Revista Argentina de Clínica Psicológica
2021, Vol. XXX, N°1, 336-348
DOI: 10.24205/03276716.2020.2031

Foreign Direct Investment, Health expenditures, HIV/Aids and Good Convergence in Africa

AMAL NOURI ALZIYANI[a], Murad BEIN[b]

Abstract
The "Foreign Direct Investment" (FDI) is considered to be important to the economy of any nation. However, the studies on factors that could influence FDI have been limited in the literature, especially in "Africa". Thus, this study empirically investigates the effects of health expenditure, HIV/AIDS, life expectancy, and total urban population on FDI. A yearly data of 43 African states that spans from 2000 to 2017 was utilized with the use of the multiple linear regression models for the analysis. The study found a negative impact of life expectancy on the influx of overseas exchange. In addition, the study found a significant effect of (Health expenditure, good governance," HIV/AIDS, Urban population) on the inflow of foreign direct investment.
Keywords: Governance, HIV/AIDS, Foreign investment, Africa

1. Introduction

In the world of business and development of any nation, the concept of "Foreign Direct Investment" (FDI) is well-known to be significant (Ueng, et al (2016)). However, there has been an increase in its demand in today's economy. Some studies posits that "innovation", nations and people's well-being are significant consequences of FDI, hence it's imperative to understand factors that could aid or hinder the attraction of FDI to a nation or region. Understanding of this would assist the policy makers in such nation or region to ensure continually attraction of FDI.

Studies abound in the literature that investigates several factors for FDI in developed, less developed and transitioning countries (Ueng, et al (2016), Saini, et al (2018), ECONOMOU, et al (2019), Asongu, et al (2018)). Among the factors identified by these authors are agglomerations, institutions, health, and trade openness.

Meanwhile, the study of Ho & Rashid (Ho, et al (2011)) argues that determinants of FDI could be both investor and country specific. It is observed in the literature that several studies have been focusing on these areas, but there is paucity of empirical studies that investigate the effect of life expectancy, health expenditure, HIV/AIDS, good governance, and urban population on the FDI inflow especially in Africa continent.

[a]Faculty of Economics and Administrative sciences, Cyprus International University, Nicosia, NORTH CYPRUS. E-mail: amal.nori.ciu@gmail.com
[b]Faculty of Economics and Administrative sciences, Cyprus International University, Nicosia, NORTH CYPRUS. E-mail: murad.bin.ciu@gmail.com

There is potential in FDI to be beneficial for developing countries, both the host countries, the "multi-national corporations (MNCs)" and other organizations seeking to invest. It is expected that additional financial resources is accrue to the host countries through investment and paying taxes. Investment from abroad creates employment as well as generating a spill-over effect, like transfer of technology and skills, managerial expertise, and practices of corporate governance. In addition, the MNCs enjoy accessibility to markets, site-specific natural resources, availability of manpower at low cost, as well as advantage of exploiting the opportunity of bilateral and multilateral trade policies. All these advantage will no doubt contribute to the sustainable development of Africa, but there is paucity of empirical studies especially in relation to human health as it affects the FDI inflow.

This study intends to investigate the end consequence of healthy institutional, though the health is a component in the association, of which medical care result in many institutional answers for this specific particular condition in both developed and developing countries (Odugbesan, et al (2019), Odugbesan, et al (2020)). FDI inflows help considerably in expansion, economic growth, along with the transmission of manufacturing techniques and new resources (Odugbesan, et al (2020)). What is more, they help make job opportunities and, even then, result in raising your competition from the sponsor state. In another respect, Multinational Enterprises (MNEs) measure the specific competitive benefit to a number of

countries over others when trying to find actions that generate additional value. Such countries have confirmed the particular issue of health concerning the global increase program (Alsan, et al (2006)). By analyzing the literature of FDI, it is placed right to the spirit of institutions to improve the FDI inflows, suggesting many different reasons why their grade could signify fascination. The previous research in this regard reveals other ways because of its institutions to alter FDI inflows. The rates are related to choosing one server nation over the subsequent. Concerning the effects of institutions, the government and policies, along with other fiscal variables as economic liberty, the quality of financial institute, trade openness, and also perfect transport may increase or lessen the general cost and essentially two impacts productivity.

Thus, the aim of this paper is to investigate the significant effects of life expectancy, good governance, health expenditure, HIV/AIDS, and urban population on the FDI inflow in Africa. The findings will suggest some measures that will guide the policymakers in Africa countries to formulate policies that will ensure continual inflow or hinder inflow of FDI to the region.

Literature review

The significance of FDI to the economy of any nation cannot be over emphasized. The same way that FDI has different channels of contributing to the economy of any nation, so also it has different channels through which its inflow into any nation is determined (Blonigen, et al (2005)). While the investment in the economy affects the nation's growth, so also the multinational firms try to get the most out of the global differences in the cost ranges of the public and services facilities (Dunning, et al (1998)). Some researchers have found that FDI is more popular with nations that offer low-cost labor costs since the machine cost of a business from the purchase cost of services such as health and education that enhance employee productivity and lessen the cost of human capital. There is likely a positive relationship available between global companies as well as the cost and private financing (Dunning, et al (1998), Dunning, et al (1958)).

Meanwhile, often times changes in government could enhance the "principle of the game," which negatively impacted the investment in business (Butler, et al (1998)). There is a direct link that unites legal and governmental framework and its governments. Political instability in the host nation is a crucial factor that could exerts a systemic pressure which could disrupt FDI pursuits, because it creates doubt with foreign investors and raises benefit vulnerability in the event of eventual expropriation (Saini, et al (2018), Odugbesan, et al (2020), Dunning, et al (1998), Dunning, et al (1958)). A study argues that FDI is fragile to institutional quality that affects the process of this market aggressive; nevertheless, it influences general wellbeing and safety (Odugbesan, et al (2020), Santangelo, et al (2013)).

Some studies posits that the higher the quantity of political risk, the more elaborate the allure of the host nation due to investments (Bhasin, et al (2019)). In specific, corruption has come to be the principal governmental hazard factor having a negative impact on overseas currency (Dutta, et al (2017)). Other research suggested that global companies have a tendency to obtain a high number of political instability, attempting to gain from weak law and regulatory management laws in-country associations (Bhasin, et al (2019)). In this evaluation, we detect a potential adverse impact of political instability over the flow of international direct payoff.

Some empirical studies have indicated that health may be basic element of human financing (Odugbesan, et al (2019), Odugbesan, et al (2020), Alsan, et al (2006), Bloom, et al (2004), Ogundari, et al (2018)). Therefore, this program's value might be regarded as a significant FDI attraction factor along using constructions, education, labor pool, along with R & D disbursement (Bloom, et al (2004), Ingram, et al (2002)). By the perspective that is based on the notion that recruitment effect on FDI, scientists thought that education and wellness are aspects of human development. They play a very substantial role in deciding on FDI (Globerman, et al (2002).

The Impact of HIV/AIDS on Businesses and FDI

HIV/AIDS can influence businesses through several channels (see Figure 1). The channels by which the disorder effects companies are adequately articulated in ILO (ILO (2008)), which indicates HIV/AIDS contributes to increased costs to the company and diminished productivity during the reduction of skilled and seasoned employees and stricter recruiting and training of new workers, through improved requirement over the FDI, could be broadly classified into two: (i) market seeking FDI functions national markets; and (ii) export-oriented FDI objectives overseas markets. HIV/AIDS may result in a substantial decrease in the magnitude of their labor force and a reduction of skilled labor. The Component of the outbreak on the number of labor force may be deduced by the information on life expectancy and also the Influence on the quality

of labor could be gleaned from the information about the amount of workers that have died from AIDS.

The channel through which HIV/AIDS influence business investment have been highlighted in the literature among which is the Executive Opinion Survey conducted by the WEF in 2003, in which company executives have been asked to rate the effects of HIV/AIDS on several different elements of their companies. The evaluation of the survey shows clearly that reduced increased or productivity absenteeism continuously being ranked as the most important channel where HIV/AIDS effects investment. In a study on "Sub-Saharan Africa", 53 percent of firms surveyed reported that HIV/AIDS reduced their earnings and increased absenteeism, as opposed to 49 percent for funeral expenses, 51 percent for health expenses and 49% to recruiting expenses (Bloom, et al (2004)). (Odugbesan, J. A., & Rjoub, H. (2019)) estimated the relationship among sustainable development, HIV/AIDS prevalence, human capital, and good governance in Africa. Results confirmed that all the variables are cointegrated, which implies a long-run relationship. Dechprom and Jermsittiparsert (2018) from a cross sectional analysis, they confirmed a positive relationship between government health expenditure and foreign direct investment.

In a related development, Quer et al. analyzed the effect of political Culture and Hazards On the general flows of FDI. The study found that the overall flows of FDI are firmly and positively affected by the people's health in Low and low-income Countries. An increase in life expectancy in 1 year raises amounts of FDI Inflows by 9% after controlling other related factors (Quer, et al (2012)). Similarly, Azemar & Desbordes (Azemar, et al (2010)) conducted an investigation on FDI inflow into the 28 European Union's member states. Furthermore, the study focused on the association between health and FDI, presuming the institutional excellent representative could function as Percentage of public health spending total wellbeing. The analysis Results confirmed a favorable connection between government spending. (Haseeb et al (2019)) confirmed that economic growth had both short-term and long-term impact on R&D expenditure. On the other hand, a long-run impact of economic growth on health expenditure was was reported. Also, long-run impact of energy consumption on both health expenditure and R&D expenditure confirmed.

In a recent study that investigates the influence of political risk, cultural distance, and outward FDI in multinational Chinese firms, the research results reveal the host country's important political risks wouldn't discourage Chinese multinational firms - the very obvious existence of overseas Chinese in the sponsor nation into Chinese FDI. Additionally, the company's size and the quantity of Chinese exports into the sponsor state have a favorable effect (Quer, et al (2012)). Burns et al. in a recent study investigate if FDI is healthy for low and middle income countries. The study reveals that perhaps not just 100-140 percent of those differences between regional FDI in human capital buildup, education, and wellness, in addition, a state where 100 percent of those Inhabitants is at risk of having deadly malaria obtains 16% DFI compared to a similar illness situated within a malaria-free zone (Burns, et al (2017)). This finding is corroborated in the study of Giammanco & GittoB who examine the implication of health expenditure on FDI in Europe and found that there is a significant and negative connection between FDI and wellness (Giammancoa, et al (2019)). This finding is also in congruent with Alsan et al. (Alsan, et al (2006)) who analyzed the impact of public health on the general flows of FDI. The study conducted a dash evaluation of 74 industrial and developing nations throughout the period 1980-2000. The analysis found that the overall flows of FDI are closely and positively influenced by the people's wellbeing in W2 Y6low and neighboring nations. A gain in life expectancy at 1 year raises FDI inflows by 9 percent following controlling for other associated factors (Alsan, et al (2006)). (Rjoub, H (2017)) reported that FDI has a positive impact on economic growth and development in the landlocked countries of SSA. However, trade openness and human capital has a negative relationship on FDI growth. Human capital development is pivotal to the economic development of any nation. Openness to trade has a significantly negative impact on FDI growth in the landlocked countries of SSA.

On the empirical studies that investigate nexus between FDI and HIV/AIDS, Asiedu, Jin, & Kayama (Elizabeth Asiedu, et al (2015)) analyzed the connection between FDI and HIVAIDS using a data of 41 countries from "Sub-Saharan Africa" (SSA). This analysis concluded that HIVAIDS includes a non-linear Negative impact on FDI, but this result is diminishing and can be a fantastic indicator; the minimal rate of the virus spread is the rise in the flow of FDI. (Rjoub et al (2016)) reported a positive relationship between domestic investment and economic growth. Trade openness have an impact on economic development for trade enhance production in recipient countries. Moreover,

human capital has and negative impact on economic growth.

From the literature review, it is evident that even though some studies have made attempt to investigate the influence of health expenditure, HIV/AIDS and good governance as a separate variables on FDI inflow, the subject has not been exhaustively investigated, especially in Africa where the HIV/AIDS is rampant (Odugbesan, et al (2019), Odugbesan, et al (2020)), and the issue of good governance is a challenge (Odugbesan, et al (2019)), as well as the health expenditure which Odugbesan & Rjoub (Odugbesan, et al (2020)) considered to be inadequate, in which the studies submitted that it will influence the achievement of sustainable development in SSA (Odugbesan, et al (2019), Odugbesan, et al (2020)). (Khongsawatkiat et al (2020)) applied VAR analysis and reported that the railroads quality, airport quality and road infrastructure have a significantly impact on FDI in Thailand. All these variable in no doubt as revealed in the literature have potential of having effect on the FDI inflow into Africa continent. However, studies in this regard are scant, thus the aim of this study to fill the gap.

3. Methodology

This study utilized the data of 43 Africa countries. The data are subject to the availability of data within the period under observation. A yearly data was used which spans from 2000 to 2017. In addition, all the data were sourced from World Bank Development Indicator and World Governance Indicator. Moreover, the analysis was carried out using multiple regression, which the authors believes will enable them to examine both the individual relationship and joint relationship of the independent variables (health expenditure, HIV/AIDs, and good governance) on the dependent variable (FDI). The descriptions of the variables are presented in Table 1.

Table 1.

Variables	Description	Source
Foreign Direct Investment (FDI)	The actual amount of realized FDI, measured by annual FDI flow to GDP %.	World Bank
Life Expectancy at Birth (LEB)	Life expectancy at birth, total (years)	World Bank
Current Health Expenditure (CHE)	Current health expenditure (% of GDP).	World Bank
Average Good Governance (AGG)	The composite index derived from: control of corruption, government effectiveness, political stability and absence of violence/terrorism, regulatory quality, and rule of law.	World Governance Indicator
HIV/AIDS	Prevalence of HIV/AIDS total (% of population ages 15-49)	World Bank
Total Urban Population (TUP)	Total Urban population	

4. Empirical findings

The descriptive statistics of the variables employed in this study are presented in Table 2 and Figure 1-6. The statistics as presented in Table 2 indicate that FDI inflow into Africa within the period under observation is 4.17% with the least of 2.79% and highest found to be 5.78. The standard deviation seems to be moderate (0.62), which indicates that there is a little variation in the FDI inflow among the countries in the panel. The average life expectancy in Africa was found to be 57.9 years, while the highest and lowest shows to be 53.62 years and 62.96 years respectively. The average expenditure on health of the countries in the panel shows to be 5.53% of GDP which is somewhat low, with the highest and lowest expenditure reveals to be 4.95% and 5.93% respectively with a very low standard deviation (0.23) which is an indication that they all shares similar patterns on health expenditure. Similar pattern is observed in the AAG which shows a mean value of 5.3, highest and lowest to be 5.71 and 4.49 respectively with a standard deviation of 0.33. It is not surprising with the statistic on HIV/AIDS, because Africa continent hosted over 60% of HIV/AIDS prevalence in the world (Odugbesan, et al (2019), Odugbesan, et al (2020)). The statistic from Table 2 reveal that Africa region has an average 5.3% prevalence of HIV/AIDS, with the highest and lowest stood at 5.41% and 4.80 respectively.

Table 2. **Descriptive results of the variables**

Variable	Mean	Std Aberration	Least	Extreme
FDI	4.17	0.62	2.79	5.78
LEB	57.9	3.01	53.62	62.96
CHE	5.53	0.23	4.95	5.93
AGG	5.3	0.33	4.49	5.71
HIVA	5.12	0.16	4.80	5.41
TUP	40.69	2.39	36.63	44.77

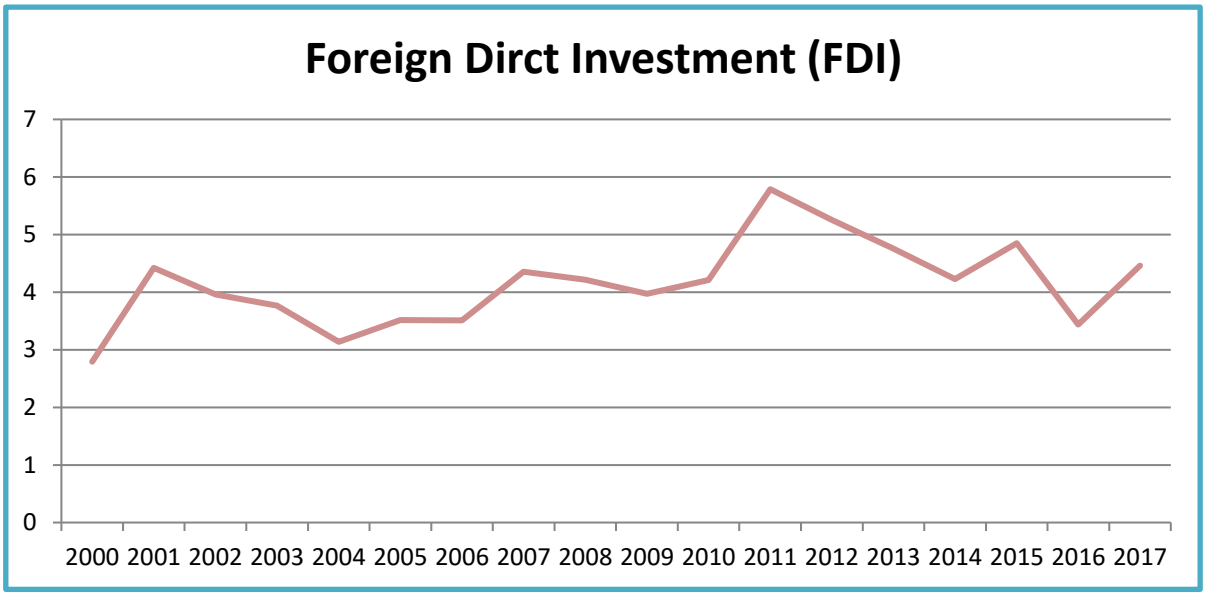

Figure 1. **Values of FDI over the years 2000-2017**

Figure 1 shows that the values of FDI over the years 2000-2017 such the values of FDI variable range from 3 to 5.

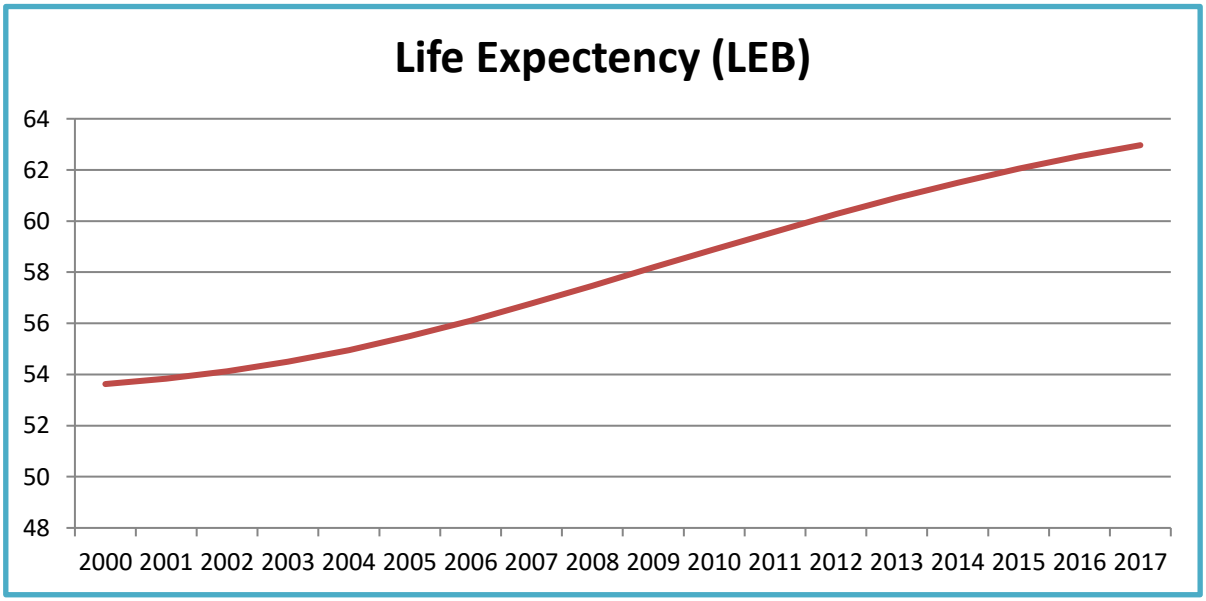

Figure 2. **Values of Life Expectancy over the years 2000-2017**

Figure 2 shows that the values of Life Expectancy over the years 2000-2017 such that the values are increasing exponentially over the period of time.

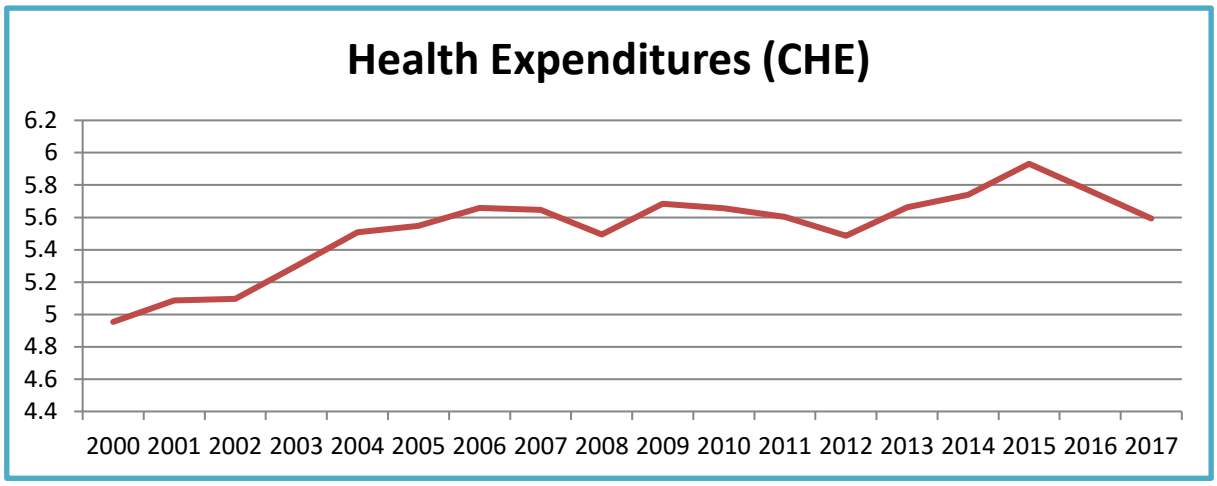

Figure 3. **Values of Health Expenditures over the years 2000-2017**

Figure 3 shows that the values of Health Expenditures over the years 2000-2017 such that the values of the health variables range from 5 to 6.

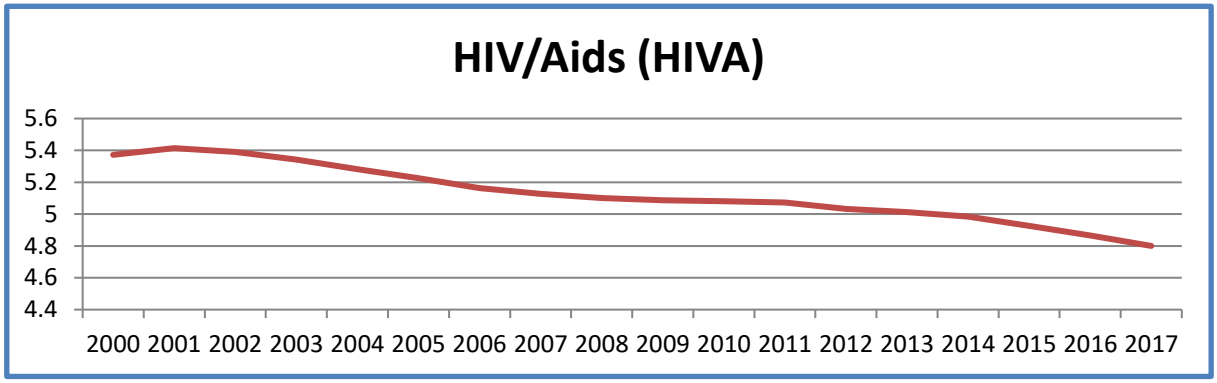

Figure 4. **Values of HIV/Aids over the years 2000-2017**

Figure 4 shows that the values of HIV/Aids over the years 2000-2017 such that the values of the HIV/Aids variable are decreasing exponentially over the period of time.

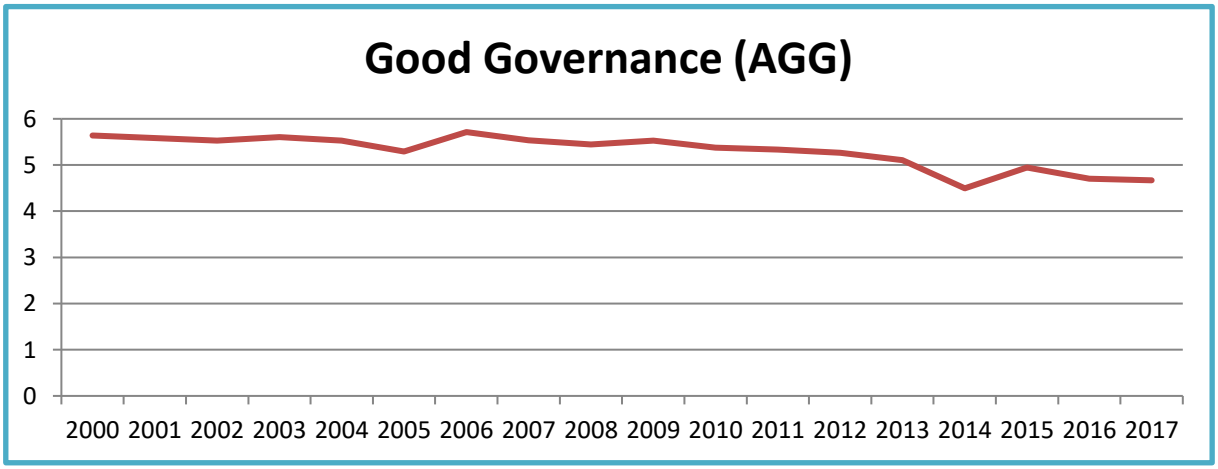

Figure 5. **Values of Good Governance over the years 2000-2017**

Figure 5 shows that the values of Good Governance over the years 2000-2017 such that the values of Good Governance variables are decreasing slowly over the time.

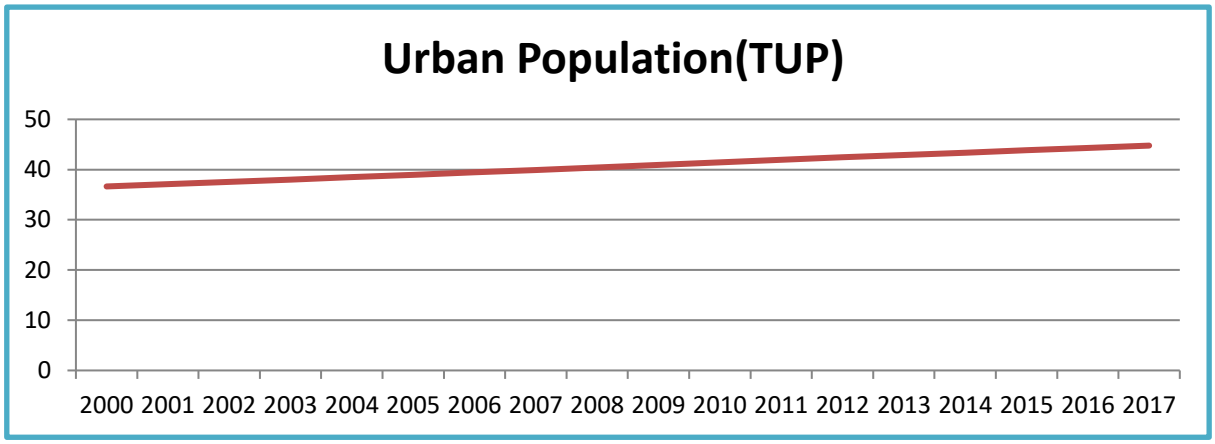

Figure 6. **Values of Urban Population over the years 2000-2017**

Figure 6 shows that the values of Urban Population over the years 2000-2017 such that the values of the urban population variable are increasing exponentially over the time.

Regression estimates

The model equation is as follow:

$FDI = \beta_1 LEB_{it} + \beta_2 AGG_{it} + \beta_3 CHE_{it} + \beta_4 HIV_{it} + \beta_5 TUP_{it} + e$

Where β (1-5) is the coefficients, *i* is the cross section, *t* is the time, while *e* is the error term.

Estimate of the link between FDI and Life expectancy at Birth

The regression estimates as presented in Table 3 indicates that LEB has a negative and significant (-2.39) relationship with FDI. In order to ensure the estimate is free from auto-correlation issue, DW (1.91) which is not greater than 2 is an indication that our result has no auto-correlation problem. . The variant is very important of Variable (LEB) is lower in comparison to 0.05. The Auto-correlation mistakes are now solved. In addition, the R square (0.81) reveal the fitness of the model which explain that LEB has a substantial variation explanation in FDI inflow to Africa.

Table 3. **Relationship between FDI and Life expectancy**

Variables	Quantity	Std Inaccuracy	t-Data	P-value
constant	0.12	0.030	4.09	0.00
D(LEB)	-2.39	0.53	-4.48	0.00
AR(1)	0.91	0.03	23.85	0.00
	F-statistic=297.2	**Probe(F-statistic)**= 0.00		
	R-square= 0.81	**Durbin-Watson (DW)=** 1.91		

Substantial at $\alpha = 0.05$

Estimates of the link between FDI and AGG

The regression estimates as presented in Table 4 indicates that AAG has a positive and significant (0.83) relationship with FDI. In order to ensure the estimate is free from auto-correlation issue, DW (1.90) which is not greater than 2 is an indication that our result has no auto-correlation problem. . The variant is very important of Variable (AAG) is lower in comparison to 0.05. The Auto-correlation mistakes are now solved. In addition, the R square (0.82) reveal the fitness of the model which explain that LEB has a substantial variation explanation in FDI inflow to Africa.

Table 4. **Relationship between FDI and Good Governance**

Variables	Quantity	Std Inaccuracy	t-Data	P-value
constant	0.021	0.02	1.03	0.30
D(AGG)	0.83	0.08	9.94	0.00
AR(1)	0.91	0.04	18.23	0.00
	F-statistic= 318.9	**Prob(F-statistic)**= 0.00		
	R-square= 0.82	**Durbin-Watson (DW)=** 1.90		

Substantial at $\alpha = 0.05$

Estimates of the link between FDI and Health Expenditure

The regression estimates as presented in Table 5 indicates that CHE has a positive and significant (1.74) relationship with FDI. In order to ensure the estimate is free from auto-correlation issue, DW (1.91) which is not greater than 2 is an indication that our result has no auto-correlation problem. . The variant is very important of Variable (AAG) is lower in comparison to 0.05. The Auto-correlation mistakes are now solved. In addition, the R square (0.82) reveal the fitness of the model which explain that CHE has a substantial variation explanation in FDI inflow to Africa.

Table 5. **Relationship between FDI and Health Expenditure**

Variables	Quantity	Std Inaccuracy	t-Data	P-value
Constant	0.014	0.027	0.51	0.60
D(CHE)	1.74	0.19	8.84	0.00
AR(1)	0.92	0.052	17.55354	0.0000*
	F-statistic= 313.7	**Prob(F-statistic)**= 0.0		
	R-square= 0.82	**Durbin-Watson (DW)=** 1.91		

Substantial at $\alpha = 0.05$

Estimates of the link between FDI and HIV/AIDS

The regression estimates as presented in Table 6 indicates that HIV/AIDS prevalence has a positive and significant (19.46) relationship with FDI. In order to ensure the estimate is free from auto-correlation issue, DW (1.91) which is not greater than 2 is an indication that our result has no auto-correlation problem. The model fitness is revealed in the F statistic (350.82) which is statistically significant. This implies the appropriateness of the model. The variant is very important of Variable (AAG) is lower in comparison to 0.05. The Auto-correlation mistakes are now solved. In addition, the R square (0.84) reveal the fitness of the model which explain that HIVA has a substantial variation explanation in FDI inflow to Africa.

Table 6. **Relationship between FDI and Health Expenditure**

Variables	Factor	Std Inaccuracy	t-data	P-value
constant	0.06	0.03	2.20	0.02
D(HIVA)	19.46	1.53	12.66	0.00
AR(1)	0.91	0.08	10.54	0.00
	F-statistic**= 350.82**	Prob(F-statistic)**= 0.00**		
	R-square**= 0.84**	Durbin-Watson (DW)= **1.90**		

*Substantial at $\alpha = 0.05$

Estimates of the link between FDI and TUP

The regression estimates as presented in Table 7 indicates that TUP has a positive and significant (3.82) relationship with FDI. In order to ensure the estimate is free from auto-correlation issue, DW (1.90) which is not greater than 2 is an indication that our result has no auto-correlation problem. The model fitness is revealed in the F statistic (289.93) which is statistically significant. This implies the appropriateness of the model. The variant is very important of Variable (AAG) is lower in comparison to 0.05. The Auto-correlation mistakes are now solved. In addition, the R square (0.81) reveal the fitness of the model which explain that TUP has a substantial variation explanation in FDI inflow to Africa.

Table 7. **Relationship between FDI and Health Expenditure**

Variables	Factor	Std Inaccuracy	t-Data	P-value
constant	-0.134	0.10	-1.27	0.20
D(TUP)	3.82	2.52	1.51	0.13
AR(1)	0.90	0.04	20.52	0.00
	F-statistic= 289.93	**Prob(F-statistic)**= 0.00		
	R-square= 0.81	**Durbin-Watson (DW)=** 1.90		

Substantial at $\alpha = 0.05$

Joint estimate of LEB, AAG, CHE, HIVA, and TUP relationship with FDI

Subsequent to the estimates of individual relationship of the variables employed in this study to FDI inflow, the authors in addition estimates the joint contribution of the variables on the FDI inflow using multiple regression. The results are summarized and presented in Table 8. The result as presented in Table 8 shows that holding all other variables constant, LEB has a positive and significant (0.20) relationship with FDI. This implies that a percentage increase in the LEB will significantly increase the FDI in about 0.20%. Similarly, AAG (2.19), HIVA (9.55), and TUP (0.86) have a positive and significant relationship with FDI inflow to Africa. This is an indication that a percentage change in these variables will leads to positive change of about 2.19%, 9.55%, and 0.86% respectively holding all other variables constant. The observation on the joint contribution of all the variables through the examination of the F-statistic reveals that LEB, AAG, CHE, HIVA, and TUP have a joint and significant effect (104.96) on FDI inflow to Africa. In addition, the R square (0.72) is an indication that all the variables have an explanation variation of about 72% in determination of FDI inflow to Africa.

Table 8. **Multiple linear regression model coefficients estimation results**

Variables	Factor	Std Inaccuracy	t-Data	P-value
Constant	-98.85	7.46	-13.24	0.00
LEB	0.20	0.16	1.24	0.21
AGG	2.19	0.15	14.37	0.00
CHE	-0.84	0.25	-3.23	0.14
HIVA	9.55	0.88	10.79	0.00
TUP	0.86	0.23	3.63	0.04
	F-statistic**= 104.96**	Prob(F-statistic)**= 0.00**		
	R-square**= 0.72**	Durbin-Watson (DW)= **0.033**		

Significant at $\alpha = 0.05$

Diagnostic tests

In order to ensure that the results obtained are devoid of bias, we conduct a diagnostic test which the results are presented in this section.

Checking the Multicollinearity problem among the independent variables

We calculate the VIF factor for all the independent variables as follow:

Table 9. **Multi-collinearity test result**

Variable	VIF
LEB	**440.94**
AGG	**4.73**
CHE	**6.76**
HIVA	**40.71**
TUP	**604.09**

Table 9 shows the value of VIF for each variable such that most of the VIF values are greater than 5, which mean the Multicollinearity problem among the independent variables exists.

Checking Hetroscedasticity problem of the residuals

We use the Goldfield-Gont test for checking the problem of Hetroscedasticity of the residuals such that the results are as follow:

Table 10. **Hetroscedasticity test result**

Goldfield-Gont Test	
Test value	**p-value**
1.8.	**0.09**

Table 10 shows the value of Goldfield-Gont test and its p-value where p-value is greater than 0.05, which means the Homoscedasticity problem of the residuals does not exist.

Checking Non-Normality problem of the residuals

We use the Jarque-Bera test for checking the problem of Non-Normality of the residuals such that the results are as follow:

Table 11. **Non-Normality test result**

Jarque-Bera Test	
Test value	**p-value**
1.73	**0.41**

Table 11 shows the value of Jarque-Bera test and the its p-value where p-value is greater than 0.05, that means the Non-Normality problem of the residuals does not exist.

Checking Autocorrelation problem of the residuals

We use the Durbin-Watson test for checking the

problem of autocorrelation of the residuals such that the results are as follow:

Table 12. **Autocorrelation problem test result**

Durbin-Watson (DW) Value	Tabulated Lower D (dL)	Tabulated Upper D (dU)
0.033456	1.71	**1.82**

Table 12 shows the worth of Durbin-Watson(DW) in which DW=0.033456 is lesser compared to DL=1.718that usually means the autocorrelation issue of the residuals exists. To Fix the Multicollinearity issue one of the different variables and the Factors and including the expression AR(1), therefore the assumptions of the OLS system are Holds and the outcomes will be as follow:

Checking the Multi linearity problem among the independent variable

We calculate the VIF factor for all the independent variables as follow:

Table 13. **Multi co-linearity test result**

Variable	VIF
LEB	**1.65**
AGG	**2.36**
CHE	**3.28**
HIVA	**1.34**
TUP	**1.67**

Table 13 shows the value of VIF for each variable such that all VIF values are lower than 5, that means the multicollinearity problem among the independent variables does not exist, so the problem is solved.

Checking Hetroscedasticity problem of the residuals

We use the Goldfield-Gont test for checking the problem of hetroscedasticity of the residuals such that the results are as follow:

Table 14. **Hetroscedasticity test result**

Goldfield-Gont Test	
Test Value	**P-value**
0.90	**0.48**

Table 14 shows the value of Goldfield-Gont test and its p-value where p-value is still greater than 0.05, which means the hetroscedasticity problem of the residuals does not exist.

Checking Non-Normality Problem of the residuals

We use the Jarque-Bera test for checking the problem of Non-Normality of the residuals such that the results are as follow:

Table 15. **Non-Normality test result**

Jarque-Bera Test	
Test Value	**P-value**
1.65	**0.42**

Table 15 shows the value of Jarque-Bera test and the its p-value where p-value is still greater than 0.05, that means the Non-Normality problem of the residuals does not exist.

Checking Autocorrelation Problem of the residuals

We use the Durbin-Watson test for checking the problem of Autocorrelation such that the results are as follow:

Table 16. **Autocorrelation test result**

Durbin-Watson Value	Tabulated Lower D (dL)	Tabulated Upper D (dU)
1.94	1.71	**1.82**

Table 16 shows the value of Durbin-Watson (DW) where DW=1.944073 is greater than dU=1.820, that means the autocorrelation problem of the residuals does not exist, so the problem is solved.

Adjusted model

Based on the observed issues arises from the diagnostic test, we attempt to correct the issues so as to ensure that our estimates are devoid of bias and it is appropriates for guiding policy makers in their policy making. The adjusted model is presented in Table 17 and it shows that while LEB is found to have negative and significant effect on FDI inflow, other variables (AGG, CHE, HIVA, and TUP) were found to be positive and statistically significant. This is an indication that individually, each of the variables in the model has a significant effect in determining the achievement of FDI inflow to Africa. In addition, the joint contribution of all the variables (F-statistic = 212.06) was found to be significant. This implies that all the variables jointly determine the achievement of FDI inflow to Africa. From Table 17, the issue of multicollinearity has been resolved which is evident in the DW (1.94) that is less that threshold requirement of 2. Thus, our results are devoid of any bias and suitable for prediction.

Table17. **Multiple linear regression model coefficients estimation results (Adjusted Model)**

Variables	Coefficient	Std Error	t-Statistic	P-value
Constant	-1.12	0.13	-8.16	0.00
D(LEB)	-3.49	0.49	-7.12	0.00
D(AGG)	1.23	0.10	11.38	0.00
D(CHE)	1.12	0.21	5.13	0.00
D(HIVA)	25.72	1.47	17.41	0.00
D(TUP)	34.55	3.21	10.75	0.00
AR(1)	0.95	0.04	22.07	0.00
	F-statistic= **212.06**	Prob(F-statistic)= **0.00**		
	R-square= **0.88**	Durbin-Watson (DW)= **1.94**		

Substantial at $\alpha = 0.05$

5. Discussion

The significant of FDI inflow to the development of any nation has been demonstrated in the literature. However, the empirical studies in respect of effect of LEB, AGG, CHE, HIVA, and TUP on FDI have not been exhaustively carried out especially in Africa which comprises of large numbers of developing countries. Thus, this study empirically investigate the relationship of life expectancy, health expenditure, good governance, HV/AIDS, and urban population with FDI by utilizing available data from 43 Africa countries that spans between year 2000 to 2017 which were all sourced world bank development indicator and world governance indicator.

From our finding, it is demonstrated that life expectancy has a positive and significant relationship with FDI inflow in Africa. Similarly, average good governance was also found to be positive and statistically significant. This is consistent with some previous studies who demonstrated that the higher the institutional quality, the higher the flow of foreign investment (Butler, et al (1998), Bhasin, et al (2019)). Meanwhile, the study finding is contrast with the study of Santagelo & Anderson (Santangelo, et al (2013)) who posited that a fragile institutional quality like Africa can negatively affect the inflow of foreign investment. The positive relationship found in this study is an indication that the investors are capitalizing on the little gains of institutional quality in Africa to be sure their transactions are not vulnerable to governmental dangers and are not captured in the corrupt. This may potentially be achieved by the incidence of democratic government. The results suggest a positive impact of government paying to the industry along with the flow of FDI.

Moreover, our study reveals that health expenditure, HIV/AIDS prevalence, and urban population are positively related to FDI inflow in Africa. The finding on the nexus between health expenditure and FDI contradict the position of some studies (Odugbesan, et al (2020), Bloom, et al (2004), Ogundari, et al (2018), Azemar, et al (2010), Elizabeth Asiedu, et al (2015)) who demonstrated in their studies that increase in health expenditure negatively influence the economic development of a nation. That's explained by claiming there's a health care which ensures that a decrease from the expenses of human capital required by overseas investment. Concerning HIV, while this study found a positive relationship, the finding contradict some previous studies which have established that inadequate people's health or diseases will negatively affect the flow of foreign investment (Alsan, et al (2006), Bloom, et al (2004), Quer, et al (2012)) . This study study attributes into the flow of investments to the African society in the health sector as a way to confront illness through the business of study centers which try to gain from their presence of a large number of people with HIV, so they could try the medication, that may be made to individuals with HIV, trying to find a drug for this specific ailment.

The findings from this study have some implication for the policy makers in African countries. Every nations in addition to the African continent especially suggest that the region should prioritize investments to foreign investment. Although the results suggested that Finally this investigation opens the way for potential Immediate investment should not be limited by covering the governmental, economic Studies which focus increasingly accurately on fixing clinical impact and societal role only, nevertheless, medical facet includes an important role in Improving foreign exchange There is just a fantastic effect within this urbanization of those folks around the flow of FDI; additionally this might be explained by the connection of urbanization including all the incidence of a suitable infrastructure to find foreign trade.

In addition, this study suggest that the

policymakers in Africa should maximize the potential of human capital which is evident in the positive coefficient of urban population relationship with foreign direct investment. Foreign investment would be more tends to investment in an environment where there is an abundant availability of labor similar to the situation in Africa. However, the policy makers should formulate a policy that will guide the workers from exploitation. This in no small measure will continually ensuring an inflow of foreign investment to Africa.

Conclusion

Our study shows that life expectancy at birth, good governance, health expenditure, HIV/AIDS prevalence, and urban population has individual and joint effects on the flow of foreign direct investment in Africa. Meanwhile, this study is not devoid of limitation which lies in the period of study, and the method employ which only account for the relationship between the variables and FDI. Nevertheless, this study makes a significant contribution by providing a foundation in which further studies can build on to empirically investigate the causal and magnitude of effects of these variables on FDI by using a more advanced econometrics techniques that will address the cross-sectional dependency issue which is out of the scope of this study. Finally, evidence from this study suggest that foreign direct investment in Africa are not likely to be affected by life expectancy, good governance, health expenditure, HIV/IDS, and urban population, but will be positively influenced if adequate attention are paid to these variables, in turn will ensure continual inflow of foreign direct investment.

References

[1] Alsan, M., Bloom E., and Cannin, D. (2006). The Effect of Population Health on Foreign Direct Investment Inflows to Low- and Middle-Income Countries. *World Development 34* (4), 613-630.

[2] Asongu, S., Akpan, U. S., & Isihak, S. R. (2018). Determinants of foreign direct investment in fast-growing economies: evidence from the BRICS and MINT countries. *Financial Innovation*, *4*(1), 26.

[3] Azemar, C. & Desbordes, R. (2010). Short-run Strategies for Attracting Foreign Direct Investment. The World Economy. 33. 928 - 957. 10.1111/j.1467-9701.2010.01226.x.

[4] Bhasin, N., & Garg, S. (2019). Impact of Institutional Environment on Inward FDI: A Case of Select Emerging Market Economies. *Global Business Review*, 0972150919856989.

[5] Blonigen, B.A., (2005). A review of the empirical literature on FDI determinants. Atl. Econ. J. 33, 383–403.

[6] Bloom, David & Canning, David & Sevilla, Jaypee. (2004). The Effect of Health on Economic Growth. World Development. 32. 1-13. 10.1016/j.worlddev.2003.07.002.

[7] Burns, D. K., Jones, A. P., Goryakin, Y., & Suhrcke, M. (2017). Is foreign direct investment good for health in low and middle income countries? An instrumental variable approach. *Social Science & Medicine*, *181*, 74-82.

[8] Butler, K., Joaquin, D., (1998). A note on political risk and the required return on foreign direct investment. *Journal of International Business Studies 29*, 599-608.

[9] Dechprom, S., & Jermsittiparsert, K. (2018). Foreign aid, foreign direct investment and social progress: A cross countries analysis. Opcion, 34(86), 2086-2097.

[10] Dunning, J.H. (1998): Location and the Multinational Enterprise: A Neglected Factor? in: Journal of International Business Studies, 29, 1, 45-66.

[11] Dunning, John H. (1958). American Investment in British Manufacturing Industry (London: Allen and Unwin).

[12] Dutta, P., Noor, M. H., & Dutta, A. (2017). Impact of oil volatility shocks on global emerging market stock returns. International Journal of Managerial Finance.

[13] ECONOMOU, F. (2019) 'Economic freedom and asymmetric crisis effects on FDI inflows: The case of four South European economies', *Research in International Business and Finance. Elsevier B.V.*, 49, pp. 114–126. doi: 10.1016/j.ribaf.2019.02.011.

[14] Elizabeth Asiedu, Yi Jin, Isaac K. Kayama (2015) the impact of HIV/AIDS on foreign direct investment: Evidence from Sub-Sahara Africa. *Journal of African Trade , 2*(1-2), 1-17

[15] Giammancoa, M. D. & Gittob, L. (2019). Health expenditure and FDI in Europe. *Economic Analysis and Policy, 62,* 255-267.

[16] Globerman, S., & Shapiro, D. M. (2002). Global foreign direct investment flows: The role of governance infrastructure. *World Development, 30*(11), 1899–1919.

[17] Haseeb, M., Kot, S., Hussain, H. I., & Jermsittiparsert, K. (2019). Impact of economic growth, environmental pollution, and energy consumption on health expenditure and R&D expenditure of ASEAN countries. Energies, 12(19), 3598.

[18] Ho, C. S., & Rashid, H. A. (2011).

Macroeconomic and country specific determinants of FDI. *The Business Review*, *18*(1), 219-226.

[19] ILO (2008) international labour organization / UNAIDS.* ILO sees significant improvement in workplace attiudes to HIV 25 April 2008. **international labour standard would strengthen the HIV response in workplace 21 July 2008.

[20] Ingram, P., & Silverman, B. (Eds.). (2002). *The new institutionalism in strategic management*. Elsevier.

[21] Khongsawatkiat et al (2020). Infrastructure as a Lifeline for Foreign Direct Investment in Thailand: Role of Quality of Railroad, Air Transport and Road Infrastructure. Hamdard Islamicus, 43(S1), 514-532.

[22] Odugbesan, J. A., & Adebayo, T. S. (2020). The symmetrical and asymmetrical effects of foreign direct investment and financial development on carbon emission: evidence from Nigeria. *SN Applied Sciences*, *2*(12), 1-15.

[23] Odugbesan, J. A., & Rjoub, H. (2019). Relationship among HIV/AIDS Prevalence, Human Capital, Good Governance, and Sustainable Development: Empirical Evidence from Sub-Saharan Africa. *Sustainability*, *11*(5), 1348.

[24] Odugbesan, J. A., & Rjoub, H. (2020). Evaluating HIV/Aids prevalence and sustainable development in sub-Saharan Africa: the role of health expenditure. *African Health Sciences*, *20*(2), 568-578.

[25] Ogundari, Kolawole & Awokuse, Titus. (2018). Human capital contribution to economic growth in Sub-Saharan Africa: Does health status matter more than education? *Economic Analysis and Policy. 58*. 10.1016/j.eap.2018.02.001.

[26] Quer, D., Claver, E., Rienda, L., (2012). Political risk, cultural distance, and outward foreign direct investment: empirical evidence from large Chinese firms. *Asia Pac. J. Manage*. 29 (4), 1089–1104.

[27] Rjoub, H., Aga, M., Oppong, C., Sunju, N., & Fofack, A. (2017). The Impact of FDI Inflows on Economic Growth: Evidence from Landlocked Countries in Sub-Saharan Africa. Bilig-Turk DunyasI Sosyal Bilimler Dergisi, 10(1), 153-168.

[28] Rjoub, H., Alrub, A. A., Soyer, K., & Hamdan, S. (2016). The syndrome of FDI and economic growth: evidence from Latin American countries. Journal of Financial Studies and Research, 2016, 1-8.

[29] Saini, N.& Singhania, M. (2018). Determinants of FDI in developed and developing countries: a quantitative analysis using GMM. *Journal of Economic Studies 45*(3).

[30] Santangelo, G., Andersson, U., (2013). Anti-competitive regulations and subsidiary relational embeddedness strategies. In: AIB 2013 Annual Meeting. *Academy of International Business.*

[31] Ueng, C. J., Lee, C., & Gee, N. (2016). Factors affecting foreign direct investment in a small town in America. *Review of Contemporary Business Research*, *5*(2), 9-16.