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Financial integration in Africa: New evidence using network approach

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ABSTRACT

We provide an empirical analysis of the network structure of African countries based on a unique data set from the syndicated loans market. Using dynamic panel estimation techniques, we analyse the effects of economic, political and trade integrations on finance. Our findings reveal that the network-based measures perform relatively better than the conventional measures in most cases. Economic activities and money supply will help to strengthen the financial sector of the African economies. Moreover, we establish the significance of connectivity within and outside the continent during the integration process. Political and trade influences are somewhat weak and need further attention.

1. Introduction

In recent years, most African countries have undergone significant reform programmes in the financial sector in the context of stabilisation and structural adjustment. However, coordination between trade and the real sectors with finance is still in the embryonic stage. Being a diverse continent, Africa economies face different experiences in this process. At one end of the spectrum, there are emerging market economies (with growing financial sector) like Morocco and South Africa. The presence of frontier countries (like Ghana, Kenya and Uganda) is also evident. At the other end of the spectrum, countries like Chad and the Democratic Republic of Congo have weak financial sector. Currently, African financial systems lack sufficient depth to be classified into a modern financial system. The World Bank and other premier organisations have identified that small-scale operations within the African financial systems can be corrected through promoting regional financial integration (RFI).

Economic theory and empirical studies provide strong evidence that the development and integration of financial markets contribute towards economic growth by removing frictions and barriers to exchange, and improving the allocation of capital efficiently. Why do African countries need to be integrated financially within and outside the continent? According to the 2016 report by the World Economic Forum, African economies have an average annual real GDP growth of 5.4% between 2000 and 2010 and annual GDP levels as high as $78 billion (in 2015 prices). If economic growth, strong trade and political stability are to continue in the future, nations in Africa need to ensure that its financial sector is fully integrated with the real sector and with international market.

First, we focus on recent initiatives behind financial integration within Africa. Among major programmes for financial integration, agreements for regional financial cooperation (e.g. the East African community) and the spread of Pan-African banking are identified in the literature, see Abegunrin (2009). In domestic banking, Pan-African banks (banking groups domiciled in Africa with subsidiaries in several countries) have developed an increasing share over time. Regional financial integration will stimulate domestic financial reforms, increase the productivity and efficiency of financial systems, extend foreign direct investment and integrate Africa with global financial and trade systems (Maimbo et al., 2011). Ekpo and Chuku (2017) have a detailed discussion on financial globalization and integration in the case of African countries.

Second, Africa has slowly began integrating financially with the rest of the world. In recent years, macroeconomic performance has strengthened in Africa and economies have proven to be more resilient during the recent global financial crisis. Financial integration also allows portfolio diversification, yielding higher profitability of investment and, hence, higher rate of economic growth. Foreign investors are becoming optimistic about private sector investment particularly in mining sector and enormous economic potential within Africa. Moreover, financial

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flows have recently changed direction from North-South to South-South relations, with the rise of emerging markets such as Brazil, China and India. Recent initiatives such as the East African Community and the spread of Pan-African banking groups within Africa allow opportunities to expand their markets across borders, and extend the scope for spreading financial services and know-how. These initiatives support the domestic customers to access foreign markets, include major increases in capital requirements in home countries, and liberalising entry requirements in host countries. Therefore, a key question among financial economists and policy advisers is how to integrate the African financial systems within the continent and with the rest of the world. We aim to contribute in three different aspects towards the literature on empirical finance for Africa.

Given that, our key contribution is to develop a measure of financial integration in Africa using the network approach, we would like to discuss here the novelty of this approach in brief. For financial institutions, different possible sources of connections exist originating from both the asset and the liability side of any balance sheet. For instance, direct connections among banks may exist through mutual exposures originating from the interbank market. Likewise, indirect linkages may develop across banks or financial institutions holding similar portfolios or sharing the same mass of depositors. Loan syndication can be used to measure the nature of mutual exposures among banks. The network approach comprises a collection of nodes and links. Nodes can be a useful representation of the financial systems and links can explain their financial relationships.

In our context, financial integration is measured considering interconnectivities across African countries and with the rest of the world. To our knowledge, this is the first piece of research focusing on the network-based approach in measuring financial integration in Africa.[1] To achieve this, we employ information from a syndicated loan market to construct the degree of financial market integration for the selected African economies.[2] In particular, using information on loans, both at the borrowing and lending levels, we compute a country-level measure of *de facto* financial market integration, using the network science approach.

We use micro-level data on international syndicated loans to construct country-level indicators of financial integration for these economies. This approach enables the visualisation of the various forms of connectivity within and outside Africa; it also facilitates a clearer identification of financial linkages from a micro to a macro perspective. The measures of the network indices are in-degree, out-degree, degree and eigenvector centrality, representing various connections. In addition, we employ conventional *de facto* measures of financial integration as alternative proxies to check the robustness of our findings.[3]

Second, our analysis of financial integration accounts for changes observed over a period of time within the network. Using dynamic panel regression estimation techniques, we conduct all possible robustness checks with both internal and external instruments in dealing with endogenity issues within our regressors. In terms of explaining financial integration, our findings establish better fit with the computed indices based on the network approach compared to the conventional proxies we use for financial integration. Finally, we provide some thoughts on whether the causes of financial integration in Africa lie in integrating economic, trade and political aspects with the financial sector for the selected panel of countries.

The paper is structured as follows. Section 2 identifies the drivers of financial integration. Section 3 covers the overview of the literature that measures financial integration including an introduction of the network approach. Section 4 presents the model, including measures of variables and estimation strategies. Section 5 covers the empirical findings, robustness checks and sensitivity analysis for our financial measures. In the concluding section, we highlight the policy implications.

2. Financial integration: a brief overview

The benefits of financial integration are enormous. Many researchers argue that in the case of adverse shocks, consumption (and demand) within a country remains smooth due to the ability of these countries to access capital markets such that these international risk-sharing activities can yield large and permanent potential growth and welfare gains (Obstfeld, 1994). Foreign capital allows countries to consume more than they produce and invest more than they save, thereby reducing income inequality and promoting economic development (Nafziger, 1997).

Improvements in the ability of domestic markets to absorb shocks and foster development may arise because of financial integration.[4] However, strong implications for financial stability abound as the probability of cross-border financial contagion increases. Yu et al. (2010) argue that the divergence in the degree of integration between emerging and mature equity markets may be due to the differences in economic, political and institutional aspects across countries.

There is a vast literature analysing the determinants of financial integration both from developed and emerging countries. Lane and Milesi-Ferretti (2008) establish that extensive cross-border asset trade occurs among the advanced economies. Apart from the stimulus provided by falling communication costs, the major factors driving cross-border integration are financial deregulation, capital account liberalisation and financial innovation. In contrast, developing and emerging countries have smaller cross-border asset and liability positions relative to developed countries. Participation in cross-border financial transactions for this developing group is found to be limited due to cross-border currency risk. However, as emphasised in Lane and Milesi-Ferretti (2007, 2008), the trend has changed in recent times with a substantial expansion in the gross scale of foreign asset holdings, foreign direct investment and net external position.

The empirical literature provides discussion on the factors associated with international financial integration. These factors include economic growth, financial development in the domestic sector, trade openness and political institutions. Openness in the financial and trading sector is related to financial integration, as argued by researchers (see for example, Bekaert et al., 2013; Obstfeld, 2007).

The level of domestic financial market development is also recognised by researchers as a key contributor to the degree of integration for most economies with the rest of the global community. The facilitation of asset trade among residents, which potentially reduces the need for external financial intermediaries, may occur as a result of developed domestic financial markets and a domestic banking system. Improvements in information flows may occur due to increases in trade linkages and in the willingness to invest in foreign assets.

Foreign investment in the domestic financial system may induce domestic financial development, and the facilitation of foreign demand for domestic liabilities may occur due to the availability of domestic financial products (Martin and Rey, 2004). As argued in Lane and Milesi-Ferretti (2008), a positive correlation exists between financial integration and financial development. Arguably, the correlation of the external financial positions with the growth of domestic financial positions can be envisaged. The tendency to engage in cross-border transactions can be explained in part by the level of economic development.

In the case of the African Common Market for Eastern and Southern Africa (COMESA), Carmignani (2006) provides the different dimensions of the integration process, which include shocks symmetry,

[1] Schiavo et al. (2010) has used this approach in analysing the international and financial network of trade and assets across countries.

[2] We consider interactions within our selected panel of African countries and with rest of the world.

[3] Our measures are quantity-based not price-based measures.

[4] See Lane (2016) on international financial inflows in Sub-Saharan Africa. Some studies on African integration include Ahmed and Mmolainyane (2014) and Çakır and Kabundi (2013).