Economic Growth in Sub-Saharan Africa

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Abstract

The sustainable growth of economics in Sub-Saharan Africa is worth exploring. Based on this topic, this paper uses panel data on economic growth, foreign direct investment, external debt, trade openness, and exchange rate from 1994 to 2018 in Sub-Saharan Africa to estimate the relationship between these variables by using the System GMM method. In the final part, we plan to analyze the potential reasons for the connection of these variables.

1 Motivation

Exploring factors which promote sustainable economic growth in developing countries is a main topic faced by world wide economists. Among numbers of factors, foreign direct investment (FDI) and external debt are the two most powerful elements that have positive or negative impacts on the development of vulnerable economies. In previous and current literature, scholars choose developing countries located in Asia, Africa, Central and South America to research on how FDI, external debt, and other potential factors play a role on the economic growth in these settings. Following this trend, we have strong interest on exploring the economy in Sub-Saharan Africa (SSA), whose sustainable growth and investment are rapid in early 2000s. Based on previous literature, besides FDI and external debt, we also put trade openness and exchange rate into consideration. More importantly, we not only explore the effects of several factors on economic growth, but also explore the interrelationships among these four factors in order to provide a complete view on the development of economy in Sub-Saharan Africa.

Research question: The effects of FDI, external debt, trade openness and exchange rate on economic growth in Sub-Saharan Africa and their interrelationships.

2 Literature Review

In the previous literature, there are a large amount of works illustrate the effects of various elements on economic growth in different regions and countries. Among these elements, most papers focus on foreign direct investment. Many of them choose Sub-Saharan Africa because FDI has become the most important external finance source in many SSA countries. Joshua et al. (2021) showed empirical evidence that FDI inflows, combined with other factors like financial aids, is useful in economic expansion in SSA countries. Asongu and Odhiambo (2020) applied novel element "information and communication technology" (ICT) into the relationship between FDI and economic growth in SSA countries. They found that ICT helps FDI generate positive net effects on three economic growth dynamics: GDP growth, real GDP and GDP per capita. In addition, this FDI-Growth relationship not only appears in SSA economy. Kalai and Zghidi (2019) analyzed the relationship between FDI and economic growth in fifteen Middle Eastern and North African countries and found that FDI gives long-run support on economic growth in these countries.

There are also empirical studies on the effects of external debt, exchange rate, and trade openness on economic growth. Manasseh et al. (2022) found that both external debt and its volatility have negative effects on economic growth in SSA countries. However, Frimpong and Oteng-Abayie (2006) showed a positive relation between external debt and economic growth under Ghana. For the effects of exchange rate and trade openness, Joshua et al. (2020) found that both factors have significant and positive impacts on economic growth in South Africa. In addition, Tahir and Ali (2014) provided a clear summary on the effects of trade openness on economic growth in the previous literature. The existing literature enhanced that there is a positive and robust relationship between trade openness and economic growth under various settings.

Besides the effects of factors on economic growth, there are also a number of works on the interrelationship among these factors. Suliman et al. (2015) provided evidence that real exchange rate does have influence on FDI inflows in SSA countries; however exchange rate does not have significant impact on FDI in China, as Khandare (2016) illustrated. Furthermore, Kizilgol and Ipek (2014) studied Turkish economy and found that in both long and short run, increase in trade openness has positive effects on external debt. Similarly, Zaman et al. (2018) showed that increasing trade openness positively influences FDI inflows in the long run in India, Iran and Pakistan countries

3 Research Design

We use five data series from the World Bank from 1994 to 2018 for the Sub-Saharan countries. The data includes Economics Growth and FDI as key variables and contains External Debt, Exchange Rate, and Trade Openness. The reason for using the data before 2019 is to avoid the impact of Covid-19. After adopting a logarithmic transformation of all variables, we plan to use System GMM to estimate the impacts of FDI, external debt, trade openness, and exchange rate on economic growth and their interrelationships. The System GMM can solve the endogeneity problem of estimating dynamic panel data. Compared with the Horizontal GMM and the Difference GMM, the System GMM improves the efficiency of estimation and enables the estimation of the coefficient of the time-invariant variable. But using System GMM should satisfy that $\{\Delta Y_{it-1}, \Delta Y_{it-1}, \ldots\}$ is unrelated to individual effect, and the disturbance term has no autocorrelation. Thus, we will test the autocorrelation of the residual term. Using Sargan test to check for overidentification is also necessary to guarantee the instrumental variables are valid. Moreover, to avoid pseudo regression, we need to do unit root test to confirm the panel data is stationary.

To conclude, adopting the System GMM, we will estimate five equations. Their dependent variables are Economics Growth, FDI, External Debt, Exchange Rate, and Trade Openness. The purpose is to explore the effects of FDI, external debt, trade openness and exchange rate on economic growth in Sub-Saharan Africa and their interrelationships.

4 Outline

Date	Progress
Apr 2 - Apr 4	Data cleaning
Apr 5 - Apr 10	Model Estimation
Apr 11 - Apr 15	Robust Test
Apr 16 - Apr 20	Paper Writing
Apr 21 - Apr 30	Adjustment and Revision

References

Asongu, S. A. and Odhiambo, N. M. (2020). Foreign Direct Investment, Information Technology and Economic Growth Dynamics in Sub-Saharan Africa. *Telecommunications Policy*, 44(1). https://doi.org/10.1016/j.telpol.2019.101838.

Frimpong, J. and Oteng-Abayie, E. (2006). The Impact of External Debt on Economic Growth in Ghana: A Cointegration Analysis. *Journal of Science and Technology (Ghana)*, 26(3). https://doi.org/10.4314/just.v26i3.33013.

Joshua, U., Adedoyin, F., and Sarkodie, S. (2020). Examining the external-factors-led growth hypothesis for the South African economy. *Heliyon*, 6(5):e04009. https://doi.org/10.1016/j.heliyon.2020.e04009.

Joshua, U., Babatunde, D., and Sarkodie, S. A. (2021). Sustaining Economic Growth in Sub-Saharan Africa: Do FDI Inflows and External Debt Count? *Journal of Risk and Financial Management*, 14(4):146. https://doi.org/10.3390/jrfm14040146.

Kalai, M. and Zghidi, N. (2019). Foreign Direct Investment, Trade, and Economic Growth in MENA Countries: Empirical Analysis Using ARDL Bounds Testing Approach. *Journal of the Knowledge Economy*, 10:397–421. https://doi.org/10.1007/s13132-017-0460-6.

Khandare, V. (2016). Impact of exchange rate on FDI: A comparative study of India and China. *International Journal of Applied Research*, 2(3):599–602.

Kizilgol, O. and Ipek, E. (2014). An Empirical Evaluation of the Relationship between Trade Openness and External Debt: Turkish Case. *International Econometric Review*, 6(1):42–58. https://doi.org/10.33818/ier.278030.

Manasseh, C., Abada, F., Okiche, E., Okanya, O., Nwakoby, I., Offu, P., Ogbuagu, A., Okafor, C., Obidike, P., and Nwonye, N. (2022). External Debt and Economic Growth in Sub-Saharan Africa: Does Governance Matter? *PLoS ONE*, 17(3):e0264082. https://doi.org/10.1371/journal.pone.0264082.

Suliman, A., Elmawazini, K., and Shariff, M. (2015). Exchange Rates and Foreign Direct Investment: Evidence for Sub-Saharan Africa. *The Journal of Developing Areas*, 49(2):203–226. https://www.jstor.org/stable/24241298.

Tahir, M. and Ali, D. H. N. B. P. H. O. (2014). Trade Openness and Economic Growth: A Review of the Literature. *Asian Social Science*, 10(9). https://doi.org/10.5539/ass.v10n9p137.

Zaman, Q. u., Zhang, D., Yasin, G., Zaman, S., and Imran, M. (2018). Trade Openness and FDI Inflows: A Comparative Study of Asian Countries. *European Online Journal of Natural and Social Sciences*, 7(2):386–396.