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Unbundling economic freedom factors that matter for FDI inflows in Ghana

Robert Amponsah-Godwyll
Institute of Chartered Accountants, Ghana (ICAG)
Email: robertamponsahgodwyll@gmail.com

Richard Kofi Akoto
Department of Banking and Finance, University of Professional Studies, Accra, Ghana
Email: richard.akoto@upsamail.edu.gh

Richard Agbanyo
Department of Economics and Actuarial Science, University of Professional Studies, Accra, Ghana
Email: agbanyo.richard@upsamail.edu.gh

Joseph Dery Nyeadi
Department of Banking and Finance, Simon Diedong Dombo University of Business and Integrated Development Studies, Wa, Ghana.
Email: jnyeadi@ubids.edu.gh

***Abstract*---**The study investigates how key components of economic freedom drive Foreign Direct Investment (FDI) inflows in Ghana. Using data over the period 1995 to 2018 from World Bank and The Heritage Foundation databases and employing Autoregressive Distributed Lag (ARDL) estimation technique, the study finds that trade freedom, financial freedom, and rule of law positively stimulate FDI inflows in Ghana in the long run. Similarly, in the short-run, the variables are observed to positively influence FDI inflows in Ghana in the current quarter but reduces it thereafter. Policymakers in Ghana should prudently reduce tariffs on both imports and exports and also promote financial system independence in terms of limited interference so as to attract more FDI inflows. Government should also engage in prudent judicial reforms that support respect for rule of law and property rights in order to attract high FDI inflows to Ghana.

***Keywords*---**Trade freedom, financial freedom, rule of law, Foreign Direct Investment, Ghana.

Corresponding author: *Akoto, R.K., Email: richard.akoto@upsamail.edu.gh*
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1. Introduction

Foreign Direct Investment (FDI) inflow is touted to provide a gamut of benefits to countries including transfer of technical know-how, enhancing workforce skills, increasing productivity, generating businesses for local firms, and creating better-paying jobs (World Bank, 2018). Other benefits include the provision of financial resources, increasing tax revenues, linkage and spill over effects, innovation, and knowledge transfer (Asongu et al., 2018). These positive effects of FDI inflows has led policy makers to an increased search for credible policies that may promote FDI inflows. This paper rather than focusing on aggregate measure of economic freedom, uniquely examines the influence of the key components of economic freedom, on which data is available including trade freedom, financial freedom, and rule of law on Foreign Direct Investment (FDI) net inflows in Ghana. This disaggregation is vital due to the uniqueness of the components of economic freedom and thus the possibility of each of them stimulating FDI inflows differently.

It is vital to note that there are three major freedoms generally recognised by social scientists that may have a significant impact on economic growth of nations. These include political freedom, legal freedom and economic freedom (Scully, 2004). One gap in this literature is that very little research attention has been given to the study of how economic freedom may spur economic activities of nations thereby limiting our understanding of the influence of this variable on economic growth potentials of countries. Though a few studies however exists in the area often with inconclusive results, they largely focus on exploring how aggregate economic freedom may drive FDI inflows thereby leaving studies that examine the influence of key component of economic freedom on FDI inflows under-researched. For example, whilst studies such as Azman-Saini et al. (2010); Ho et al. (2013); Moussa et al. (2015); Ajide and Eregha (2015); Hossain (2016); and Ghazalian and Amponsem (2019) find a positive influence of overall economic freedom and or its component parts on FDI inflows, others including Kapuria-Foreman (2007) and Bheemul et al. (2020) observe mixed or no such association, with most of these empirical works concentrating on the influence of aggregate economic freedom on FDI inflows.

Given the uniqueness of the various components of economic freedom, it is important for researchers and policy makers to understand how each of these factors may influence FDI inflows, so as to fully understand how economic freedom dynamics may affect FDI. Thus, the inadequacy of studies in the field, particularly on the association between key components of economic freedom and FDI inflows coupled with the general inconclusiveness of findings in the field is the main motivation for this study. The paper contributes exceptionally to the existing literature by examining how the key factors of economic freedom namely trade freedom, financial freedom, and rule of law may stimulate FDI inflows in Ghana using the Bound testing ARDL model.

The study focuses on Ghana for three critical but interrelated reasons. Firstly, it is observed that the FDI inflows sector in Ghana is characterised by heavy regulations. For instance, Ghana is among the few African countries with strict local content laws which aims at regulating and limiting participation in some sectors of the economy Amoako-Tuffour et al. (2015). These local content laws include but not limited to the Mineral and Mining Regulation 2012, LI 2173 provisions; and the Local Content and Local Participation Regulations 2013, LI 2204. These laws regulate and restrict international investment inflows into the mining sector of the country. Furthermore, the imposition of high Minimum Capital requirement for foreign investors remains a challenge to foreign investors in Ghana. For instance in Ghana, foreign investors require USD200, 000.00 for joint venture businesses with a Ghanaian partner(s) having at least 10% equity holdings. Similarly, Enterprises which are wholly owned by non-Ghanaians require a minimum capital of USD500, 000.00 while trading companies (that buy or sell imported goods and services) wholly owned by non-Ghanaians require USD1 million. These regulations obviously may have some trade implications for Ghana which policy makers need to clearly understand and adjust for. However, this issue has not been investigated by any formal study to the best of our knowledge.

Secondly, since 2012 up until recently, Ghana's position continues to improve in the list of countries on the 'ease of doing business' ranking report (World Bank, 2020). This improvement may come from various reforms embarked upon by successive governments including putting controls in place to ease the processing of construction permits, introducing a paperless customs clearance process system to speed up trade across borders, and the carrying over of losses to ease payment of taxes (World Bank, 2020). This continuous improvement in Ghana's business environment is a good news as it positions the country to be attractive for FDI inflows. Similarly, Ghana has also continue to see an improvement in its respect for rule of law position since 1992. According to the 2020 World Justice Report, Ghana came 6th out of 31 Sub-Saharan African (SSA) countries in respect for rule of law. In spite of these significant achievements, studies that have formally examine the collective effect of these issues on foreign investment inflows to Ghana are rare. This study therefore focuses on Ghana as it presents an opportunity to the researchers to find out how these achievements may have influenced FDI inflows to the country. The results of such a study will guide policy makers in formulating or reviewing FDI inflows support policies.

Thirdly, according to the World Bank report in 2020, Ghana has experienced a downturn in attracting FDI inflows over the period 2006-2018 despite the various policies and interventions adopted by the country's successive governments. The authors argue that Ghana's FDI inflow in 2005 was USD 2.71billion, however, this amount has plummeted significantly to about USD 106.5 million in 2018. Consequently, this observation calls for more decisive research works into identifying prudent policies and efficient institutions that may be crucial to promote FDI inflows in Ghana.

The rest of the paper is organised as follows: section 2 reviews the literature and section 3 describes the data and methodology used in the study. Section 4

discusses the empirical results while section 5 concludes the paper and offers policy recommendations.

2. Related Literature
2.1 Theoretical Literature

This study uses a multi-theoretical approach to explain the relationship between the dependent variable and the independent variables of focus. Specifically, the study derives its theoretical foundation from Dunning's 1995 eclectic paradigm theory; and the Institutional FDI fitness theory by Wilhelms and Witter (1998).

The eclectic paradigm theory examines whether a particular business approach creates more value for a firm than other alternative approaches as an organisation endeavours to produce goods and services (Dunning, 1995). The theory is also known as the OLI framework, denoting the three sub-theories of the eclectic paradigm theory: 'Ownership advantage' theory, 'Location advantage' theory, and 'Internalization' theory.

Ownership advantage theory posits that a firm will expand through its inherent capabilities over domestic and foreign competitors (Dunning, 1995). Ownership advantage is derived from technology, organizational skills, size, diversification access or control over raw materials, ability to call for government support, access to finance with favourable terms, and the ease with which the firm can shift production between countries. The location advantage theory stipulates that multinational companies will continue to enjoy value for situating in some geographical regions. Sources of location advantages include transport cost for raw materials and finished goods, import restriction, ease of doing business, tax policies, and political instability. Specifically, this study focuses on the internalisation sub-theory of the wider eclectic paradigm theory which advocates that multinational companies will engage in foreign direct investment only if it is cheaper to produce in the foreign country than to export (Dunning, 1995). This implies that the prevalence of any form of bottleneck that supresses the smooth or efficient production of goods and services in an economy could deter foreign businesses from operating in that economy. Thus, weaknesses in trade and financial system policies coupled with lack of prudent laws to protect property rights among others can pose significant costs to businesses and scare foreign businesses away. This notion can be traced from earlier theoretical works in the field by McManus (1972) and Buckley and Casson (1976), who postulate that multinational firms will produce in host countries if the benefit of their operations exceeds the average cost of operation.

Similarly, Wilelms and Witter (1998) developed the institutional FDI fitness theory and explain FDI fitness to mean the ability of a country to attract, absorb and retain FDI inflows. These authors note that a country has an advantage in attracting FDI inflows if its domestic policies properly align to the expectations of foreign investors. One of the most important pillars that this theory hinges on is what the authors describe as 'government fitness' which specifies that countries that adopt friendly and favourable policies towards investors are expected to attract high levels of FDI inflows. This suggests that for an economy to attract high amounts of FDI inflows, policy makers should focus on building strong

institutions that promote FDI. Specifically, these institutions include but not limited to those that: stimulate trade, foster finanial sysyem independence and efficiency, and those that superintend the respect for rule of law and property rights.

2.2 Empirical Literature

A gamut of studies exist on how FDI may be attracted to a country. However, research-based works that examine how economic freedom; and particularly its key components may drive FDI are rare and often produce inconclusive results. Whilst some of these available studies find a positive result between economic freedom and or its key component parts and FDI, others observe a negative or no association. The study begins the section by reviewing the empirical works that find a positive relationship between economic freedom and or its key component parts and FDI (see for example, Azman-Saini et al., 2010; Ho et al., 2013; Moussa et al., 2015; Ajide & Eregha, 2015; Hossain, 2016; and Ghazalian & Amponsem, 2018) followed by those that observe mixed or no association between economic freedom and or its key component parts and FDI inflows (see for example, Sooorea-Bheemul et al., 2020; and Kapuria-Foreman, 2007).

Azman-Saini et al. (2010) investigate the link between FDI, economic freedom, and economic growth in 85 countries, using the generalised method of moment. The results reveal that economic freedom has a positive influence on FDI inflows. Further analysis of the study shows that its only trade freedom and property rights protection that positively propels foreign direct investment.

Similarly, Ho et al. (2013) examine the determinants of flow of foreign direct investment in 6 fast emerging countries, including Brazil, China, India, Russia, South Africa, and Malaysia. Using ordinary least square (OLS), seemingly unrelated regression (SUR), and generalised least square estimation techniques, the study reveals that total economic freedom positively drives FDI inflows.

Furthermore, Moussa et al. (2015), explore the macroeconomic impact of economic freedom on the flow of foreign direct investments in 156 countries, including Fragile and Conflict-Affected States, in Sub-Saharan Africa, Oceania, and Post-Soviet countries. Using panel data methodology, the study finds that economic freedom positively influences FDI flow in all the countries.

Additionally, Ajide and Eregha (2015) study the relationship between foreign direct investment, economic performance, and economic freedom in nineteen Sub-Saharan African countries. Using panel data methodology, the study reveals that economic freedom is important for the flow of FDI in Sub-Saharan Africa.

Similarly, Hossain (2016) investigates the relationship between economic freedom, foreign direct investment, and economic growth of 79 developing countries. Using panel data methodology and different estimation techniques, the study reveals that total economic freedom positively influences FDI inflows. The study further notes that trade freedom, financial freedom, property rights, and government integrity are positive determinants of FDI inflows.

Also, Ghazalian and Amponsem (2018) examine the effect of economic freedom and its components on FDI flow in 120 developed and developing countries. The result indicates that total economic freedom has a positive influence on FDI inflow. The study argue that this overall impact is contributed by the positive influence of rule of law, market openness, and a less restrictive regulatory environment.

One of the most recent studies in the field that provided a mixed findings is contributed by Soorea-Bheemul et al. (2020) who investigate whether economic freedom matters to SSA. Using data from The Heritage Foundation and Fraiser Institute for the period over 1997-2016 for 40 SSA countries and employing panel data methodology, the results of the study indicate mixed findings. Specifically, the authors find that total economic freedom positively drives FDI inflows in SSA. The study notes that this finding is triggered by regulatory efficiency, fiscal freedom, market openness, market size, trade openness, and strong telecommunications infrastructure. On the other hand, the authors observe that, financial freedom and investment freedom are less vital in attracting FDI in SSA whilst stronger rule of law and property rights doesn't matter for FDI inflows in SSA. Similarly, Kapuria-Foreman (2007) evaluates whether foreign direct investment responds to the level of economic freedom in developing countries using cross-country growth regressions. The results indicate that overall economic freedom does not have an impact on FDI inflows. The author however notes that some components of economic freedom such as increasing property protection rights, reducing government intervention, lowering barriers to capital flows and foreign investment show positive influence on FDI inflows.

In conclusion, it is evident that the empirical works that examined the association between economic freedom and or its component parts and FDI inflows are rare with often inconclusive results thus limiting our understanding of how the variables really interact. Significantly also lacking in the empirical literature is the over reliance of prior works on exploring how aggregate economic freedom may drive FDI inflows thereby leaving studies that examine the influence of key component of economic freedom on FDI inflows under-researched.

3. Data and Methodology

3.1 Data

The study uses quarterly data converted from annual sources over the period 1995 to 2018 from The Heritage Foundation and two sub-databases of the World Bank, namely, the World Development Indicators and the World Governance Indicators databases. This conversion is motivated by data inadequacy amidst the basic requirement of more data points for the estimation technique employed. The approach is premised on the assumption that the variables occurred evenly throughout the year suggesting that the conversion will not cause any data loss (see for example, Boot et al., 1967; Ahmad & Burney, 1988).

3.2 Model Specification

Following the works of Pesaran et al. (2001), we identify the following general functional model:

FDI = f (EcoF, OpenX, GDPG, GDPI, NRrent) (i)

Where, FDI, denotes foreign direct investment; EcoF, represents economic freedom; OpenX, denotes trade openness; GDPG, is gross domestic product growth; GDPI, is inflation; while NRrent, denotes natural resource rent.
However, because economic freedom (EcoF) can be decomposed into Trade Freedom (TF), Financial Freedom (FF), and Rule of law (Rlaw), we modify equation (1) to generate equation (2) as follows:

FDI = f (TF, FF, Rlaw, OpenX, GDPG, GDPI, NR rent) (ii)

Based on the above, we specify an ARDL model that examines the effect of Trade Freedom (TF), Financial Freedom (FF) and rule of law on FDI inflows in Ghana in equation (3) below:

$$\begin{aligned}\Delta InFDI_t = &\sum_{i=1}^{n=1} B_{1i}\,\Delta InFDI_{t-i} + \sum_{i=0}^{n=4} B_{2i}\,\Delta TF_{t-i} + \sum_{i=0}^{n=4} B_{3i}\Delta FF_{t-i} + \sum_{i=0}^{n=0} B_{4i}\,\Delta Rlaw_{t-i} \\ &+ \sum_{i=0}^{n=0} B_{5i}\,\Delta OpenX_{t-i} + \sum_{i=0}^{n=4} B_{6i}\,\Delta GDPG_{t-i} + \sum_{i=0}^{n=4} B_{7i}\,\Delta GDPI_{t-i} \\ &+ \sum_{i=0}^{n=0} B_{8i}\,\Delta NRrent_{t-i} + \emptyset_1 FDI_{t-i} + \emptyset_2 TF_{t-i} + \emptyset_3 FF_{t-i} + \emptyset_4 Rlaw_{t-i} \\ &+ \emptyset_5 OpenX_{t-i} + \emptyset_7 GDPG_{t-i} + \emptyset_8 GDPI_{t-i} + \emptyset_9 NRrent_{t-i} + \varepsilon_t\end{aligned}$$

(iii)

Where, $InFDI_t$ represent log of FDI net inflow for the current year, $InFDI_{t-i}$ is lag of the log of FDI net inflows. TF, indicates trade freedom index; FF, represents financial freedom index; Rlaw, denotes rule of law index; OpenX, represents trade openness; GDPG, denotes gross domestic product growth; GDPI, indicates inflation; whilst NRrent, represents total natural resource rent. Also, *t*, represents 1995,...,.....,2018 and i = 1,.....96 respectively refers to time period and number of lags. β_1, β_2,.....,β_8 are the coefficients of the regressors while ε, represents the error term assumed to be independent and identically distributed. Table 1 below shows the definition and source of variables used in the study. Our choice of control variables is informed by standard FDI literature.

Table 1: Definition and source of variables

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Variable	Definition	Source
FDI (Foreign Direct Investment)	A non-residence acquiring a lasting interest in a resident enterprise in an economy. It is measured as the natural logarithm of FDI net inflows	World Bank (WDI)
TF (Trade Freedom)	A measure of the absence of tariff and non-tariff barriers that affect imports and exports of goods and services. It is an index ranging from 0-100, with 0 indicating low trade freedom.	The Heritage Foundation
FF (Financial Freedom)	A measure of banking efficiency, independence from government control and interference in the financial sector. It is an index ranging from 0-100, with 0 indicating low financial freedom	The Heritage Foundation
Rlaw (Rule of Law)	Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police and the courts, as well as the likelihood of crime and violence. It is an index ranging from -2.5 to +2.5, with -2.5 indicating low respect for rule of law.	World Bank (WGI)
OpenX (Trade Openness)	Sum of exports and imports expressed as a percentage of GDP	World Bank (WDI)
GDPG (GDP growth)	Final GDP less initial GDP all divided by initial GDP x 100	World Bank (WDI)
GDPI (Inflation)	GDP deflator index : Nominal GDP divided by real GDP x 100	World Bank (WDI)
NRrent (Natural resource rent)	Total natural resource as a percentage of GDP	World Bank (WDI)

Note: WDI, represent World Development index; WGI, is World Governance Indicators.

3.3 Theoretical justification of other variables in the model

Trade openness is the sum of export and import expressed as a percentage of GDP. It measures how a country is flexible and accessible to foreign investors for international trade (IGI Global, 2021). In other words, host countries with more free trade relations will attract more foreign investment. Base on this, the study expects that trade openness will positively affect the inflow of FDI in Ghana.

GDP is the value of goods and services produced in a country within a specific time period. Therefore, a growth in GDP symbolises the strength of an economy. Other things being equal, whenever GDP goes up, it means that people are spending more and businesses are expanding (Bank of England, 2019). Investors are interested in host countries that have the capacity to consume what they produce instead of creating an export markets that has its own market risks. A high GDP growth is therefore desirable in attracting FDI inflow into a country. The study therefore expects GDP growth to positively drive FDI inflows.

Ghazalian and Amponsem (2018) stipulate that a higher degree of inflation does cause macroeconomic instability and reduces capital accumulation and investment made. To these authors, high inflation enables foreign investors to demand higher risk premium on their investments which is ideal for earning higher rate of return. Alternatively, Mustafa (2019) notes that high inflationary levels are not desirable for success of businesses because it dumpens domestic capital accumulation and discourages foreign investment inflows. Based on this, the study therefore, expects either positive or negative relationship between FDI inflows and inflation in Ghana. Finally, World Trade Organisation (2010) defines natural resources as "stocks of materials that exist in the natural environment that are both scarce and economically useful in production or consumption, either in their raw state or after a minimal amount of processing." A large economically viable natural resource base countries are therefore expected to attract more FDI inflows (Hayat, 2018). Based on this, the study therefore expects a positive relationship between FDI inflows and natural resource rent.

3.4 Estimation Technique

The study adopts the Bounds testing (ARDL) approach to cointegration developed by Pesaran et al. (2001) for its estimation. The technique is rooted in earlier works by Pesaran et al. (2000) and Pesaran et al. (1999). This estimation technique is appropriate for the study since the researchers expect the independent variables for previous periods to affect FDI inflows for the current year. That is, the ARDL approach provides the study the opportunity to include lagged variables. It is also vital to note that using the ARDL model provides the flexibility to use variables with different integrations, either integrated at order 0 [I (0)] or order 1 [I(1)]. However, the model cannot run if any of the variable is integrated at order 2. Another advantage of using the ARDL model is that it is used to test for both short-run and long-run relationships between the dependent variable and its regressors. In estimating the model, we checked for the presence of stationarity; normality; heteroscedasticity; and serial correlation in the data and report the results in appendixes A, B, C, D, and E of the study. The tests suggest that these issues may not be a challenge in our model.

4. Empirical Results

4.1 Descriptive Statistics

Table 2 represents the descriptive statistics of the dependent and independent variables of the study.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Max	Min	Std. Dev.
FDI	96	20.2642	21.9676	17.8919	1.5675
TF	96	60.4125	67.8000	31.2000	9.5270
FF	96	48.7500	60.0000	30.0000	6.0263
Rlaw	96	-0.0085	0.1546	-0.2757	0.1221
OpenX	96	80.8501	116.0484	57.4231	15.5394
GDPG	96	5.7140	14.0471	2.1782	2.5455
GDPI	96	24.2073	80.7546	10.2102	16.0096
NRrent	96	12.9283	19.7279	6.5454	3.0587

Table 2 shows a considerable variation in FDI net inflows ranging from a low of 17.89 to a high of 21.97 with a mean of 20.26 indicating a wide variation in FDI inflows in Ghana. Similarly, trade freedom, financial freedom and rule of law show wide variations. Specifically, trade freedom has a low of 31.2 and a high of 67.8 with a mean of 60.41 indicating a wide variation. Also, financial freedom ranges from a minimum of 30 to a maximum of 60 with a mean of 48.75 indicating a wide variation. Finally, rule of law ranges from a low of -0.276 to a high of 0.155 with a mean of -0.009 which also suggests a wide variation.

4.2 Correlation

Table 3 shows the correlation matrix between FDI inflows and its regressors. The Table suggests that multicollinearity may not be a problem in the model.

Table 3: Correlation Matrix

Table 3: Correlation Matrix

	LNFDI	TF	FF	Rlaw	OpenX	GDPG	GDPI	NRrent
LNFDI	1							
TF	0.5236	1						
FF	0.0367	-0.1769	1					
Rlaw	0.5594	0.7071	-0.2263	1				
OpenX	-0.5199	0.2115	-0.0198	0.1441	1			
GDPG	0.4081	0.3014	-0.1240	0.2626	-0.0115	1		
GDPI	-0.1826	-0.4572	-0.2035	-0.2850	-0.2602	-0.0695	1	
NRrent	0.5158	0.3012	-0.0690	0.2521	-0.0240	0.4253	-0.2658	1

4.3 Statistic Results

4.3.1 Stationery or Unit Root Tests

In analysing a time series data, the stationery of all variables must be confirmed before any causality test can be conducted. For this purpose, the study uses three methods to test for the stationarity of the variables: the traditional Augmented Dickey-Fuller test developed by Dickey and Fuller (1981); Phillips-Perron test proposed by Phillips and Perron (1988); and the Dickey-Fuller generalised least square (DF-GLS) de-trending test by Elliott et al. (1996). The test results suggest that all variables are integrated at order zero or one (i.e., I[0] or I(1). A critical requirement of the tests is that the integration of all variables should be determined to ensure that none is I(2) which is vital to ensure that spurious results are not reported. According to Pesaran et al., (2001), if a variable in a model is I(2), the model's overall significance represented by the F-statistics cannot be explained. The results of our unit root tests as shown in appexdix A and B suggest that none of the variables is I(2).

4.3.2 Long Run Regression results and Discussion

Table 4 shows the estimated long-run effect of disaggregated economic freedom variables and other covariates on FDI inflows in Ghana. The results from the Table show that all the independent variables of focus are at least significant at 5% level in the long-run.

Specifically, Table 4 shows that trade freedom positively drives FDI inflows in Ghana. Reduction in tariffs and removal of non-tariff barriers on imports and exports of goods and services may account for the positive relationship. For instance, the government of Ghana introduced the synchronization of the internal processes of its ports into one system (Osei-Owusu & Mahmood, 2020) which makes the ports paperless and thereby increasing the speed with which port businesses are done. This finding is consistent with the theoretical underpinning of the study namely, Dunning's 1995 sub-theory of firm's 'internalization' and the 'institutional FDI fitness' theory by Wilelms and Witter (1998). The finding is also similar to previous empirical works by Azman-Saini et al. (2010); Hossain (2016); and Bheemul et al. (2020) who investigate the influence of trade freedom on FDI inflows and find that the former promotes the latter.

Similarly, Table 4 shows a long run positive relationship between financial freedom and FDI inflows, suggesting that improvements in financial freedom attracts more FDI inflows in Ghana. This positive relationship may largely be attributed to the relative improvement in the Ghanaian financial sector after the 1980s financial sector adjustment programme, popularly referred to as FINSAP I&II. Like trade freedom, this finding supports the theoretical works of Dunning (1995) sub-theory of firm's 'internalization' and the 'institutional FDI fitness' theory by Wilelms and Witter (1998). The finding also confirms prior empirical work by Hossain (2016) who finds that more financial freedom spurs FDI inflows. However, it contradicts the work of Soorea-Bheemul et al. (2020), who find that financial freedom is less vital in attracting FDI in SSA.

Furthermore, Table 4 shows that rule of law has a significantly positive long-run influence on FDI inflows in Ghana. The result which is in line with Zangina and Hassan (2020) suggests that improvement in rule of law attracts more FDI inflow in Ghana. This results can be attributed to the various constitutional reforms and regulations that has improved the judicial system in Ghana. For example following the 1992 constitution, the establishment of the Judicial Reforms and Projects Directorate (JRPD) under the Ghana Judicial service has improved judicial decisions, strengthened judicial independence and has helped in devising new channels of resolving dispute, (Oxford Business Group, 2013).

Table 4: ARDL Long-run regression results

Table 4: ARDL Long-run regression results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TF	0.095937	0.012771	7.512192	0.0000
FF	0.081323	0.011618	6.999713	0.0000
Rlaw	2.320927	1.056372	2.197074	0.0319
OpenX	-0.085635	0.003144	-27.23503	0.0000
GDPG	0.081597	0.017667	4.618767	0.0000
GDPI	0.023014	0.004370	5.266656	0.0000
NRrent	0.093618	0.014915	6.276673	0.0000

4.3.3 Short-run Regression Results and Discussion

The ARDL Error Correction Regression measures the short-run effect of the disaggregated economic freedom variables on FDI inflows. The results as presented in Table 5 show that in the short run, trade freedom and financial freedom has a significantly positive effect on FDI inflows at 1% level in the current quarter but a negative association thereafter. The finding suggests that though prudent economic freedom policies may enhance FDI inflow, it may also repress it if those same policies are circumvented in the later years by corrupt officials for parochial gain. This result is not astonishing since Ghana is not unknown as a country where most public officials often side-step policies after it has been implemented for a while for their personal interest.

The parameter CointEg(-1) represents a one-period lag error correction term. It measures the speed at which both FDI and its independent variables will return to equilibrium after a shock. In this study, the parameter CointEg(-1) is statistically significant at 1% level. The coefficient of -0.4732 suggests a relatively low speed of adjustment from the short run to the long run if there is any disequilibrium between FDI and its regressors. Whenever there is disequilibrium, it takes an average speed of 45.19% to adjust from the short run to the long run. More so, the R-square of 63.4% shows that the model has a good fit.

Table 5: Short-run Regression Results

Table 5: Short-run Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.289643	0.699153	10.42639	0.0000
D(LNFDI(-1))	-0.155048	0.076581	-2.024618	0.0474
D(LNFDI(-2))	-0.155048	0.076581	-2.024618	0.0474
D(LNFDI(-3))	-0.155048	0.076581	-2.024618	0.0474
D(TF)	0.020439	0.005153	3.966551	0.0002
D(TF(-1))	-0.026801	0.005486	-4.885370	0.0000
D(TF(-2))	-0.026801	0.005486	-4.885370	0.0000
D(TF(-3))	-0.026801	0.005486	-4.885370	0.0000
D(FF)	0.023887	0.003698	6.458744	0.0000
D(FF(-1))	-0.022465	0.004569	-4.916601	0.0000
D(FF(-2))	-0.022465	0.004569	-4.916601	0.0000
D(FF(-3))	-0.022465	0.004569	-4.916601	0.0000
D(Rlaw)	0.444453	0.324484	1.369723	0.1759
D(Rlaw(-1))	-1.193966	0.348099	-3.429959	0.0011
D(Rlaw(-2))	-1.193966	0.348099	-3.429959	0.0011
D(Rlaw(-3))	-1.193966	0.348099	-3.429959	0.0011
D(OpenX)	-0.027534	0.002754	-9.998485	0.0000
D(OpenX(-1))	0.018312	0.003215	5.695250	0.0000
D(OpenX(-2))	0.018312	0.003215	5.695250	0.0000
D(OpenX(-3))	0.018312	0.003215	5.695250	0.0000
CointEq (-1)*	-0.473228	0.045628	-10.37153	0.0000

4.3.4 Diagnostic Tests

Several diagnostic tests are performed to test the model's validity and robustness. The regression for the underlying ARDL model passes all the diagnostic tests against serial correlation, normality, and heteroscedasticity, as shown in Table 6 and further supported by appendixes C, D and E. The Breusch-Godfery serial correlation test results in the table shows that there is no serial correlation as the probability value is more than 0.05. The result is also confirmed by the F-test and the Durbin Watson test. The study therefore rejects the null hypothesis that there is serial correlation. Similarly, the Breusch-Pagan-Godfery test also suggests no heteroscedasticity with a probability value of more than 0.05. Finally, the Jarque Bera test results indicate that the variables in the model are normally distributed.

Table 6: Summary of Diagnostic Test

Table 6: Summary of Diagnostic Test

	LM-Test	**F - Test**
Serial Correlation	Chi Sq (4) = 9 = 5.6373(0.3089)	F(4, 74) = 1.2217 (0.3089)
Heteroscedasticity	Chi sq.= 32.91631(0.2388)	F (29,62) =1.25916 (0.2256)
Normality	Jarque Bera 4.499872 (0.1054060)	

4.3.5 Stability Test

The CUSUM and CUSUMSQ graph is used to check the stability of the long-run and the short-run movements for the ARDL Error Correction Model. The null hypothesis of all co-efficient is stable if the plot of the CUSUM and CUSUMSQ statistics stay within the critical bound of 5% significant level. As shown in Figure 1 and 2, the plots of the CUSUM and the CUSUMSQ statistics are within the desired boundaries suggesting that the models have remained stable within the critical bound.

Figure 1: **Cumulative sum (CUSUM) of recursive residuals**

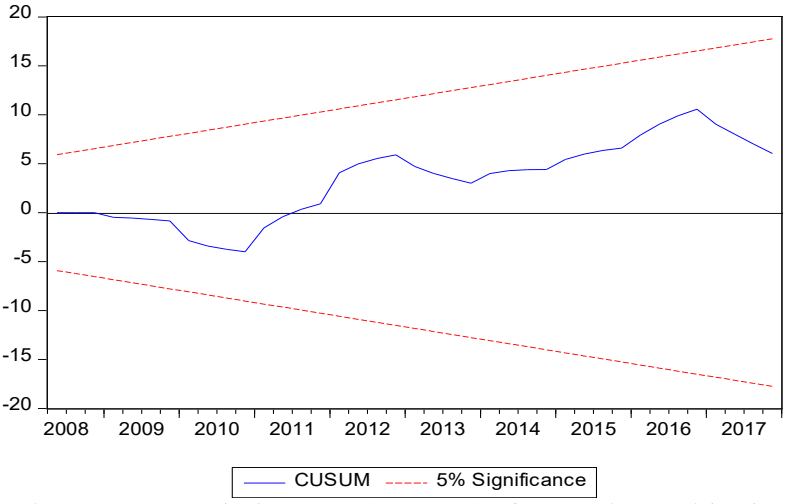

Figure 1: Cumulative sum (CUSUM) of recursive residuals
Source: Author's Construct from Eviews

Figure 2: Cumulative sum of square (CUSUMSQ) of recursive residuals

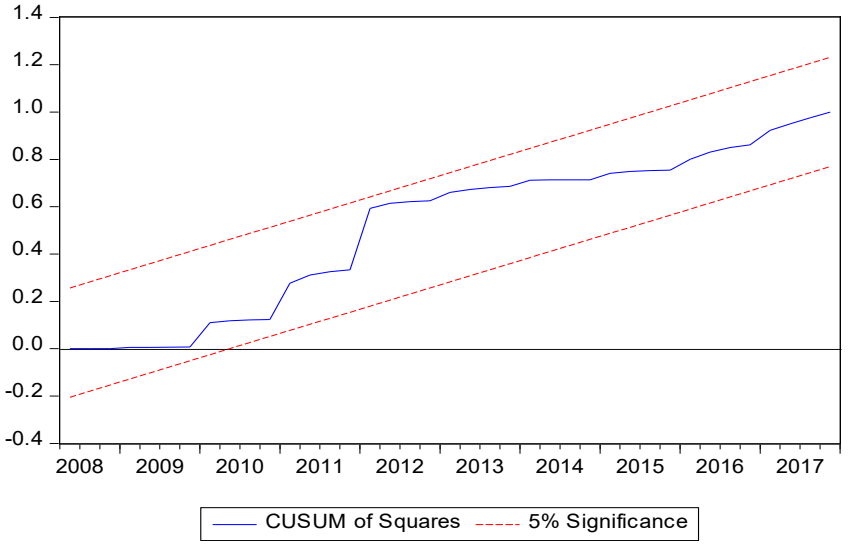

Figure 2: Cumulative sum of square (CUSUMSQ) of recursive residuals
Source: Author's Construct from Eviews

5. Conclusion and Policy Recommendations

The study investigated the influence of economic freedom on FDI inflows. Specifically, it assessed how trade freedom, financial freedom, and rule of law may affect FDI net inflows in Ghana using the ARDL bound approach to co-integration. It is found that trade freedom, financial freedom, and rule of law positively and significantly drive FDI inflows in the long-run. Based on the findings, the study recommended that policy-makers in Ghana should be interested in crafting prudent economic freedom related policies that would spur FDI inflows in the long-term in Ghana. Specifically, government of Ghana should reduce tariffs on exported goods and services and imported raw materials to encourage exports and also motivate entrepreneurs that import raw materials for domestic production. Government should also promote any other prudent policy that would stimulate international trade. Furthermore, government of Ghana should enact prudent banking sector management laws that would support banking sector efficiency, including foreign bank participation, and also encourage general financial independence devoid of government control. Finally the government of Ghana must continue to engage in far-sighted judicial reforms that would strengthen judicial independence and uphold of the rule of law.

This study is however not without limitation. For example, one limitation is that the study is restricted to only Ghana which therefore limits the generalisation of the findings. Future studies may therefore broaden the scope, maybe to include entire Africa or sub-Saharan Africa so as to understand the issue from a broader perspective.

Disclosure statement
The authors report there are no competing interests to declare.

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APPENDIX A

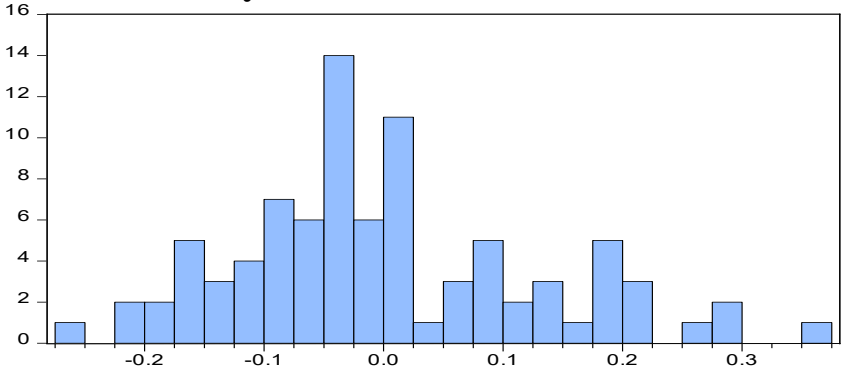
STATIONERITY TEST AT 5% SIGNIFICANT LEVEL						
	ADF TEST		***DF GLS TEST***		***PP Test***	
	T-Statistics	T-Critical	T-Statistics	T-Critical	T-Statistics	T-Critical
FDI	-1.279631	-3.457808	-1.430479	-3.046000	-1.29999	-3.457808
TF	-3.051395	-3.457808	-1.720721	-3.046000	-3.056079	-3.457808
FF	-2.905926	-3.459950	-2.940186	-3.058800	-4.070058	-3.457808
Rlaw	-2.558896	-2.893589	-1.129621	-2.590622	-2.580238	-2.893589
OpenX	-2.827219	-3.457808	-1.863236	-3.046000	-2.848524	-3.457808
GDPI	-3.642622	-2.892200	-2.770120	-1.944248	-3.946212	0.0026
NR rent	-2.670913	-3.457808	-2.456179	-3.046000	-2.799226	-3.457808
GDPG	-2.739265	-3.457808	-2.952613	-3.457808	-2.952613	-3.154859

APPENDIX B

STATIONERITY TEST AT 1ST DIFFERENCE						
	ADF TEST		***DF GLS TEST***		***PP Test***	
	T-Statistics	T-Critical	T-Statistics	T-Critical	T-Statistics	T-Critical
FDI	-9.612921	-3.458326	-9.685129	-3.049200	-9.612921	-3.458326
TF	-9.834203	-3.458326	-9.811743	-3.049200	-9.836951	-3.458326
FF	-7.987923	-3.459950	-8.079874	-3.058800	-9.540495	-3.458326
Rlaw	-9.420335	-2.893956	-9.456733	-1.944445	-9.420335	-2.893956
OpenX	-9.626268	-3.458326	-9.693698	-3.049200	-9.626268	-3.458326
GDPI	-7.370726	-2.893589	-7404623	-1.944286	-9.60104	-2.892536
NR rent	-9.542039	-3.458326	-9.646169	-3.049200	-9.542039	-3.458326
GDPG	-9.544335	-3.458326	-9.646750	-3.049200	-9.544335	-3.458326

APPENDIX C

Test for Normality



Series: Residuals
Sample 1996Q1 2017Q4
Observations 88

Mean	2.57e-15
Median	-0.024734
Maximum	0.368977
Minimum	-0.258327
Std. Dev.	0.127149
Skewness	0.553867
Kurtosis	3.012712
Jarque-Bera	4.499872
Probability	0.105406

APPENDIX D

Test for Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.221731	Prob. F(4,74)	0.3089
Obs*R-squared	5.637311	Prob. Chi-Square(4)	0.2279

APPENDIX E

Test for Heteroskedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.259164	Prob. F(28,59)	0.2256
Obs*R-squared	32.91631	Prob. Chi-Square(28)	0.2388
Scaled explained SS	14.89023	Prob. Chi-Square(28)	0.9796