictability in the ‘before’ period. For the GSE, the results suggest that the reform did not yield efficiency gains. Similarly, the introduction of a computerised trading system in ESE did not show significant gains in the short run.

In terms of market response to regulatory reform, it is found that the big shake up of the JSE with the Stock Exchange Amendment Act September 1995 implemented since November 1995, the market has become more efficient and ready to facilitate enhancement of market liquidity. For GSE market the introduction of SEC saw no significant gains in efficiency, which is may be explained partially by the loss in efficiency realised with the change in trading system.

In terms of market response to relaxation of foreign investor’s participation, it is found that the NISE (which further relaxed the controls on foreign investors participation in January 1995), the ZSE (which opened the market to foreign investors in April 1993), and the NSE January 1995. The ZSE show no significant gains with the entry of foreign investors; in

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4 Due to advances in ICT, most of the emerging stock markets in Africa are replacing the manual trading system with automated trading in attempt to improve liquidity and reduce the costs of trading.
fact in the ‘after’ period random walk hypotheses are rejected. Both GSE and MSE show a decline in market efficiency. NSE shows significant gain with the entry of foreign investors. The NISE shows lower returns and efficiency gains in the period ‘after’ the reforms, which widened the participation level of foreign investors. These results imply that relaxation of foreign investors’ participation in portfolio investment has positive gains.

Overall, therefore, existing evidence suggests that there are positive gains in terms of market efficiency when stock exchanges adopt advanced trading technology aimed to reduce transaction costs and settlement periods. Also positive gains are realised when the regulatory system is strengthened to reduce information asymmetry problem and protect the rights of investors, and when controls on foreign investors’ participation in the market are relaxed.

With regard to reforms in the trading system, both GSE and MSE show similar direction of relationship between efficiency and volatility. For GSE significant reduction in market efficiency is associated with insignificant decline in volatility while in MSE both volatility and efficiency show insignificant decline. These imply that if significant gains in efficiency are to follow then volatility must decline significantly. For NISE and ESE significant increase in volatility is associated with significant decline in efficiency while NSE shows insignificant increase in efficiency with rise in volatility.

The entry of foreign investors show mixed results while the level of volatility tends to reflect the level of foreign investors participation. For example, ZSE reports a significantly high volatility with the entry of foreign investors; NSE indicate insignificant decline in volatility; while NISE shows a significant increase. Overall, therefore, more efficient markets have lower volatility than less efficient markets. However, there is no evidence that the structure of market volatility is dictated by the institutional structure. For example, all the sample markets show significant volatility persistence and clustering while leverage effect and the pricing of time varying premium vary across the markets.

6. Unresolved Issues, Undiscovered Territory and the Future of Capital Markets in Africa

6.1 Unresolved Issues as Promising Research Ideas

The inevitable outcome of this paper is that there are so many gaps in our knowledge of capital markets in Africa that further research on these unresolved issues is urgently required, and where the ADB and AERC could lead in innovative work in the area of capital markets in Africa. We identify a number of what we believe are promising research ideas.

6.1.1 Capital Market Development and Integration in Africa

One major weakness of existing studies is that the capital markets in Africa are treated as if they are homogenous in terms of development and integration. Clearly, this assumption is restrictive. The indicators reported in Appendix Tables A1-A3 would seem to suggest at least three market tiers. Tier 1 is the JSE, which is by far the largest and most developed in Africa. Tier 2 comprises the main emerging capital markets in Africa, specifically Egypt, Morocco, Tunisia, Nigeria and Zimbabwe. Tier 3 comprises the frontier markets, namely Algeria, Botswana, Ghana, Malawi, Namibia, Mauritius, Swaziland, Tanzania, Uganda and Zambia.

Research is required to propose and implement measures for categorising African capital markets into different stages of development and integration. Existing research suggests that the most widely used categorisation of emerging markets is based on the International Finance / Standard & Poor’s Emerging Market database (EMDB). The EMDB classifies the markets by calculating a relative development ranking based on market capitalisation, turnover, value traded, and number of shares. The procedure is also applied in Demirgüç-Kunt and Levine (1996), where the overall level of relative development is
calculated using a means-removed methodology that combines the four indicators. In addition, a simple estimate of the degree of global integration may be calculated as the unconditional correlation with the JSE (for integration with African markets), the Emerging Markets Index (for integration with other emerging markets) and with the Morgan Stanley World Index or any global capital market index (for integration with the global markets).

In addition, research is required to assess the degree of market integration in Africa as well as the interaction between the domestic stock market and the global markets especially given the popularisation of regional integration and globalisation.

The issue regional capital market integration should be explored together with existing proposals for formal regional stock exchanges such as the BRVM. It is useful to establish the optimum condition under which the establishment of a regional stock exchange can lead to more competitive and efficient capital markets in the region, and lead to a more efficient allocation of capital. See also 6.2 and 6.3.4.

6.1.2 Design of Technologies to Underpin the Bond Market and Managed Funds

Judging by the trends in other emerging and frontier markets, the capital markets in Africa should be able to provide a mechanism for mutual funds and other international investment portfolios. However, two major impediments exist in the markets at present: one, is the limited trading of risk-free bonds, which are necessary in a Markowitz (1959) sense; the second, is the relative absence of well tailored tools for benchmarking the risk-return profiles of African markets, in the presence of market imperfections and asymmetric information. The first problem requires a regional player across Africa, such as the African Development Bank to spearhead the development of a bond market, in which companies and government issue bonds, and local as well as foreign investors in the trading of the bonds or portfolios.

The second problem also requires a regional multilateral financial institution that can provide benchmarks against which managed portfolios are measured. In recent years, modern corporate finance has developed methodologies for valuing a wide variety of assets whose characteristics extend across time, and which impose intricate and complex risks on investors (Murinde, 2006). These include models for adjusting for risk models, including the Sharpe’s index, the RAP measure, Treynor’s index and Jensen’s index; equilibrium models such as the CAPM, the Intertemporal CAPM, and the APT model; market timing and selectivity models by Treynor and Mazuy, Henriksson and Merton, and the total performance measure; and the Fama decomposition of returns model. Also, the analysis may be conducted in terms of identifying the drivers of risk and return (Harvey, 1995, 2000) in African markets. However, there are still many pitfalls and unresolved issues in the process of performance measurement and portfolio analysis, with respect to frontier markets, especially in Africa. Hence, regional benchmarks are necessary.

6.1.3 Measurement of Microstructure Gains from Capital Market Reforms

There is need for further research to assess gains from investing in institutional changes in the revitalisation process, for the capital markets in Africa, and any constraints in setting up an institutional structure that supports growth of the capital market. The idea is to examine the microstructure characteristics (including volatility, costs of trading, liquidity and efficiency of price discovery process) for the period before and after the reforms.

6.1.4 Complementarity of Financial Institutions and Capital Markets

There is need for research to assess the contribution of the stock market to economic growth, by modelling the mechanisms that link the stock market to the growth process: for example, analysing the implications of stock market performance on capital structure and investment
behaviour; and analysing the impact of stock market on savings. A related idea is to assess the complementarity and substitutability between the financial intermediaries and stock markets in their growth and contribution to development.

6.1.5 Capital Markets Versus the Financing Needs of Companies and Governments

It is important to research the extent to which the capital markets are able to meet initial capital as well as additional capital required by listed firms, especially in the form of IPOs. Particular attention should be focused not only on the cost of new issues but also on the timing as well as post-performance of the IPOs. In addition, the research should focus on the role of the capital markets in issuance and trading of government securities in Africa. A starting point is to undertake careful systematic analysis of the IPOs issues in African markets recently, especially in South Africa and Nigeria.

6.1.6 Measuring the Cost of Capital in Africa’s Capital Market

An important role of capital markets is to determine the cost of capital, even for firms which are not listed on the stock exchange. This is because firms evaluating a direct investment project in a new market must estimate not only future cash flows, but also an appropriate discount rate or weighted average cost of capital (WACC).

Collins (2007) estimates the cost of equity measures for a sample of capital markets in Africa, as reported in Appendix Table A6. It is shown that for the measures used, except size, South Africa has either the highest or the second highest cost of equity compared with its continental African counterparts. This is despite higher turnover, more listed shares, higher global integration and a more efficient market. The anomalies in these results suggest that further research is necessary in the context that it is not appropriate to estimate cost of equity based on one risk measure for all African markets. It is more appropriate to use different risk measures for each market, depending on their level of integration with global markets. Further research is necessary to establish the most appropriate method for calculating the cost of equity for markets in different stages of development and integration.

6.2 Undiscovered Territory

The main undiscovered territory of capital markets in Africa relates to the third component of the structure of capital markets in Figure 1. It is the derivative market, which serves the exchange of securities created by the exchange and whose value is derived from the underlying securities. Recent innovations in financial engineering to yield synthetic financial instruments such as options, forwards, futures and swaps remain in the realm of uncharted waters. However, the specific area of real options should be of specific interest to the emerging capital markets in Africa, especially in terms of the options to invest and the options to wait and how this influences the nature of the relationship between investment and uncertainty, as recently explored by Lensink and Murinde (2006a). Real options give companies and investors flexibility in making future investment decisions in the face of uncertainty, as well as the flexibility to switch from one option to the other.

The other main undiscovered territory relates the legal infrastructure for entrenching mechanisms for regional initiatives to overcome market segmentation and information asymmetry in order to facilitate an enabling environment for sustained growth of capital markets and the private sector in Africa. Financial securities are by design legally binding instruments, companies are legally corporate bodies and governments issuing bonds do so legally. To what extent do the country-specific legal infrastructures in Africa safeguard property rights, rights of appeal and arbitration in financial transactions? This nexus between law and finance poses a serious challenge to capital market development in Africa. Legal
infrastructure is also important in empowering the potential role of the capital markets in corporate governance (in a principal-agency sense), given the history of abuse of state-owned owned companies in most African countries through the breakdown of standard corporate governance practices.

6.3 The Future of Capital Markets in Africa

The recent proliferation of stock exchanges in Africa is based on the expectations of the role of stock markets in financial development and economic growth of African economies. It is expected that these markets will become an avenue for attaining long term equity finance for the development of the economy as a whole. Also, the markets may be seen as an important part of a wider strategy for developing national, and even regional, economies, stimulation regional savings as well as growth in investment.

6.3.1 Privatisation and the Growth of the Company Sector

Most of the new markets in Africa, which were established about five years ago, have not taken off the ground, because of the limited number of listed companies. In some cases, the expected growth of numbers from privatisation of previous state-owned enterprises has not materialised, depending on the method of privatisation used. Micro and small enterprises (MSE) in most African countries tend to remain small, so there has been limited graduation of MSE to fully-fledged listed firms (Green, Kirkpatrick and Murinde, 2006).

6.3.2 The Missing Bond Market

The growth of the 20 capital markets requires the growth of the bond market for issuing and trading debt instruments, including company and government bonds. See also 6.1.2 above.

6.3.3 Growth of Mutual Funds and Other Managed Portfolios

Fund management is an important part of the capital markets, and it is expected that this will increase across the African markets in the future. This aspect of market development is contingent on a number of factors, as highlighted in 6.1.2 above.

6.3.4 Regional Stock Exchanges Versus Cross-Listing and Integration

The first step towards regionalisation of stock exchanges in Africa was the creation of the BVAM in 1989. From one point of view, the presence of strong regional trading blocs across the continent should facilitate a common stock exchange. From another point of view, advances in information and communications technology (ICT), which means stock markets can take place in a virtual arena, should facilitate cross-listing and integration, without the need for a common stock exchange. For example, in 2000, as a good sign of an increasing integration of African stock exchanges, there was an increase in the number of dual and cross listings in other stock exchanges, particularly in Namibia and Uganda. The debate, therefore, is on the feasibility of a regional stock exchange versus the need for integrated markets. See also 6.1.1.

6.3 Policy Challenges

There are also some policy challenges that financial and monetary authorities in Africa, perhaps jointly with multilateral organizations, need to confront to enhance the role of capital markets. The theoretical literature and the econometric evidence point to the existence of
strong interaction between the stock market and macroeconomic policy variables in developing as well as developed economies. However, there are two problems. First, a number of African economies do not have a good track record of successful design and implementation of credible macroeconomic policies; this is notwithstanding the fact that there are some successful examples to emulate. Second, African economies have different resource bases and institutional structure such that the impact of anticipated as well as unanticipated macroeconomic policies may be amplified in one economy and suppressed in another. Country-specific policy experiences may not be transferable across the continent. Nevertheless, the challenge of macroeconomic policy co-ordination is worth looking into, perhaps facilitated by a regional multilateral institution.
REFERENCES


Figure 1: The Structure of the Capital Market

Financial Institutions / Intermediaries / Underwriters

- Securities (Equity/debt/hybrids)
  - Capital repayments
  - Dividend/Interest
  - Cash subscribed

Primary market: the market for new capital issues by firms and other institutions (including government)

Investors

Stock Exchange / Market Makers

- Securities
  - Secondary Capital Market
  - Cash settlements

Secondary market: the market for the exchange of existing securities

Investors

Derivative trading houses

- Securities
  - Options, futures, swaps
  - Cash settlements

Derivative market: the market for the exchange of securities created by the exchange and whose value is derived from the underlying securities

Investors
Figure 2: Production, Consumption and Investment with Capital Markets

Capital market line

U3 (production and exchange)
U2 (production alone)
U1 (initial endowment)
Table 1: The theoretically expected response of revitalisation reforms on microstructure characteristics

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Appendix Table A2: Market Capitalisation of Stock Exchanges in Africa

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**Notes:** Data are reported in US Dollars millions, end of period.

**Source:** Compiled from UNDP (2003, pp. xx-xx) and from national stock markets.
Appendix Table A3: Number of Companies Listed on Stock Exchanges in Africa

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Notes: Data are reported as actual number of companies, end of period levels.

Source: Compiled from UNDP (2003) and from national stock markets.
Appendix Table A4: Value Traded in Stock Exchanges in Africa

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Notes: Data are reported in US Dollars millions, end of period.
Source: Compiled from UNDP (2003, pp. xx-xx) and from national stock markets.
## Appendix Table A4: Summary of Evidence on Weak Form Efficiency in Capital Markets in Africa

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**Source:** Modified version of Table 1 in Ngugi, Murinde and Green (2003).

## Appendix Table A5: The Type of Trading System in a Sample of Capital Markets in Africa

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<th>Periodic trading system</th>
<th>Type of market maker</th>
<th>Trading cycle type of technology</th>
<th>Types of continuous trading system</th>
</tr>
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<td></td>
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<td>Specialist dealer</td>
<td>Manual</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
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<td></td>
</tr>
<tr>
<td>Mauritius</td>
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<td>✓</td>
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</tr>
<tr>
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<td>✓</td>
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<td>✓</td>
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<td></td>
</tr>
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<td>✓</td>
<td></td>
<td></td>
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<tr>
<td>Zimbabwe</td>
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<td>✓</td>
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</table>

**Source:** Modified version of Table 3 in Ngugi, Murinde and Green (2003).
### Appendix Table A6: Cost of Equity Comparisons in African Capital Markets

<table>
<thead>
<tr>
<th>Market</th>
<th>$\beta^D$</th>
<th>CE$_\beta$</th>
<th>CE$_\Sigma$</th>
<th>CE$_\sigma$</th>
<th>CE$_{Skew}$</th>
<th>CE$_{Var}$</th>
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</thead>
<tbody>
<tr>
<td>S. Africa</td>
<td>10.78</td>
<td>8.88</td>
<td>14.95</td>
<td>14.45</td>
<td>39.13</td>
<td>17.46</td>
</tr>
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<td>7.01</td>
<td>4.77</td>
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<td>14.26</td>
<td>9.10</td>
<td>15.15</td>
</tr>
<tr>
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<td>4.02</td>
<td>21.77</td>
<td>21.26</td>
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<td>26.15</td>
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<td>3.51</td>
<td>7.94</td>
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<td>8.09</td>
<td>7.56</td>
<td>8.60</td>
</tr>
<tr>
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<td>3.02</td>
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<td>11.76</td>
<td>13.27</td>
<td>13.85</td>
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<td>10.81</td>
<td>11.93</td>
<td>17.39</td>
<td>12.38</td>
</tr>
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<td>9.99</td>
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<tr>
<td>Kenya</td>
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</tr>
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<td>12.55</td>
<td>24.13</td>
<td>13.80</td>
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<td>4.84</td>
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</table>

**Source:** Collins (2007), Table 7.

### Appendix Table A7: Summary of Risk Variables for African Capital Markets (based on weekly $ returns, sorted by standard deviation)

<table>
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<tr>
<th></th>
<th>$\mu$</th>
<th>$\sigma$</th>
<th>$\beta$</th>
<th>IR</th>
<th>Size</th>
<th>$\Sigma$</th>
<th>$\Sigma_\mu$</th>
<th>$\Sigma_\sigma$</th>
<th>$\Sigma_{Skew}$</th>
<th>$\Sigma_{Kurt}$</th>
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</thead>
<tbody>
<tr>
<td>Zimbabwe</td>
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<td>0.08</td>
<td>5.90</td>
<td>7.92</td>
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<td>6.48</td>
<td>6.47</td>
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<td>-15.76</td>
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<td>3.53</td>
<td>3.53</td>
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<td>3.51</td>
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<tr>
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<td>2.76</td>
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<td>2.79</td>
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<td>2.53</td>
<td>2.54</td>
<td>0.33</td>
<td>-6.15</td>
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<td>-0.09</td>
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<td>2.55</td>
<td>2.55</td>
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<td>-5.62</td>
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<tr>
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<td>2.14</td>
<td>0.06</td>
<td>2.14</td>
<td>6.64</td>
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<td>1.82</td>
<td>1.85</td>
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</table>

$\mu$: Mean Return; $\beta$: Systematic Risk (Beta); $\sigma$: Total Risk; IR: Idiosyncratic Risk; Size: Log of the average market cap; $\Sigma_\mu$: Semi-standard deviation with respect to the mean; $\Sigma_\sigma$: Semi-standard deviation with respect to zero; $\Sigma_{Skew}$: Semi-standard deviation with respect to the Risk-Free Rate; Downside Beta; $VaR$: Value at risk; Skew: Skewness; Kurt: Kurtosis

**Source:** Modified from Collins (2007), Table 2.
Appendix Table A8: Return and Other Market Sensitivity Indicators of African Capital markets (2000:01-2005:12)

<table>
<thead>
<tr>
<th>Country</th>
<th>Alpha (%)</th>
<th>Beta</th>
<th>Volatility (%)</th>
<th>Cumulative Return (%)</th>
<th>Annualised Return (%)</th>
<th>Sharpe Ratio</th>
<th>Treynor Ratio</th>
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<td>9.7</td>
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