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## Complementarity Between Foreign Aid and Financial Development as a Driver of Economic Growth in Selected Emerging Markets

### Abstract

*This paper studied whether the complementarity between financial development and foreign aid promotes economic growth in selected emerging markets using the panel Fully Modified Ordinary Least Squares (FMOLS) approach, with data ranging from 1994 to 2014. Although (1) aid-growth and (2) finance-growth studies have been conclusively dealt with, the role of financial development in the aid-growth nexus has been hardly researched. Is financial development a channel through which foreign aid positively influences economic growth? The current study seeks to address these issues using selected emerging markets as a case study. The complementarity between foreign aid and financial development (domestic credit provided by the financial sector; domestic private credit provided by banks, outstanding domestic private debt securities and stock market turnover) resulted in a significant positive impact on economic growth. The study, therefore, urges selected emerging markets to implement policies which deepen the financial sector in order to allow foreign aid to positively contribute towards economic growth.*

**Keywords:** *foreign aid; financial development; economic growth; emerging markets*

**JEL:** *F35; F43; G15*

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## 1. Introduction

**Background of the study:** The relationship between foreign aid and economic growth is currently a topical issue in development economics and finance because of the existing theoretical contradictions on the causality between these two variables. Four dominant views emanate from the literature: (1) the foreign aid-led positive growth hypothesis, (2) the foreign aid-led negative growth hypothesis and (3) the mixed view hypothesis. The fourth view, which argues that certain conditions – including financial sector development – must be available in the foreign aid receiving country before foreign aid can positively influence economic growth, was supported by Nkusu and Sayek (2004), Ang (2010), Tang and Bundhoo (2017) and Adam (2013). Using the theoretical foundation proffered by Ang (2010) and Nkusu and Sayek (2004), the current paper investigated the influence of the complementarity between foreign aid and financial development on economic growth in selected emerging markets, a bloc of countries which has been ignored by prior empirical studies on similar subject matter. The findings of the study are expected to help selected emerging markets to craft reliable financial development policies aimed at ensuring that foreign aid inflows enhance economic growth. The study is also expected to inform the selected emerging markets on the extent to which they can rely on foreign aid for economic growth purposes.

The aim of this study is threefold: Firstly, to find out the impact of foreign aid on economic growth. Secondly, to investigate the effect of complementarity between foreign aid and financial development on economic growth. Thirdly, to explore whether financial sector development is a channel through which foreign aid enhances economic growth in the selected emerging markets.

**Research gap and contribution of the study:** Nkusu and Sayek (2004) were the first authors to combine finance-growth and aid-growth studies into a single study aimed at investigating the role of financial development in the aid-growth nexus. They argued that more foreign aid inflows exert upward pressure on the real exchange rate, thus pushing up the prices of goods and services leading to negative economic growth in the long run. A developed financial sector produces financial instruments which could effectively manage the resultant negative influence of the foreign aid on economic growth. Ang (2010) argued that the financial sector's ability to allocate financial resources enables foreign aid to contribute more towards economic growth and development.

According to Adam (2013), the combination between (a) foreign aid and domestic investment, (b) foreign aid and international reserves and (c) foreign aid and exports had a positive and significant impact on economic growth. A study by Tang and Bundhoo (2017) noted that foreign aid on its own failed to stimulate economic growth in Sub-Saharan African countries. They noted that foreign aid complemented by good macroeconomic policy environment, high institutional

quality and investment enhanced economic growth in Sub-Saharan Africa. Moreover, India was found to have economically benefited more from foreign aid because of its liberalized financial markets (Ang 2010: 209).

The current study deviates from prior empirical studies on similar subject matter in the following ways: (1) it used GDP per capita, which is a superior measure of economic growth and development, (2) it used financial development measures which represent the stock market, banking sector and the bond sector, (3) it used panel data analysis, (4) it focused on selected emerging markets as a bloc and (5) to the best of the author's knowledge, it is the first study to investigate the complementarity of foreign aid and financial development in enhancing economic growth in emerging markets.

**Organization of the paper:** The rest of the paper is structured as follows: Section 2 discusses the influence of foreign aid on economic growth from both a theoretical and empirical literature viewpoint. Section 3 is a description of the research methodology, data analysis and interpretation of results. Section 4 summarises the paper whilst section 5 concludes. Section 6 is the bibliography.

## 2. Impact of foreign aid on economic growth – a literature review

There are three theoretical rationales explaining the relationship between foreign aid and economic growth, namely the foreign aid-led positive growth hypothesis, foreign aid-led negative growth hypothesis and the mixed results hypothesis, as discussed next.

The foreign aid-led positive growth hypothesis was founded on Solow's (1956) neoclassical growth theory and was theoretically supported by Balde (2011). According to Solow (1956), savings enhance the accumulation of physical capital, investment and consequently economic growth. Balde (2011), on the other hand, argued that foreign aid contributes to domestic savings, thus promoting physical capital accumulation and investment, which is necessary for economic growth. The endogenous growth theory proponents (Lucas 1988; Romer 1986) emphasised that human capital development is a necessary ingredient for economic growth. It is against this background that Kargbo (2012) argued that foreign aid enhances economic growth if it is directed more towards capacity building and technical assistance.

Empirical studies which supported the foreign aid-led positive growth hypothesis were done by Adam (2013), Lof, Mekasha and Tarp, F. (2015), Mekasha and Tarp (2015), Hossain (2014), Murshed and Khanaum (2012), Al-Foul (2013), Kargbo (2012), Minoiu and Reddy (2009) and Moreira (2005), among others.

Using a three-equation simultaneous-equations model with data ranging from 1990 to 2009, Adam (2013) investigated the influence of foreign aid on economic

growth in the Economic Community of Western African States (ECOWAS). The study found that foreign aid had a significant positive impact on economic growth in the ECOWAS countries. Furthermore, foreign direct investment, the level of international reserves and interest rates were found to have had a significant positive effect on economic growth. A study by Minoiu and Reddy (2009) noted that foreign developmental aid was instrumental in promoting economic growth in developing countries. Using time series data analysis, Lof et al. (2015) explored the relationship between foreign aid and income. They found that foreign aid had a long run influence on income in the recipient country. Using dynamic panel data analysis, Jones and Tarp (2016) observed that foreign governance aid was instrumental in terms of promoting and strengthening political institutions in developing countries.

Hossain (2014) investigated the impact of foreign aid on economic growth in Bangladesh using multiple regression analysis with time series data from 1980 to 2012. The findings of this study were twofold: (1) economic growth was found to have been positively and significantly influenced by foreign aid and (2) institutions in Bangladesh lacked the capacity to effectively utilise the foreign aid. Al-Foul (2013) studied the impact of foreign aid on economic growth in Jordan and Egypt using time series data analysis with data from 1960 to 2005. Whilst the study found results which support the foreign aid-led growth hypothesis in Jordan, foreign aid and economic growth were found to have had no causality effect on each other in Egypt. A study by Murshed and Khanaum (2012) also found results which supported foreign aid-led growth hypothesis in the case of Bangladesh.

Kargbo (2012) explored the impact of foreign aid on economic growth in Sierra Leone using the Autoregressive Distributive Lag (ARDL) with data from 1970 to 2007. The study observed that economic growth was Granger caused by foreign aid in Sierra Leone, both in the short and long run. However, the impact of foreign aid on economic growth was found to be marginal during the war whereas the pre-war period was characterised by a more efficient impact of foreign aid on economic growth. Minoiu and Reddy (2009) studied the effect of development aid on economic growth in developing countries using panel data analysis. They found that developmental aid was instrumental in promoting economic growth in comparison to non-developmental aid. Using a cross-country study, Moreira (2005) found that the foreign aid-led growth nexus was relevant in developing countries.

The foreign aid-led negative growth hypothesis was theoretically supported by Knack (2001), whose study argued that foreign aid reduces institutional quality and increases corruption and rent-seeking activities, thereby negatively influencing economic growth. The negative impact of foreign aid on the economic growth hypothesis was supported by recent empirical studies such as Mallik (2008), Sothan (2018) and Ali (2013), among others. Using co-integration analysis, Mallik (2008) investigated the impact of foreign aid on economic growth in the poorest African countries. The study revealed that a long run relationship between foreign

aid, economic growth, trade openness and investment existed in the poorest African countries studied. On the other hand, economic growth was found to have been negatively influenced by foreign aid in the poorest African countries studied. Sothan (2018) studied the effect of foreign aid on economic growth in Cambodia using the ARDL approach with time series data ranging from 1980 to 2014. The findings are twofold: (1) foreign aid had a positive effect on economic growth in the short run only and (2) foreign aid had a negative impact on economic growth in Cambodia.

Ali (2013) investigated the impact of foreign aid on economic growth in Egypt using the vector error correction model (VECM) with time series data ranging from 1970 to 2010. The study observed that foreign aid had a significant negative influence on economic growth in Egypt, both in the short and long run. The same study revealed that Egypt would economically benefit from relying on internal financial resources rather than depending on foreign aid to finance growth (Ali 2013: 749).

Albiman (2016), Alemu and Lee (2015), Ekanayake and Chatrna (2010) and Rahnama et al. (2017), among others, are the more recent empirical studies which corroborated the mixed results hypothesis. For example, Albiman (2016) investigated the effect of foreign aid on economic growth in Tanzania using the dynamic ordinary least squares approach with time series data ranging from 1976 to 2014. In the short run, foreign aid was found not to have had any effect on economic growth, yet the same study observed that foreign aid had a negative influence on economic growth in Tanzania in the long run. Using the dynamic generalised methods of moments (GMM) with panel data ranging from 1995 to 2010, Alemu and Lee (2015) studied the role of foreign aid in economic growth in African countries. The findings were twofold: (1) foreign aid had a significant positive impact on economic growth only in low-income African nations. By contrast, no evidence was found which supports the foreign aid-led growth hypothesis in the case of middle-income African countries.

Ekanayake and Chatrna (2010) studied the impact of foreign aid on economic growth in 85 developing countries from Africa, Asia, the Caribbean and Latin America using panel data analysis with data ranging between 1980 and 2007. Estimating the economic growth model for different time frames, economic growth was found to have been negatively affected by foreign aid in developing countries. The negative influence of foreign aid on economic growth was also observed in Asia, the Caribbean and Latin America when the economic growth model was estimated for different regions. In Africa, foreign aid was found to have had a significant positive influence on economic growth. When the economic growth model was estimated using the level of income criteria, foreign aid had a negative influence on economic growth in low income and upper-middle-income countries. On the other hand, economic growth was found to have been positively affected by foreign aid in lower-middle-income countries (Ekanayake and Chatrna 2010: 11).

Using the dynamic GMM approach, Rahnama et al. (2017) investigated the impact of foreign aid on economic growth in developing countries. They observed that economic growth was positively influenced by foreign aid in high income developing countries, especially in the later stages of development. The same study revealed that foreign aid had a negative influence on economic growth in low income developing countries.

These contradictions from the literature on the relationship between foreign aid and economic growth is clear evidence that the relationship between these two variables is far from being a settled matter. Moreover, the conditions that must be available in the foreign aid receiving country before foreign aid triggered economic growth happens is still an area which needs further attention. Clearly, there is consensus in the literature with regard to the list of channels through which foreign aid can influence economic growth.

### 3. Research methodology

The study identified two main independent variables that determine economic growth, namely foreign aid and financial development. Control variables identified in the economic growth econometric function included FDI, human capital development, inflation, savings, trade openness and infrastructural development.

**Econometric Model Specification:** The following empirical models were tested.

$$GR_{i,t} = \beta_0 + \beta_1 FAID_{i,t} + \beta_2 FIN_{i,t} + X_{i,t} + \mu_i + \varepsilon_{it} \quad (1)$$

$$GR_{i,t} = \beta_0 + \beta_1 FAID_{i,t} + \beta_2 FIN_{i,t} + \beta_3 (FAID_{i,t} \cdot FIN_{i,t}) + \beta_4 X_{i,t} + \mu_i + \varepsilon_{it} \quad (2)$$

Where GR, FAID, FIN and X stand for economic growth, foreign aid, financial development and control variables such as trade openness, inflation, savings, infrastructural development and human capital development.  $\beta_0$  is the intercept term while  $\beta_2$  to  $\beta_4$  represent the coefficients of the variables concerned.  $\varepsilon_{it}$  is the error term. Subscripts  $t$  and  $i$  stand for time and country respectively whereas the unobserved country-specific time-invariant effect is denoted by  $\mu_i$ . The interaction between foreign aid and financial development is represented by  $(FAID_{i,t} \cdot FIN_{i,t})$ , consistent with Goff and Singh (2014).

**Definition of variables, justification and a priori expectation:** Adam (2013), Jones and Tarp (2016) and Kargbo (2012) are some of the recent empirical studies

which observed a positive impact of foreign aid on economic growth. On the other hand, a negative influence of foreign aid on economic growth was corroborated by prior research done by Mallik (2008) and Sothan (2018). This study, therefore, expects foreign aid to have either a positive or negative effect on economic growth. The financial sector positively influences economic growth through its ability to promote the efficient utilisation of financial resources in the economy (King and Levine 1993), the pooling of savings and channelling them into more productive use (Grossman 1976), advancing risk management to protect the economy participants, and lowering the cost of doing business by reducing transaction and information gathering costs (Goldsmith 1969; Townsend 1983). By contrast, Kiprop et al. (2015) noted that excessive financial development misallocates resources and causes economic volatility. Overall, financial development is expected to either positively or negatively affect economic growth.

According to Romer (1986), FDI brings along with it the new technology, human capital development and technical know-how into the host country, know-how and the training of labour, all of which enhances economic growth. It is against this background that FDI is expected to influence economic growth positively. High inflation rates negatively affect the growth of the economy whereas moderate inflation rates lead to positive economic growth, argued Mallik and Chowdhury (2001). Inflation is expected to either have a positive or negative impact on economic growth. According to McKinnon (1973), economic growth is enhanced if savings are channelled towards the sectors of the economy which are productive. Savings are therefore expected to have a positive effect on economic growth.

Exports bring in foreign currency whilst imports enable the country to purchase inputs, implements and other resources necessary for the functioning of the economy. Moreover, high levels of trade openness subject the economy to international trade shocks which might consequently have a long-term negative effect on economic growth (Baltagi et al. 2009). Trade openness can, therefore, have either a positive or negative influence on economic growth. Infrastructure development is expected to positively affect the growth of the economy just like any other factor of production.

Table 1 summarises the variables used, their proxies, the expected relationship between the independent and dependent variables and the sources of data.



**Table 1. Variables, proxies, data source(s) and expected signs**

<b>Variable</b>	<b>Proxy</b>	<b>Expected relation with dependent variable (economic growth)</b>	<b>Source(s) of data</b>
Economic growth	GDP per capita	N/A	World Development Indicators
Foreign aid (FAID)	Net official development assistance received per capita	+/-	International Financial Statistics, World Development Indicators, International Financial Statistics, various reports from the United Nations Development Programme and International Monetary Fund databases.
Financial development (FIN)	Domestic credit provided by financial sector (% of GDP)	+/-	International Financial Statistics, World Development Indicators and International Financial Statistics.
Foreign direct investment (FDI)	Net FDI inflow (% of GDP)	+	International Financial Statistics, World Development Indicators, International Financial Statistics, various reports from the United Nations Development Programme, International Monetary Fund, Global Financial Indicators, United Nations Conference on Trade and Development database and African Development Indicators.
Human capital development (HCD)	Human capital development index	+/-	Various reports from the United Nations Development Programme, International Monetary Fund, Global Financial Indicators, the United Nations Conference on Trade and Development database and African Development Indicators.
Inflation (INF)	Inflation, consumer prices (annual %)	-	International Financial Statistics, World Development Indicators and International Financial Statistics.
Savings (SAV)	Gross domestic savings (% of GDP)	+	International Financial Statistics, World Development Indicators, International Financial Statistics and Global Financial Indicators.
Trade openness (OPEN)	Total of exports and imports (% of GDP)	+/-	International Financial Statistics, World Development Indicators, International Financial Statistics and the United Nations Conference on Trade and Development database.



Variable	Proxy	Expected relation with dependent variable (economic growth)	Source(s) of data
Infrastructural development (INFR)	Electric consumption (% of GDP)	+	International Financial Statistics, World Development Indicators, International Financial Statistics, and International Monetary Fund database.

Source: author's compilation.

**Estimation method:** A panel data approach was used because of its main advantages, which were highlighted by Hsiao (2003) and Wooldridge (2002). These are: (1) it is better placed to measure an impact that cannot be easily be identified using time series and cross-sectional data analysis. Specifically, the current study used the panel Fully Modified Ordinary Least Squares framework to estimate equations 1 and 2.

**Descriptive statistics:** In line with Abel and Le Roux (2016), performing correlation analysis and descriptive statistics is important before main data analysis in order to avoid the problem of spurious results. This is because, in econometrics, empirical results always have to adhere to a priori expectations.

**Data:** The study used panel data ranging from 1994 to 2014. In line with the International Monetary Fund (2015) classification criteria and data availability considerations, the emerging markets studied include Argentina, Brazil, Colombia, Indonesia, India, Mexico, Turkey and South Africa. The data for the macro-economic variables were obtained mainly from African Development Indicators, the International Monetary Fund, the World Development Indicators, various reports from the United Nations Development Programme and the Global Financial Indicators database.

#### 4. Research findings

The correlation co-efficient matrix (see Table 2) shows that there is a significant positive correlation between (1) foreign aid and economic growth and (2) infrastructure development and economic growth. A positive but non-significant correlation between (3) financial development and economic growth, (4) FDI and economic growth and (5) human capital development and economic growth was observed. Table 2 also shows a negative but non-significant correlation between (6) inflation and economic growth and (7) economic growth and trade openness.

On the other hand, the study observed that economic growth and savings in emerging markets were negatively but significantly correlated with economic growth. The majority of the correlation results are in line with the existing literature.

**Table 2. Correlation analysis**

	GR	FAID	FIN	FDI	HCD	INFL	SAV	OPEN	INFR
GR	1.00								
FAID	0.26***	1.00							
FIN	0.03	0.46***	1.00						
FDI	0.26	0.08	-0.07	1.00					
HCD	0.53	-0.05	-0.32***	0.27***	1.00				
INFL	-0.06	-0.07	0.01	-0.12	0.06	1.00			
SAV	-0.45***	-0.31***	-0.13*	-0.18**	-0.45***	0.01	1.00		
OPEN	-0.07	0.33***	0.27***	-0.16**	-0.19**	-0.11	0.3***	1.00	
INFR	0.48***	0.37***	0.74***	-0.03	0.18**	-0.03	-0.4***	0.16**	1.00

Note: \*\*\*/\*\*/\* denotes statistical significance at the 1%/5%/10% level respectively

Source: author's own compilation from E-Views.

All the correlations were found to be below 0.8. This means that the problem of multicollinearity does not exist between and among the variables studied, in line with Gujarati's (2007) argument.

Table 3 shows the descriptive statistics for the variables studied, such as mean, median, maximum, minimum, standard deviation, skewness, kurtosis and Jarque-Bera. There were 168 observations for each variable studied during the period from 1994 to 2014.

**Table 3. Descriptive statistics**

	GR	FAID	FIN	FDI	HCD	INFL	SAV	OPEN	INFR
Mean	5077	6.96	65.0	2.10	0.72	24.5	21.7	42.7	1834
Median	4302	3.98	50.5	2.04	0.73	6.88	20.5	45.1	1718
Maximum	14443	44.8	193	8.46	0.88	2076	35.5	96.2	5061
Minimum	353	0.01	19.7	0.07	0.45	0.16	12.9	15.6	240
Standard. deviation	3472	8.40	42.3	1.33	0.09	160	5.39	14.6	1285
Skewness	0.58	2.26	1.69	1.22	-0.53	12.6	0.86	0.16	1.00
Kurtosis	2.51	8.92	4.98	6.00	3.00	162	2.93	2.79	3.25
Jarque-Bera	11.1	389	108	104	7.87	181775	20.7	1.04	28.7
Probability	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.59	0.00
Observations	168	168	168	168	168	168	168	168	168

Source: author's own compilation from E-Views.

The standard deviation for economic growth and infrastructural development (above 1000) is an indication that there exist extreme and abnormal values in the data for the two variables. The zero probability values of the Jarque-Bera criteria for variables such as economic growth, foreign aid, financial development, FDI, human capital development, inflation, savings and infrastructural development, is evidence that the data for the variables concerned is not normally distributed. If the problem of extreme values and data not following a normal distribution is not corrected, this might lead to spurious results in line with Abel and Le Roux's (2016) observation. One way to address the problem is to convert all the data into natural logarithms before being used for main data analysis (Hair et al., 2014: 80).

**Panel unit root tests:** Table 4 shows that not all variables were stationary at level. At first difference, all variables were found to be stationary. As argued by Green (2000), this is a necessary condition which must be achieved in order to avoid results which can mislead the decision making processes.

**Table 4. Panel unit root tests – Individual intercept and trend**

	Level				First difference			
	LLC	IPS	ADF	PP	LLC	IPS	ADF	PP
LGR	-0.70	-0.09	13.2	12.2	-2.62***	-2.6***	31.97**	65***
LFAID	-0.02	0.95	11.79	29.1**	-1.08*	-4.53***	49.4***	157***
LFIN	0.95	-0.57	17.2	43.8	-1.99*	-2.80***	35.1***	106***
LFDI	-3.33***	-2.79***	33.77***	53.7***	-4.53***	-6.04***	63.4***	124***
LHCD	-5.89***	-4.19***	45.4***	86.9***	-9.37***	-8.61***	87.9***	173***
LINFL	0.04	-2.03**	31.3**	67.0***	-4.74***	-6.82***	71.49***	141***
LSAV	-1.87**	-2.54***	35.7***	42.0***	-4.79***	-5.52***	60.3***	111***
LOPEN	-0.09	-0.92	22.7	40.0***	-2.81***	-5.01***	53.97***	148***
LINFR	-2.94***	-2.11**	30.22**	30.0**	-6.15***	-3.99***	44.5***	79***

*Note:* LLC, IPS, ADF and PP stands for Levin, Lin and Chu (2002); Im, Pesaran and Shin (2003); ADF Fisher Chi-Square and PP Fisher Chi-Square tests respectively. \*, \*\* and \*\*\* denote 1%, 5% and 10% levels of significance, respectively.

Source: author's own compilation from E-Views.

The Kao Residual co-integration tests (results not presented here) showed that there is a long run relationship among the variables studied, a finding which gave way for the main data analysis using the panel Fully Modified Ordinary Least Squares to be undertaken.

**Findings and Analysis:** The results of the panel Fully Modified Ordinary Least Squares are presented in Table 5. The proxy that was used for financial development in Table 5 is the domestic credit provided by the financial sector (% of GDP).

**Table 5. Panel Fully Modified Ordinary Least Squares (FMOLS) Results**

	Without interaction variable (Model 1)			With interaction variable (Model 2)		
	Co-efficient	Std. Error	t-statistic	Co-efficient	Std. Error	t-statistic
FAID	0.0696**	0.0298	2.3366	-0.9551***	0.2362	-4.0444
FIN	0.1525	0.1644	0.9280	-0.4316**	0.1921	-2.2471
FAID.FIN	-	-	-	0.2723***	0.0628	4.3344
FDI	0.1061**	0.0459	2.3132	0.0836**	0.0409	2.0457
HCD	-1.0858**	0.4993	-2.1746	-0.2423	0.4651	-0.5210
INFL	-0.0868**	0.0411	-2.1101	-0.1039***	0.0367	-2.8321
SAV	0.7932***	0.2299	3.4500	0.8518***	0.2049	4.1580
OPEN	-0.4919**	0.2029	-2.4241	-0.3825**	0.1816	-2.1060
INFR	1.6224***	0.1545	10.5027	1.5666***	0.1388	11.2867
R-squared 0.94				R-squared 0.95		
Adjusted R-squared 0.93				Adjusted R-squared 0.94		

Notes: GDP per capita is the dependent variable. \*\*\*, \*\* and \* denote 1%, 5% and 10% levels of significance, respectively.

Source: author's own compilation from E-Views.

In model 1 (without the interaction variable), foreign aid had a significant positive impact on economic growth, in line with Balde (2011), whose study argued that foreign aid positively influences the growth of the economy through increasing domestic savings, physical capital accumulation and investment activities. In support of King and Levine (1993) and Grossman (1976), the current study showed that financial development had a positive effect on economic growth. FDI was also found to have had a significant positive impact on economic growth in line with the endogenous growth theory (propagated by Lucas, 1988) which noted that technology, technical know-how and managerial experience which flow alongside FDI bring economic growth into the host country.

Contradicting most theoretical predictions, human capital development had a negative effect on economic growth. The possible explanation could be that investing in human capital development on its own without addressing the conditions necessary for economic growth, such as corruption, corporate governance, the rule of law and political stability, among others, could be an exercise in futility. Inflation was found to have had a deleterious effect on economic growth, as supported by Mallik and Chowdhury (2001), whose study noted that economic growth is negatively affected by high levels of inflation, which puts the cost of production inputs beyond the affordability of many domestic companies.

The current study shows that savings positively influenced economic growth, in line with McKinnon (1973), who argued that economic growth is enhanced if savings are channelled towards investment and productive activities. Moreover, trade openness was found to have had a negative effect on economic growth, in support of the view by Baltagi et al. (2009), which says that trade openness exposes the country to international trade shocks which might negative consequences for

the economy. In line with the existing literature, infrastructural development had a significant positive influence on economic growth.

In model 2 (with the interaction variable), foreign aid had a significant negative influence on economic growth in selected emerging markets, in support of a view by Knack (2001), who argued that foreign aid decreases the quality of institutions, pushes up corruption and rent-seeking activities, thereby affecting the growth of the economy in a negative manner. In support of Kiprop et al. (2015), whose study explained that excessive financial development misallocates resources and causes economic volatility, the current study observed that financial development had a significant negative effect on economic growth in selected emerging markets. When foreign aid and financial development interacted, the study showed that the interaction term had a significant positive influence on economic growth in support of the argument by Ang (2010) and Nkusu and Sayek (2004), which says that financial sector development or liberalization influences foreign aid's positive impact on economic growth. The finding also means that foreign aid and financial development complemented each other in promoting economic growth in selected emerging markets. The impact of FDI, human capital development, inflation, savings, trade openness and infrastructural development are similar under models 1 and 2.

### Robustness tests

Table 6 presents the test results for the FMOLS approach. Foreign aid interacted with outstanding domestic private debt securities, outstanding domestic public debt securities, stock market capitalisation, stock market turnover, stock market value traded and domestic private credit in models 1, 2, 3, 4, 5 and 6, respectively.

**Table 6. Robustness Test Results for the FMOLS**

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
FAID	0.0603**	0.1075	-0.4616***	0.1946	-0.0470	-0.2877**
FIN	-0.0527	-0.1225**	-0.0252	0.1694**	0.0916	0.3014***
FAID.FIN	0.0337***	-0.0076	0.1495***	-0.0354	0.0407	0.0934**
FDI	0.1346***	0.0558	0.0730*	0.0926**	0.0468	0.0486
HCD	-1.0042**	-1.2307**	-0.3385	-1.0893**	-0.9710**	-1.0521**
INFL	-0.1190***	-0.1199***	-0.0875**	-0.0665	-0.0567	-0.0545*
SAV	0.7008***	0.7611***	0.4084*	0.5930**	0.6204***	0.7645***
OPEN	-0.3872**	-0.4288**	-0.3933**	-0.3387*	-0.4110**	-0.4910***
INFR	1.7158***	1.9630***	1.6680***	1.8697***	1.6928***	1.5264***
R-squared	0.9392	0.9424	0.9482	0.9379	0.9427	0.9536
Adjusted R-squared	0.9324	0.9360	0.9424	0.9310	0.9363	0.9484

Note: \*\*\*, \*\* and \* denote 1%, 5% and 10% levels of significance, respectively.

Source: author's compilation from E-Views.

When foreign aid interacted with outstanding domestic private debt securities (model 1), stock market capitalisation (model 3), stock market value traded (model 5) and domestic private credit (model 6), the findings show that foreign aid and financial development complemented each other in enhancing economic growth. The results are in line with arguments put forward by Ang (2010) and Nkusu and Sayek (2004). On the other hand, Table 6 shows that the interaction between (a) foreign aid and outstanding domestic public debt securities and (b) foreign aid and stock market turnover, had a deleterious effect on economic growth. This could be possible especially when high public bond sector development crowded out both foreign and domestic investment, in line with an argument by Tan and Ismail (2015). It could also be possible when high liquid stock markets cause significant FDI outflows and consequently slow down economic growth.

## 5. Conclusion and recommendations

This paper studied the complementarity between financial development and foreign aid in promoting economic growth in selected emerging markets using the panel Fully Modified Ordinary Least Squares approach with data ranging from 1994 to 2014. Although (1) aid-growth and (2) finance-growth studies have been conclusively dealt with, the role of financial development in the aid-growth nexus has been barely researched. Whether financial development and foreign aid complement each other in the economic growth process is a question that is still an unsettled issue in finance and economics. Is financial development a channel through which foreign aid positively influence economic growth? The current study sought to address these two questions using selected emerging markets as a case study. The complementarity between foreign aid and financial development resulted in a significant positive impact on economic growth in support of the scant literature available (Nkusu and Sayek 2004; Ang 2010). In other words, financial development was found to be a channel through which foreign aid enhanced economic growth in selected emerging markets. The study, therefore, urges selected emerging markets to implement policies which deepen the financial sector in order to allow foreign aid to positively contribute towards economic growth. In addition, the study recommends that more conditions which enhance foreign aid's ability to positively influence economic growth need to be investigated in a separate empirical study.

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## Streszczenie

### KOMPLEMENTARNOŚĆ POMOCY ZAGRANICZNEJ I ROZWOJU FINANSOWEGO JAKO SIŁA NAPĘDOWA WZROSTU GOSPODARCZEGO NA WYBRANYCH RYNKACH WSCHODZĄCYCH

*W artykule podjęto próbę odpowiedzi na pytanie czy komplementarność rozwoju finansowego i pomocy zagranicznej przyczynia się do wzrostu gospodarczego na wybranych rynkach wschodzących. Analizy dokonano przy użyciu w pełni zmodyfikowanej metody najmniejszych kwadratów (FMOLS – Fully Modified Ordinary Least Squares), wykorzystując dane z okresu 1994–2014. Co prawda badania dotyczące (1) wzrostu pomocy i (2) rozwoju finansowego były prowadzone, to rola połączonego wpływu rozwoju finansowego i wzrostu pomocy na wzrost gospodarczy praktycznie nie była zbadana. Czy rozwój finansowy stanowi kanał, poprzez który pomoc zagraniczna pozytywnie wpływa na wzrost gospodarczy? Niniejsze badanie stara się podjąć te zagadnienia wykorzystując jako studium przypadku wybrane rynki wschodzące. Komplementarność pomocy zagranicznej i rozwoju finansowego (kredyt krajowy udzielany przez sektor finansowy, krajowy kredyt prywatny udzielany przez banki, się krajowe prywatne dłużne papiery wartościowe i obrót giełdowy) wywarła znaczny pozytywny wpływ na wzrost gospodarczy. Dlatego badania zachęcają wybrane rynki wschodzące do wdrażania polityk sprzyjających pogłębianiu sektora finansowego w celu umożliwienia wzrostu gospodarczego dzięki pozytywnemu oddziaływaniu pomocy zagranicznej.*

**Słowa kluczowe:** pomoc zagraniczna; rozwój finansowy; rozwój ekonomiczny; rynki wschodzące