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Regionalization versus internationalization of African stock markets: A frequency-time domain analysis

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Introduction

Among other factors, the World Bank indicates that with an anticipated human population growth of about 1.458 billion by 2025, Africa is increasingly becoming a frontier for investment and world economic development. Increases in demographic transitions opens a window of opportunities, as the working age population increases. This presents an opportunity to open up the African market to enhance intra-African trade, as well as the flow of capital across borders and between Africa and the rest of the world over time. The African Development Bank, UNDP, and OECD report that recent trends in African total trade flows – exports and imports, highlight a shift in trade dynamics and increasing competition from China for the African market. From 2010 to 2013, intra-African exports grew by 50% and by another 11.5% in 2014 to USD61.4 billion. Despite Europe's dominance in Africa trade, Africa's trade with Asia rose by 22% between 2012 and 2013. Moreover, since 2000 official remittances to Africa increased six-fold and were projected to reach USD64.6 billion in 2015 with Egypt and Nigeria receiving the bulk of flows. At the same time, increasing Greenfield investments from China, India, and South Africa are expected to increase foreign investment in the continent. The resultant effects of these are improvements in the overall economic growth and developments in the financial sector. In fact, Ahmed et al., (2014) estimates the contribution of Africa's demographic dividend to gross GDP volume growth of 10-15% by 2030.[1] Standard economic theory postulates that the flow of foreign capital to a recipient country increases its stock of capital and technological knowledge, leading to better economic performance. Capital flows could also enhance local savings, promote capital accumulation, and market efficiency. To reap the above benefits, African countries ought to establish stronger ties and collaborations with the global economy. However, the degree and extent of both inter- and intra-regional interconnectedness ought to be pegged at certain optimal levels in order to reap benefits from scale economies.[2]

The paper examines regional and global co-movemnt of Africa's stock markets using the three-dimensional continuous Morlet wavelet transform methodology. The analyses which are done in segments investigate co-movements with global markets; bilateral exchange rates expressed in US dollars and euro; and four regional markets in Africa. The wavelet analysis helps in the localization in the frequency and time domains, has the ability to breakdown any ex-post variables on different frequencies to examine the subtleties of joint movements across diverse

[1] Unless otherwise stated, figures are gleaned from AfDB, OECD, UNDP (2015) African Economic Outlook report.
[2] Though highly integrated markets may present fertile grounds for shock spillover the benefits of integration cannot be overemphasized. An aggressive pursuit of integration will not only help in risk diversification but also help smooth the impact of shocks – Beck et al., (2009).

time horizons without losses in information, and also provides a better trade-off between detecting oscillations and peaks or discontinuities. The method also simultaneously allows for an assessment of the impact of investment horizon. From the point of view of portfolio diversification, short-term or long-term investors are more concerned with the co-movements at higher or lower frequencies to help them formulate their investments strategies. Thus, through wavelets we are able to make a distinction between the short-term and long term investor, as well as their investments horizons.

We find evidence of stronger co-movements of the African stock markets broadly narrowed to short-run fluctuations. The co-movements are time-varying and commonly non-homogeneous – with phase difference arrow vectors implying lead-lag relationships. The presence of lead-lag effects and stronger co-movements at short-run fluctuations may induce arbitrage and diversification opportunities to both local and international investors with long-term investment horizons. The findings also reveal that some African equity markets are, to a degree, segmented from volatilities of the dollar and euro exchange rates. Thus, inferring that international investors may diversify their portfolio investments across those markets without worrying about the effects of currency price volatility. Another implication of our finding is that, from the perspective of the international investor, equity portfolio diversification opportunities into African markets (specifically, Tunisia, South Africa, Nigeria, Kenya, Egypt, and Botswana) are relatively less significant in the short term than the long term. International investors with long-term investment horizons could therefore diversify into the above markets to reduce portfolio risk by adopting lower frequency trading strategies. The results generally show that stronger co-movements occurring at medium frequencies exist at shorter periods. This appears useful for investors with short term investment needs seeking diversification in the short-to-medium term.

Further observation of the findings is the somewhat sparse co-movement between the MSCI-DW on one hand and each of Ghana and Morocco on the hand across all frequencies and time. We also notice that relatively major stronger co-movements occurring during the period of the 2007-2009 GFC happen at higher frequencies (shorter periods). Moving down the frequency axis, major co-movements are hardly observed across all market pairs for the GFC period. This suggests that the impact of the crisis on international investors diversifying their equity portfolio in Africa's stocks was more severe for investors with short-term than those with long-term investment horizons. We also find evidence of partial segmentation of African stock markets, regionally. The instances of higher regional co-movements among markets may be reflective of the degree of openness and integration, removal of some barriers to intra-regional trade, various market liberalization programmes, as well as level of macroeconomic coordination between countries and regions. Going forward however, aggressive efforts ought to be pursued in the area of harmonizing exchange rate mechanisms, and intensifying trade and other cooperation among national governments to reduce barriers to free flow of investment capital cross regions and countries.

Reference

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