Stock Exchange Development and Economic Growth in Sub-Saharan Africa (SSA)

Yu Yvette Zhang   Fred O. Boadu

Department of Agricultural Economics, Texas A&M University

yzhang@tamu.edu   f-boadu@tamu.edu

Stock Exchange Development and Economic Growth in Sub-Saharan Africa (SSA)

Yu Yvette Zhang & Fred O. Boadu

Texas A&M Univerrsity

Introduction

Several countries in Sub-Saharan Africa (SSA) embraced the structural adjustment programs (SAPs) suggested by the World Bank and the International Monetary Fund (IMF) in the 1980s. SAPs entail three main transitions: (1) from state control to market-led development; (2) from authoritarianism to rule of law, and (3) from central control to constitutionalism (Cass, 1991). The transitions are interrelated and form the main pillars of a market economy to promote growth in SSA. As a part of SAPs, many African countries began to reform their financial sectors and some countries established stock exchanges or expanded existing one. The existing literature suggests possible correlation between development of financial markets and overall economic growth. An understanding of the causal links would promote better policy decision-making, especially in sequencing policies to promote economic growth driven by a developed financial sector. Since the history of financial systems of African countries is relatively short, the studies to explore the relationship between financial market development and economic growth rely on a panel with small number of cross-section units or time periods. We note, however, most existing work studying correlation between developments of financial markets and overall economic growth in SSA fails to take into account the panel nature of the data used in the analysis. This oversight leads to inconsistent estimation results owing to the so called *incidental parameter* problem (Lancaster, 2000).

This paper investigates the causal relationship between stock exchange development, institutional and macroeconomic variables, and economic growth using data from SSA countries, using an approach for panels with small number of cross-sectional units or time periods, tackling the incidental parameter problem.

Research Methodology

Since the history of financial systems of African countries is relatively short, we rely on a panel of fourteen countries to explore the relationship between financial market development and economic growth. This approach has been utilized in a number of existing works. To fully understand the dynamic interactions between financial market development and economic growth, vector autoregressive regression (VAR) method is employed. A typical VAR involves regressing a vector of potentially endogenous variables on a vector of lagged dependent variables and other control variables that are assumed to be exogenous in the system. The system can then be estimated using the conventional linear regression method. The incidental parameter problem arises from the individual effects whose number increases with the number of cross-sectional unit in a panel data. For static models, the individual effects can be removed by first differencing or de-meaning within each unit. However, they remain in the system after these transformations in a dynamic model for panel data.

Because the causal relationship between the financial market development and economic growth may run into either direction, we use vector autoregressive regression in our analysis. The vector of dependent variables include for each country-year, per capita GDP and indicators of financial market development. The GMM-VAR estimator for dynamic panel models proposed by Holtz-Eakin et al. (1988) is used in our analysis.

Analsis and Results

The VAR model on economic growth and financial market development is given by the following equations:

$$gGDP_{i,t} = \alpha_{1,1}gGDP_{i,t-1} + \alpha_{1,2}gMKTCAP_{i,t-1} + \alpha_{1,3}Liquidity_{i,t-1} + X'_{i,t}\beta_1 + \gamma_{1,i} + u_{i,t},$$
$$gMKTCAP_{i,t} = \alpha_{2,1}gGDP_{i,t-1} + \alpha_{2,2}gMKTCAP_{i,t-1} + \alpha_{2,3}Liquidity_{i,t-1} + X'_{i,t}\beta_2 + \gamma_{2,i} + v_{i,t},$$
$$Liquidity_{i,t} = \alpha_{3,1}gGDP_{i,t-1} + \alpha_{3,2}gMKTCAP_{i,t-1} + \alpha_{3,3}Liquidity_{i,t-1} + X'_{i,t}\beta_3 + \gamma_{3,i} + w_{i,t}.$$

Our analysis on GDP and stock market development indicators suggests that degree of liquidity plays little role in economic development and is therefore excluded from our model. Therefore, our model consists of a bivariate dynamic VAR system with two dependent variables: growth GDP and growth MKTCAP. The results of VAR models indicate strong effects of stock market growth capitalization on GDP growth; at the same time, GDP growth has little effects on stock market growth. Since the results may suffer from the incidental parameter bias, we proceed to estimate the model using GMM-VAR method for dynamic panel models. The results are qualitatively similar. The coefficient for the stock market growth on GDP growth remains virtually identical, whereas its statistical significance decreases to 7.8%, a marginally significant level.

Conclusion

Overall, our results lend support to the notation that growth in stock market to some degree causes economic growth. The results are robust with respect to alternative specifications, and consistent with a large body of theoretical and empirical literature.