Global uncertainty, economic governance institutions and foreign direct investment inflow in Africa

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Abstract

Based on the fact that Africa has not fared well in attracting foreign direct investments in the last decade compared to other regions of the world, especially during periods of high uncertainty occasioned by one crisis or the other, this study investigated: the impacts of global uncertainty and economic governance institutions on FDI inflow to Africa; the moderating effect of economic governance institutions on global uncertainty-FDI relationship in Africa; and other significant drivers of FDI inflow to Africa. The study used the system GMM modeling framework and a panel of 46 African economies over the period 2010–2019. The results indicate that global uncertainty has a significant dampening effect on FDI inflow to Africa, and economic governance institutions on the continent amplify this effect rather than mitigate it. The results further indicate that natural resource endowment, market size, and initial FDI inflows are robust drivers of FDI inflows to Africa, while the roles of financial development and trade openness remained muted. Overall, the study concludes that policymakers in Africa should take urgent steps to strengthen the quality of economic governance institutions as a means of mitigating the excruciating effect of global uncertainty on FDI inflows to Africa.

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1 Introduction

Foreign direct investment (FDI) inflow is a fundamental contributor to the economic growth of many developing countries. This is because nations that are plagued by scarcity of capital and technological expertise are most likely to face slower growth rate than those that have abundance of capital and technological expertise (Asiedu 2006). Thus, FDI inflow is envisaged as a vital channel to bridge the capital and technological gap, especially in third world economies with low capital formation (Dunning and Hamdani, 1997). The transmission channel of operation is through technological diffusion that improves the production base of the host country, thereby enhancing income generation and employment (Anyanwu 2011). FDI inflow also fosters sectoral growth through diversification and expansion of the production capacities of recipient countries, thereby increasing the volume and quality of exports (Gerschewski 2013; World Bank 2017). Due to the significant roles of FDI inflow in stimulating growth and development, the extant literature has paid much attention to the determining factors of FDI inflows across regions (see for example, Anyanwu 2011; Abbott et al. 2012; Blonigen and Piger 2014; Kasasbeh et al. 2018).

In recent years, economic researchers have focused on the effect of economic policy uncertainty as one of the key determinants of FDI inflows. The debate has been that the gains from FDI inflow may not materialize in an environment characterized by uncertainty, which is typical of most African economies (Zhu et al. 2019; Avom et al. 2020). The huge sunk cost associated with FDI makes a foreign investor hesitant to take investment decision unless the business has mild level of uncertainty and risk to its capital and personnel (Aziz 2018). Keynes (1936) opines that investment demand is highly sensitive to the perception of future events and thus, undesirable perception on future events will retard investments demand. According to the investment report of UNCTAD (2017), the low level of recovery of global FDI flows after 2% decline in 2016 is associated with global uncertainty following global commodity price shock. The rationale is that the investment decisions of companies depend on the level of uncertainty, and that at the period of high uncertainty, firms prefer to postpone investment decisions, which ultimately impede investment rate (Bloom 2009). Therefore, countries or regions of the world with high levels of uncertainty are likely to experience low levels of FDI inflow.

The ongoing COVID-19 pandemic and the recent fall in global commodity prices have not only heightened uncertainty on the continent but have also put enormous pressure on the already declining FDI inflows to Africa. FDI inflows to the continent declined by 10% to $45.3 billion in 2019 relative to 2018 (see Figs. 2 and 3 in the Appendix). The uncertainty occasioned by the pandemic has also led to the suspension of major projects on the continent (UNCTAD 2020). This is evidenced by 62% decline in value and number of Greenfield project declarations in the first quarter of 2020 and 72% decline in cross-border mergers and acquisitions from their 2019 monthly average. In fact, UNCTAD forecasts a decline of 25% to 40% in FDI inflows to Africa in 2020, with a more decline expected in 2021 (UNCTAD 2020). Indeed,

the ongoing COVID-19 pandemic is a typical reflection of the growing importance of world factors in driving uncertainty globally.[1] Incidentally, Ahir et al., (2018) had documented that the heightened level of uncertainty in Africa in the past decade is quite greater than the level experienced in the Middle East and Central Asia.

Despite several decades of economic reforms and arrangements to facilitate FDI inflow in Africa, the region not only receives the least FDI inflow relative to other regions of the world but also ranks as the least of investors' preferences according to UNCTAD (Buchanan et al. 2012). Such economic reform efforts include the New Partnership for Africa's Development (Adams 2009; AUC 2018), the Structural Adjustment Programmes (Ayadi et al. 2014; Cleeve 2012), among others. According to UNCTAD (2017) statistics, after a steady increase in FDI inflows to African economies as share of total world FDI inflows for almost a decade, it fell from a peak of 4% in 2008 to 3% in 2010 following the 2007–2009 Global Financial Crisis. Within the same periods, developing Asia economies received FDI inflows of 25% of total world inflows in 2008 and it rose to 30% in 2010. Similar experience occurred during the global commodity price shock in 2016, when the proportion of FDI inflows to Africa to global developing economies dropped to 5.9% in 2017 from 7.8% in 2015. Clearly, developing economies in Africa have not fared well in terms of FDI inflows compared to their Asian counterparts, especially during period of high uncertainty occasioned by one economic crisis or the other (see Table 4 and Fig. 1 in the Appendix).

The pertinent question becomes: why are African economies attracting lesser FDI inflows[2]? To answer this question, it is important to understand how FDI inflow to Africa is responding to global uncertainty, and whether economic governance institutions on the continent reduce or heighten the effect of global uncertainty on FDI inflow to Africa. This is particularly relevant to policy formulation on the continent given the ongoing global pandemic cum global commodity price shock. The variation in FDI inflows across countries in the presence of global uncertainty is deemed to reflect differences in economic governance institutions. This is particularly so because recent trend has shown that the conventional determinants of FDI inflow as embodied in the eclectic paradigm of Dunning (1977) do not completely explain Africa's experience, and as such attention has shifted toward the role of governance institutions (Asiedu 2006; Kasasbeh et al. 2018). Acemoglu and Robinson (2012) contend that economic policy, value system, culture, or geography do not guarantee success or failure of economies, rather success or failure of economies is conditional upon their institutions. Therefore, this study is motivated to investigate the moderating effect of economic governance institutions in the uncertainty-FDI relationship in Africa due to the fact that most African economies are known to have extractive

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[1] Apart from the ongoing COVID-19 Pandemic and the crash in global commodity prices, especially the fall in international oil prices that started in 2013, other remarkable events that have heightened global uncertainty include the Brexit vote, the US-China trade war, and the 2010–2012 Euro Area Sovereign Debt Crisis, among others.

[2] According to UNCTAD data as seen in Figs. 1, 2 and 3 in the appendix, FDI inflows to Africa are low relative to other regions.

institutions that are exploitative in nature (Acemoglu andRobinson 2010), and these institutions may be lacking the will to mitigate uncertainty and support foreign investment on the continent (Cleeve 2012). According to North (1990), healthy governance institutions have the capacity to create conducive environment and engender investors' confidence by ensuring that property rights are protected and that the rule of law is enforced. Besides, sound governance institutions uphold ownership-specific benefits like patents and trademarks while ensuring that corruption does not get a foothold in the economy. According to Bartlett et al. (2013), foreign-owned firms are mostly attracted to countries with sound economic governance institutions, but the bureaucratic bottlenecks, bribery, and rent-seeking behaviors that characterize most African economies engender distrust among foreign investors, and thus deter investments on the continent (Ndulu et al. 2008). According to World Bank's World governance Indicators, Africa is ranked as the region with poorest economic governance institutions as illustrated in Table 5 in the Appendix.

Consequently, this study seeks to: (i) ascertain the impacts of global uncertainty and economic governance institutions on FDI inflow to Africa; (ii) establish the moderating effect of economic governance institutions on the global uncertainty-FDI relationship in Africa; and (iii) determine other significant drivers of FDI inflow to Africa. The contributions of this study to the literature are twofold. First, the effect of uncertainty on FDI inflow can be examined in several ways. Existing studies mainly concentrated on the effect of domestic uncertainties on foreign investment decision. Sources of domestic uncertainties considered by such studies include terrorism (Bezić et al. 2016), exchange rate (Asamoah et al. 2016; Eregha 2019), political crises (Gulen and Ion 2016; Bonaime et al. 2018), among others. This means that the extant literature is somewhat biased against the effect of global uncertainty on foreign investment decision, notwithstanding that many uncertainty inducing events have occurred across the globe, particularly in the last decade (Al-Thaqeb and Algharabali 2019). Due to global connectedness, shocks originating from one part of the world that heighten uncertainty will surely have spillover effect in other parts of the world, and foreign investors usually consider such spillover effect before making investment decision (Cheng 2017; Carrière-Swallow and Céspedes 2013; Colombo 2013). Thus, this paper contributes to the extant literature by analyzing the effect of world uncertainty on FDI inflow in Africa. This is important because a rise in world uncertainty is usually associated with potential changes in foreign investment decisions such that foreign investors could adopt a wait-and-see behavior considering the long-term commitment associated with foreign investments that are usually costly to reverse.

Second, although few studies (e.g., Avom et al. 2020; Ho and Gan 2021) have investigated the effect of global uncertainty on FDI, this study is quite relevant because the extant literature has largely neglected how economic governance institutions could moderate the uncertainty-FDI relationship. Even though it has been shown that uncertainty could exert negative influence on FDI inflow (e.g., Avom et al. 2020), it has also been revealed that quality institutions attract FDI inflows (Busse and Hefeker 2007; Aziz 2018). What remains unclear, particularly in Africa, is how economic governance institutions moderate the effect of global uncertainty on FDI inflows. In fact, revealing how economic governance institutions interact

with global uncertainty to influence FDI inflows in Africa will significantly enrich the robustness of the existing evidence about uncertainty-FDI nexus in Africa, thereby providing information to aid evidence-based policies on the continent. This is an important contribution because macroeconomic risk management alone as advocated by earlier studies may not be sufficient to drive FDI inflow unless other fundamental factors such as economic governance institutions are taken into the consideration.

2 Literature review

The theoretical underpinning of this study is the Eclectic theory advanced by Dunning (1977, 1980, 1988). The theorist opined that national firms grow into transnational firms and engage in FDI when the ownership, location and internationalization advantages make production abroad more profitable. This implies that the major factors behind cross-border investments are the expected returns to the investments, the protection of investments and the possibility of exit when necessary. These factors are largely dependent on the political and socioeconomic environment, and indeed, the overall economic governance institutions of the host country. In other words, the attitude of foreign investors towards FDI depends not only on government policies and socioeconomic features of the host country but also on the uncertainties surrounding such policies and the overall socioeconomic environment. Thus, foreign investors take into consideration the vulnerability of the economy against external shocks when they make choices on the investment amount and location. Li (2006) argued that long-term profit maximizing firms take decisions of investment amount and location based on the expected profit rate and hedge against risks.

The location-quantity model of Li (2006), which was distilled from the rational-choice theory, offers another theoretical aspect that explains firm's response to risk. The theorist posits that the impact of risk on foreign direct investment depends on uncertainty and the rational expectations on the part of foreign investors. The theory postulates that firms that operate across border are usually faced with uncertain investment environment in their host countries and as a result, their investment decisions depend on their evaluation of ex ante and ex post effects of uncertainty (e.g., global shock) on investment flows. Of course, firms do not have perfect knowledge of future risks and thus, they have to adjust to the consequences of unpredicted risk. Therefore, larger predicted effect of uncertainty can be taking into consideration when firms make investment decisions such that the actual uncertainty incidence can easily be absorbed with insignificant effect on their investments, while small predicted effect of uncertainty implies that large actual incidents of uncertainty will have negative significant effect on their investments.

Base on the foregoing theories, empirical studies relating to the impact of uncertainty on FDI have been envisaged in the extant literature. However, the factors influencing FDI can be classified into two main categories: domestic and international factors. Most studies focused only on domestic factors. For instance, Asamoah et al. (2016) examined the effect of domestic economic uncertainty on FDI inflows in 40 Sub-Saharan African economies and found negative association. A

similar study by Eregha (2019) indicates that the effect of domestic uncertainty on FDI inflows in West African monetary zone is also negative. Moreover, Sohag et al. (2021) used quantile-based econometric technique to show that a rise in domestic economic policy uncertainty depreciates Russian currency under floating exchange rate system, while it leads to the appreciation of the currency under managed floating exchange rate system.

On the other hand, studies on global factors have now evolved following the emergence of world uncertainty index developed by Ahir et al (2018). Notwithstanding that different domestic economic crises are often used to measure uncertainty, global uncertainty differs from domestic uncertainty because its effects are international in nature. Incidentally, the global economy has become intricately interconnected through trade and financial linkages. Thus, there are bound to be stronger uncertainty propagation across economies such that global uncertainty can exert substantial influence on FDI inflows, thereby underlining the focus of this study. However, there is limited literature concerning the effect of global uncertainty on FDI inflow, and the few available empirical studies are not completely one-sided. This is because while some studies established significant negative impact of an increasing global uncertainty on FDI inflow, others revealed positive association between global uncertainty and FDI inflow. For instance, using the generalize method of moments technique, Avom et al (2020) employed world uncertainty index advanced by Ahir et al. (2018) to examine the effect of global economic uncertainty on FDI inflow in 138 economies. The study revealed that global uncertainty has negative impact on FDI inflow. Further findings suggest that the effect of global economic uncertainty is more prominent on FDI inflows in emerging and developing countries than in advanced countries. Ho and Gan (2021) find in an analysis of 142 countries for the period 1996 to 2019 using the generalize method of moments estimation technique that global pandemic uncertainty impedes FDI inflows. By grouping the countries according to income levels and regions, the study found that the effect of global pandemic uncertainty is more pronounced in emerging and Asia–Pacific countries. Zhu et al. (2019) also find empirical evidence that support negative association between economic uncertainty and FDI inflow. The authors used economic policy uncertainty index developed by Baker et al. (2016) for the period 2004–2012 to investigate the relationship between the uncertainty and FDI in 23 economies.

Contrary to the findings in the preceding paragraph, other studies in the literature have found positive relationship between global uncertainty and FDI inflows. For example, in their pioneer paper on the linkages between international uncertainty and FDI, Canh et al. (2020) used sequential approach of linear panel data models to reveal that uncertainty has positive and significant effect on FDI inflows for 21 countries. The empirical results showed that an increase in global uncertainty leads to a rise in levels of net foreign direct investment positions. The study attributed the finding to behavioral bias in investors' sensitivity from systematic aversion toward global uncertainty. Some studies have reaffirmed this belief. Notably, Ashby and Ramos (2013) found positive association between high risk and FDI inflow in oil and mining sector in Mexico. The authors argued that firms that engage in natural resource-based activities such as oil extraction and mining industries are not only constrained in a specific location but also face high sunk costs and thus, are likely to

manage risk. Wagner (2006) describes this investor's conviction as a result of attractiveness of expected returns on investment which is assumed to be large enough to offset the attendant risks. Similarly, Obi (2008) found that Chinese investment in Niger Delta region of Nigeria has been increasing despite high level of uncertainty caused by militant activities in the region.

In another perspective, some empirical studies have investigated the effect of government intervention in attempting to mitigate uncertainty. These studies have generally argued that most government policies aimed at curtailing the level of uncertainty in the economy have ultimately resulted in higher costs of transactions and as such, caused investors to move elsewhere in order to guard against possible losses. This in turn deters FDI flows. For example, Greenbaum et al. (2007) found negative impacts of terrorist attack on number of firms. They argued that public and private sectors spending to improve security such as hiring security personnel and gadget and risk management consultancy, among others, may crowd out productive investment resources available and thus, may lead to high cost of capital as well as high insurance premium which eventually may result to decline in number of firms. Similar observation by Aggarwal (2006) suggests that government regulations and policies following increasing uncertainty have resulted in increased operation costs for firms.

Geographical halo effect of uncertainty typically suggests much larger effects on FDI since economic uncertainty from events like terrorism, war, and political crises in a given region will create a strong foreign investors' perception of high level of uncertainty across the whole region, notwithstanding that the political or economic shock is centered in particular area within the region. Consistent with this possibility, Enders et al. (2006) examined the spillover effect of September 11, 2001 attack on FDI from country of origin to OECD countries and non-OECD countries. The study found the presence of geographic halo effect such that the low FDI inflow across OECD countries is attributed to the external shock from the U.S. attack. Similarly, there is evidence that the recent act of terrorism by Boko Haram in Nigeria has caused possible investor's cognitive bias on FDI decision-making in other West African States which has manifested in low level of FDI inflow recently recorded in the sub-region (Ajogbeje et al. 2017). Furthermore, Mariev et al. (2016) used gravity model to investigate the key drivers of FDI flows between economies as well as the performance of Russian economy in attracting FDI by computing the potential bilateral FDI inflows and compare them with actual values for the Russian economy over the period 2001 to 2011. The paper employed Poisson pseudo maximum likelihood method with instrumental variables estimation technique to estimate the model. First, the study finds that the key drivers of bilateral FDI flows are market size of the host economy, market size of the investing proximity between economies, institutional quality of the recipient economy, investor economy's remoteness, recipient economy's remoteness, recipient economy's wage, common language, common border, two countries membership within a regional economic union and colonial relationships between countries in the past. Second, the paper finds that the actual values surpass potential values of FDI inflows in Russia and that some economies overinvest while some underinvest. Similarly, Ghalia et al. (2019) applied gravity model and Poisson pseudo maximum likelihood method to examine the key driver

of tourist flows. The study finds that the key drivers of tourist flows include institutional quality and political risk, and that the effects are more prominent for the host countries than for the source countries. Other gravity factors that drive tourist flows include market size, population size, proximity, common language and common border.

3 Data and methodology

This study used a panel of 46 African countries over the period 2010–2019. The countries included in the study are: Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo Dem, Congo Rep, Cote d'Ivoire, Egypt, Equatorial Guinea, Eswatini, Gabon, Gambia, Ghana, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia, and Zimbabwe. These countries were chosen for this study on the basis of data availability. The study focused on the post-Global Financial Crisis period so that the knowledge gained can be used to inform policies in the post-COVID-19 pandemic era. Table 1 presents the description of the variables and the sources of data used in the study.

The dependent variable in this study is foreign direct investment (FDI) inflow. Specifically, the study used FDI inflow as a percentage of total world FDI inflow. A core explanatory variable in this study is global uncertainty, which we measured using world economic uncertainty index (WUI). The measurement of uncertainty is somewhat problematic because several approaches have been developed to measure it and there is no agreement as to which measure is the most appropriate. Some studies have used the volatility of major financial and economic indicators to measure uncertainty (Bloom 2009; Asamoah et al. 2016). This approach has been criticized due to the use of a single variable to measure uncertainty. However, Baker et al. (2016) recently developed the Economic Policy Uncertainty (EPU) index to measure uncertainty based on three basic elements: (i) newspaper coverage of policy-associated uncertainty; (ii) provision of federal tax code for a year's duration; and (iii) public spending and inflation forecasts. The EPU index has also been criticized because its coverage is mainly limited to developed economies. Thus, this study used the world uncertainty index (WUI) advanced by Ahir et al. (2018), which is neither limited to developed economies nor based on a single variable that may not capture the various aspects of uncertainty. The index has large coverage of 143 economies of the world, and thus offers a more robust measure of global uncertainty. The index is computed on the basis of economic and political events relating to uncertainty sourced from Economist Intelligence Unit (EIU) report. Recent studies (e.g., Avom et al. 2020; Ho and Gan 2021) have also used the world uncertainty index to measure uncertainty.

To account for economic governance institutions in our modeling framework, we used government effectiveness (GOVE) and regulatory quality (REGQ) variables from the World Governance Indicators published by the World Bank. The

Table 1 Definition of variables and data sources *Source* Authors

Variable	Definition	Data source
FDI	Foreign direct investment, net inflows (% of total world)	UNCTAD Investment Statistics https://unctad.org/topic/investment/world-investment-report
WUI	World Uncertainty Index (WUI)	Ahir et al. (2018) from https://worlduncertaintyindex.com/
REGQ	Regulatory quality, which is a measure of economic governance institution. It is estimated in country's score on the aggregate, in units ranging from approximately -2.5 to 2.5	World Bank's World Governance Indicators (WGI) https://datacatalog.world bank.org/dataset/worldwide-governance-indicators
GOVE	Government effectiveness, which is a measure of economic governance institution. It is estimated in country's score on the aggregate, in units ranging from approximately -2.5 to 2.5	World Bank's World Governance Indicators (WGI) https://datacatalog.world bank.org/dataset/worldwide-governance-indicators
FINDEV	Financial development, measured as domestic credit to private sector by banks (% of GDP)	World Bank's World Development Indicators (WDI) (https://datacatalog.world bank.org/dataset/world-development-indicators)
ENDOW	Natural endowment, measured as natural resource rents total (% of GDP)	World Bank's World Development Indicators (WDI) (https://datacatalog.world bank.org/dataset/world-development-indicators)
MSIZE	Market size, measured as GDP growth (annual %)	World Bank's World Development Indicators (WDI) (https://datacatalog.world bank.org/dataset/world-development-indicators)
TOP	Trade openness, which is the sum of exports and imports of goods and services expressed as a percentage (%) of GDP	World Bank's World Development Indicators (WDI) (https://datacatalog.world bank.org/dataset/world-development-indicators)

All the variables were logged prior to estimation

government effectiveness variable is an institutional quality variable that accounts for the public perception of the soundness of civil and public services as well as the level of autonomy from political pressures and the rules of engagement to create and execute credible policies, which evidently could influence FDI inflows. The regulatory quality variable accounts for the public perception of the capacity of an economy to create and execute good policies and guidelines that allow and support the advancement of the private sector. Thus, it assists to measure the contribution of economic governance institutions in economic stabilization, which is in turn expected to enhance FDI inflows. To ensure that the results from the government effectiveness (GOVE) estimations are consistent, this study is also subjected to robustness checks and thus used regulatory quality (REGQ) as an alternative measure for economic governance institutions.

Other control variables included in this study are: trade openness (TOP), financial development (FINDEV), natural endowment (ENDOW) and market size (MSIZE). Market size is measured as the rate of growth of gross domestic production expressed in percentage, which mirrors the extent of the market (in terms of size) in the FDI recipient economies (Bayraktar 2013), which is important for market-oriented FDI. Openness to trade is the summation of import and export measured as a percentage of GDP. The degree of openness to trade could serve as how liberal an economy is to cross-border investments (Ramasamy and Yeung 2010). Financial development is measured as the domestic credit to private sector as a share of GDP. Financial development is included in this study because it gives an indication of the extent to which domestic banks can provide financial resources to investors. A well-developed financial sector enhances FDI inflows through the reduction in financial transaction costs, which influence the investment cost structure of firms (Hussain and Kimuli 2012). Natural endowments attract FDI inflows, especially from multinational enterprises that specialize in extracting and processing of natural resources. Natural endowment is measured in this study as the rent accrued from the supply of natural resources as a percentage of GDP. The descriptive statistics and the correlation matrix of the raw data are shown in Table 2. This table shows the mean, standard deviation, minimum and maximum values of the data.

The summary statistics in Table 2 indicate that the minimum, average and maximum FDI net inflows in Africa over the period 2010–2019 were − 0.48% recorded by Angola in 2013, 0.06% and 0.58% recorded by Egypt in 2019, respectively. The standard deviation of 0.11 indicates that FDI inflows follow a close pattern across the African countries. The descriptive statistics for quality of economic governance institutions variables exhibit a clear pattern. In fact, the statistics indicate the average score of − 0.61 and − 0.70 for regulatory quality and government effectiveness, respectively, which is quite low, signifying the prevalence of poor economic governance institutions in the region. The data actually show that Botswana, Cabo Verde, Mauritius, Rwanda, Seychelles and South Africa are associated with relatively higher quality of economic governance institutions within the study period. The correlation matrix in Table 2 shows negative correlation between FDI and world uncertainty index (WUI), suggesting that an inverse association exists between them. However, the correlations between FDI and the quality of economic governance institutions variables are positive. The signs of these pairwise correlations are

Table 2 Descriptive Statistics and Correlation Matrix of the Variables *Source* The variable are as defined in Table 1

Variables	FDI	WUI	REGQ	GOVE	FINDEV	ENDOW	MSIZE	TOP
Mean	0.064	0.220	− 0.613	− 0.705	23.380	10.326	3.865	73.268
Std. Dev.	0.114	0.037	0.548	0.616	19.250	9.546	4.188	32.470
Minimum	− 0.488	0.152	− 2.070	− 1.848	3.697	0.001	− 36.391	16.668
Maximum	0.585	0.278	1.127	1.056	106.260	56.038	20.715	216.483
Skewness	1.240	− 0.213	0.351	0.493	1.945	1.652	− 2.475	1.162
Kurtosis	10.058	2.202	3.473	2.784	6.484	6.020	24.774	5.075
Correlation Matrix								
FDI	1							
WUI	− 0.034	1						
REGQ	0.093	− 0.025	1					
GOVE	0.118	− 0.002	0.883	1				
FINDEV	0.114	0.056	0.632	0.702	1			
ENDOW	− 0.035	− 0.138	− 0.514	− 0.511	− 0.423	1		
MSIZE	0.075	− 0.174	0.143	0.112	− 0.074	− 0.079	1	
TOP	− 0.129	− 0.068	0.173	0.299	0.265	0.119	− 0.031	1

consistent with economic expectations as well as the extant literature on determinants of FDI inflows. However, the correlation matrix also shows that there is a problem of collinearity arising from the high correlation between the two variables measuring the quality of economic governance institutions. Specifically, regulatory quality and government effectiveness exhibited a pairwise correlation of 0.88, which is considered high. Therefore, to avoid the problem of collinearity, regulatory quality and government effectiveness variables were included in separate estimations of the underlying model for this study. Indeed, we used the model that included government effectiveness as the baseline model, while the model that included regulatory quality was used for robustness check. Interestingly, as we shall soon notice, the results from both models qualitatively followed similar patterns.

To examine the impact of global economic uncertainty and economic governance institutions on FDI inflows in Africa, this study specifies a dynamic panel model following Avom, Njangang and Nawo (2020) and Ho and Gan (2021). The model is of the form:

$$\text{FDI}_{it} = \alpha_i + \gamma \text{FDI}_{it-1} + \beta \text{WUI}_{it} + \phi \text{GOVE}_{it} + \omega \text{Z}_{it} + \varepsilon_{it} \qquad (1)$$

where: FDI_{it} denotes the foreign direct investment net inflows to world ratio of country i in time t; FDI_{it-1} denotes the lagged value of FDI_{it}; WUI denotes the world uncertainty index; Z denotes a vector of other control variables; ε denotes the error term; and α, γ, β, φ and ω are the parameters to be estimated.

To model the moderating effect of economic governance institutions on the global uncertainty-FDI relationship, we extend the cross-country FDI net inflows

function in Eq. (1) by including an interaction term. Thus, the econometric model in Eq. (1) is re-specified as follows:

$$\text{FDI}_{it} = \alpha_i + \gamma \text{FDI}_{it-1} + \beta \text{WUI}_{it} + \phi \text{GOVE}_{it} + \lambda \left(\text{WUI}_{it} * \text{GOVE}_{it} \right) + \omega Z_{it} + \varepsilon_{it} \tag{2}$$

where: λ denotes the coefficient of the interaction term. This paper is particularly interested in the marginal effect of a change in global economic policy uncertainty on FDI inflows, and how this change is influenced by the level of economic governance institution. Hence, the net effect is computed through the partial derivative of Eq. (2) with respect to WUI. This partial derivative of the FDI inflow variable with respect to WUI is given by:

$$\frac{\partial FDI_{it}}{\partial WUI_{it}} = \beta + \lambda \text{GOVE}_{it} \tag{3}$$

Thus, the key point of this study is on the coefficients β and λ in the partial derivative equation. If β is negative (i.e., $\beta < 0$) and λ is positive (i.e., $\lambda > 0$), it suggests that the unconditional world uncertainty index is adversely influencing FDI inflow, while the conditional world uncertainty through economic governance institution is mitigating that adverse influence. This suggests that adverse influence of world uncertainty diminishes as economic governance institution improves. In this scenario, whether the net effect of world uncertainty is FDI attracting or FDI inhibiting depends on the level of economic governance institution in the continent, which suggests the presence of a threshold effect. Similarly, if β is positive (i.e., $\beta > 0$) and λ is negative (i.e., $\lambda < 0$), it suggests that the unconditional world economic uncertainty improves FDI inflows, whereas the conditional world economic uncertainty through economic governance institution decreases the FDI inflows in Africa. However, if the two coefficients carry positive signs on the one hand, it means that a rise in unconditional WUI encourages FDI inflows, while an improvement in the conditional WUI through economic governance institution would intensify the attractiveness of FDI inflows. But if the two coefficients carry negative signs on the other hand, it means that unconditional increase in WUI would lead to a decrease in FDI inflows, whereas the conditional WUI through weak economic governance institution would heighten the decrease. In essence, if the two coefficients (β and λ) carry the same sign, the computation of threshold is not feasible. In theory, the inhibiting effect of uncertainty on FDI inflows can be mitigated when there are high quality economic governance institutions. Intuitively, the coefficient of world uncertainty index is expected to be negative, while the coefficient of the interaction term is expected to have a positive sign if the quality of economic governance institutions is high, otherwise it will have a negative sign.

We estimated Eq. (2) by using the dynamic panel system Generalized Method of Moments (GMM) modeling approach advanced by Arellano and Bover (1995) and Blundell and Bond (1998) in order to achieve the specific objectives of this study. The dynamic system GMM panel specification is justified for this study given that our panel has large cross section, N, and a small number of periods, T (i.e., number of cross sections or countries, $N = 46$ and number of years, $T = 10$).

This estimation technique proves quite insightful, robust and enormously suitable based on its important features identified by Blundell and Bond (1998) as follows. First, the GMM approach is quite appropriate in addressing the problem of endogeneity triggered by the inclusion of initial value of FDI and other endogenous variables in the model by means of instrumentation process of the corresponding lags of independent variables. Second, it corrects for unobserved country-specific heterogeneity, which is an inherent phenomenon across African economies and FDI dynamics across time. Third, it addresses the misspecification problem that usually occurs in a static model. The inclusion of lagged dependent variable in GMM usually omitted in static models is important because of its robust influence in predicting the contemporaneous response of the dependent variable. Furthermore, it has been explained by Blundell and Bond (1998) that the system GMM estimator is more efficient than the instrumental variable estimator even in the presence of heteroscedasticity and that in the absence of heteroscedasticity, the instrumental variable estimator is not preferred asymptotically to the system GMM estimator. Hence, the specification follows *two-step* system-GMM procedure with forward orthogonal deviations controls which controls for heteroscedasticity. Lastly, the system GMM robust estimator makes the standard error to be consistent even in the presence of persistent series and heteroscedasticity (Blundell and Bond 1998; Bond et al. 2001).

In a GMM narrative, some conceptual issues such as identification, simultaneity and exclusion restrictions require clarification for better understanding and smooth presentation. Identification relates to the choice of the dependent, endogenous and strictly exogenous explanatory variables; the issue of simultaneity is addressed with past values of contemporaneous explaining variables as instruments; while exclusion restriction is the process by which strictly exogenous variables influence the dependent variable exclusively via the suspected endogenous explanatory variables (Tchamyou and Asongu 2017; Tchamyou 2019; Asongu and Acha-anyi 2019). In line with the recent literature (see Boateng et al. 2018; Tchamyou et al. 2019; Asongu and Acha-anyi 2019), all the explaining variables are either predetermined or suspected endogenous variables except time-invariant indicators that are considered to be strictly exogenous. The identification of time-invariant indicators as strictly exogenous is in line with Roodman (2009b), which explained that time-invariant indicators cannot become endogenous in first difference. Hence, time-invariant indicators influence foreign direct investment inflow via the suspected endogenous explanatory variables such that *ivstyle* is "iv(time-invariant variables, eq(diff))", whereas *gmmstyle* contains predetermined variables. Besides, the statistical test to validate the selected exclusion restriction variables is assessed using Difference in Hansen Test (DHT) for instrument exogeneity. Consequently, the null hypothesis of the underlying DHT should not be rejected in order for the exclusion restriction assumption to be valid, akin to the standard instrumental variable method in which, the null hypothesis of the underlying Sargan Overidentifying Restrictions Test should not be rejected in order for the strictly exogenous variables to explain the dependent variable exclusively via the channel of predetermined or suspected endogenous variables (Beck et al. 2003).

4 Results and discussion

This empirical investigation started with two important preliminary tests. First, to confirm that the system GMM estimator is preferred to the difference GMM estimator in this study, we conducted the Bond (2002) test, and the results showed that the system GMM estimator is appropriate for the study. Second, we conducted the Pesaran (2020) test for cross-sectional dependence, and the results showed that there is no evidence of cross-sectional dependence in our panel.[3] According to Dong et al. (2018), testing for cross-sectional dependence in dynamic panels where the number of cross-sectional units is higher than the number of time periods ($N > T$) is important in order to avoid inefficient and misleading estimates. To conserve space, we do not explicitly report the results of these preliminary tests, but they are available on request. The empirical results of this study are shown in Table 3 following Eq. (2). Panel 1 of Table 3, which includes government effectiveness as a regressor, reports the baseline estimation results, while Panel 2, which includes regulatory quality as a regressor, reports the robustness check results. In both Panels 1 and 2, Column (1) shows a regression in which the world uncertainty index (WUI) and the lag of FDI are the only regressors. The quality of economic governance institutions variable and its interaction with the uncertainty variable are introduced in Columns (2) to (6), while the financial development variable is introduced in Columns (3) to (6). In Columns (4) to (6), we introduced the natural endowment variable; while in Columns (5) and (6), we introduced the market size regressor. The trade openness regressor is included only in Column (6). This modeling approach enabled us to assess the consistency of the results.

In the first column of Table 3, the results in both Panels 1 and 2 indicate that global uncertainty impacts negatively and significantly on FDI inflows in Africa. This finding is consistent with theoretical predictions, which indicate that uncertainties influence the attitude of foreign investors and that long-term profit maximizing firms consider the need to hedge against risks while making investment decisions (Dunning 1977, 1980, 1988; Li 2006). The finding is also consistent with some studies in the literature (e.g., Avom et al 2020; Ho and Gan 2021; Zhu et al. 2019). This finding reaffirms the facts established by Ogbuabor et al. (2016) that even though African economies are interconnected with the rest of the global economy, they are nonetheless vulnerable to global shocks. Thus, this study has established that global uncertainty significantly hinders FDI inflow in Africa. This finding is, however, contrary to Canh et al. (2020), which showed that global uncertainty can promote FDI.

Given the finding that global uncertainty inhibits FDI inflow in Africa, we should be interested in how to mitigate this adverse effect of uncertainty on FDI inflow to the continent. The extant literature suggests that one of the major possible ways of mitigating this factor that is threatening FDI inflow in Africa is to ensure that high quality economic governance institutions are enthroned on the continent (Asiedu

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[3] Assuming there is evidence of cross-sectional dependence in our panel, this would have been controlled for under the system GMM framework adopted for the study through the introduction of time effects in the model following Tchamyou, Erreygers and Cassimon (2019) and Asongu and Nting (2021).

Table 3 Two step system GMM dynamic panel estimation results *Source* Authors

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
Panel 1: Includes Government Effectiveness as a Regressor						
WUI	−0.128***	−0.310***	−0.311***	−0.309***	−0.353***	−0.339***
	(0.0422)	(0.1126)	(0.1081)	(0.1046)	(0.1180)	(0.1139)
GOVE		0.090**	0.084**	0.106***	0.123***	0.114***
		(0.0422)	(0.0401)	(0.0398)	(0.0447)	(0.0435)
WUI*GOVE		−0.325**	−0.319**	−0.340**	−0.410**	−0.367**
		(0.1543)	(0.1443)	(0.1423)	(0.1622)	(0.1654)
FINDEV			0.005	0.015	0.017	0.019
			(0.0144)	(0.0136)	(0.0142)	(0.0132)
ENDOW				0.013***	0.014***	0.013***
				(0.0042)	(0.0046)	(0.0046)
MSIZE					0.001	0.001
					(0.0005)	(0.0004)
TOP						−0.021
						(0.0131)
L.FDI	0.220***	0.187***	0.192***	0.229***	0.236***	0.238***
	(0.0660)	(0.0586)	(0.0627)	(0.0648)	(0.0665)	(0.0706)
Cons	0.069***	0.120***	0.103*	0.061	0.061	0.146*
	(0.0141)	(0.0355)	(0.0555)	(0.0480)	(0.0497)	(0.0746)
Net effect of WUI	–	−0.427	−0.426	−0.431	−0.500	−0.471
Threshold of GOVE	–	Negative Synergy	Negative Synergy	Negative Synergy	Negative Synergy	Negative Synergy
AR(1)_P-value	0.006	0.013	0.015	0.013	0.009	0.016
AR(2)_P-value	0.257	0.243	0.243	0.250	0.247	0.248
Sargan Test _P-value	0.256	0.400	0.397	0.381	0.437	0.410
Hansen Test _P-value	0.385	0.317	0.327	0.328	0.390	0.352
DHT for instruments						
(a) GMM instrument for level						

Table 3 (continued)

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
H excluding group _P-value	0.302	0.354	0.348	0.370	0.374	0.365
Dif (null, H=exogenous) _P-value	0.903	0.724	0.727	0.633	0.655	0.640
(b) Instrumental Variables (IV)						
H excluding group _P-value	0.888	0.318	0.547	0.454	0.601	0.456
Dif (null, H=exogenous) _P-value	0.053	0.901	0.304	0.424	0.323	0.424
Wald statistics	544.1***	1608.7***	1775.8***	1549.3***	1563.5***	1533.9***
No. of instruments	6	11	12	13	14	15
Countries	46	46	46	46	46	46
Observation	414	414	414	414	414	414
Panel 2: Includes Regulatory Quality as a Regressor						
WUI	−0.128***	−0.473**	−0.467***	−0.385**	−0.413**	−0.432***
	(0.0422)	(0.1930)	(0.1808)	(0.1602)	(0.1737)	(0.1589)
REGQ		0.154**	0.144**	0.131**	0.142**	0.142***
		(0.0703)	(0.0624)	(0.0523)	(0.0557)	(0.0517)
WUI*REGQ		−0.647**	−0.631**	−0.505**	−0.557**	−0.558**
		(0.2899)	(0.2636)	(0.2365)	(0.2570)	(0.2389)
FINDEV			0.007	0.017	0.020	0.022
			(0.0148)	(0.0143)	(0.0148)	(0.0140)
ENDOW				0.010***	0.011***	0.010**
				(0.0036)	(0.0040)	(0.0042)
MSIZE					0.001*	0.001**
					(0.0005)	(0.0005)
TOP						−0.021
						(0.0141)
L.FDI	0.220***	0.198***	0. 203***	0.229***	0.236***	0.237***

Table 3 (continued)

Regressors	(1)	(2)	(3)	(4)	(5)	(6)
	(0.0660)	(0.0660)	(0.0627)	(0.0636)	(0.0665)	(0. 0709)
Constant	0.069***	0.152***	0.126*	0.067	0.060	0. 151*
	(0.0141)	(0.0520)	(0.0607)	(0.0577)	(0.0599)	(0.0875)
Net effects of WUI	–	–0.717	–0.705	–0.575	–0.623	–0.642
Thresholds of REGQ	–	Negative Synergy	Negative Synergy	Negative Synergy	Negative Synergy	Negative Synergy
AR(1)_P-value	0.006	0.010	0.010	0.013	0.013	0.015
AR(2)_P-value	0.257	0.228	0.228	0.244	0.242	0.240
Sargan Test _P-value	0.256	0.369	0.346	0.381	0.435	0.418
Hansen Test _P-value	0.385	0.255	0.242	0.337	0.382	0.356
DHT for instruments						
(a) GMM instrument for level						
H excluding group _P-value	0.302	0.168	0.171	0.204	0.212	0.200
Dif (null, H=exogenous) _P-value	0.903	0.753	0.726	0.846	0.848	0.756
(b) Instrumental Variables (IV)						
H excluding group _P-value	0.888	0.170	0.116	0.135	0.414	0.507
Dif (null, H=exogenous) _P-value	0.053	0.738	0.881	0.821	0.293	0.219
Wald statistics	544.1***	1739.4***	2100.2***	1766.2***	2135.9***	2195.9***
No. of Instruments	6	11	12	13	14	15
Countries	46	46	46	46	46	46
Observation	414	414	414	414	414	414

Robust standard errors are in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$. DHT denotes Difference in Hansen Test for exogeneity of instruments subsets; Dif denotes Difference. The regressions followed Roodman (2009b) to collapse the instrument matrix. The variables are as defined in Table 1

2006; Kasasbeh et al. 2018). Consequently, we introduced the quality of economic governance institutions variable and its interaction with the uncertainty variable in Columns (2)–(6). The results in both Panels 1 and 2 of Table 3 indicate that the unconditional economic governance institutions impact positively and significantly on FDI inflow in Africa at 5% level of significance. In fact, this finding holds regardless of whether the quality of economic governance institutions is measured with government effectiveness or regulatory quality. This finding is also consistent with some studies (e.g., Kasasbeh et al. 2018; Asamoah et al. 2016) that found that institutional quality is a robust determinant of FDI inflows since good economic governance institutions provide the enabling environment for foreign investments to thrive.

At this point, our results have shown that global uncertainty retards FDI inflow in Africa while economic governance institutions improve it. Hence, the pertinent question is: can economic governance institutions moderate the negative impact of global uncertainty on FDI inflow in Africa? To answer this question, we must consider the net effect of employing economic governance institution to influence world uncertainty to attract FDI inflow. We find that the unconditional effect of world uncertainty is negative (-0.339), while the marginal effect through the interaction of the quality of economic governance institutions with the global uncertainty variable is also negative (-0.367) and both are statistically significant at the 5% level in Columns (2)–(6) of Panels 1 and 2. If we take, for example, Column (6) in Panel 1 of Table 3, we computed the net effect of world uncertainty using Eq. (3) as:

$$\frac{\partial \text{FDI}_{it}}{\partial \text{WUI}_{it}} = -0.339 - 0.367\text{GOVE} \tag{4}$$

Therefore, the net effect of world uncertainty on FDI inflow is -0.471 at average level of economic governance institution (details of these computations are provided in Appendix). This suggests that rather than reduce the adverse effect of global uncertainty on FDI inflow in Africa, economic governance institutions on the continent considerably intensify the dampening effect of global uncertainty on FDI inflow. Given that the unconditional and marginal effects have same signs (i.e., negative), a negative synergy effect is obvious. Therefore, the threshold level of economic governance institution cannot be determined. Even though the negative synergy effect is not the theoretical expectation, the finding is not surprising given the weak quality of economic governance institutions in Africa as illustrated in Table 5 in the Appendix. Thus, instead of counteracting the negative effect of world uncertainty on FDI inflows in Africa, economic governance institutions on the continent are intensifying it. This finding amplifies the submission by Avom et al. (2020) that global economic uncertainty has larger effect on FDI inflow in Africa than any other region of the world. Similarly, Ho and Gan (2021) found that global economic pandemic uncertainty has severe impact on FDI inflow in Africa relative to other parts of the world. Our finding suggests that the proposition "high level of global uncertainty, lower level of FDI inflows" is tenable when global uncertainty is entrenched within a weak economic governance institutional structure. Our finding reinforces the argument that most government regulations and policies aimed at curtailing the level of uncertainty in the economy have ultimately resulted in higher costs of

transactions and as such, hindered the inflow of FDI by causing foreign investors to move elsewhere in order to guard against possible losses (Aggarwal 2006; Greenbaum et al. 2007).

In terms of other significant drivers of FDI inflow in Africa, the results in both Panels 1 and 2 of Table 3 indicate that natural resource endowment positively and significantly impacts on FDI inflow on the continent. This finding is consistent with economic theory, and also suggests that the presence of natural resource endowment acts like a magnet that attracts FDI inflow to Africa. The finding is also supported by Anyanwu (2011), which also established that natural resource endowments in Africa attract FDI inflows. The results in Panel 2 of Table 3 further indicate that market size significantly promotes FDI inflow in Africa. In other words, the greater the market size, the better the prospects of higher investment return for foreign firms, which in turn boosts investors' confidence and FDI inflows. This finding is consistent with some studies in the literature (Hsieh et al. 2019; Avom et al. 2020; Ho and Gan 2021) that also found that GDP growth impacts positively and significantly on FDI inflow. The results in Table 3 also indicate that the initial level of FDI impacts positively and significantly on the current level of FDI inflow in Africa. This is consistent with Aziz (2018), which explained that the presence and success of multinational firms in their host countries is a factor that considerably attracts more foreign investments. In fact, this finding supports the argument that FDI attracts more FDI. Contrary to the submissions that well-developed financial sectors and openness to trade enhance FDI inflows (Hussain and Kimuli 2012; Ramasamy and Yeung 2010), our results indicate that the roles of financial development and trade openness as determinants of FDI inflow in Africa remained muted throughout. These findings are consistent with Walsh and Yu (2010), which suggests that the financial sector in Africa is not deep enough to drive FDI inflows, as well as Ogbuabor et al. (2016), which established that African countries are mostly small open economies, intensely interconnected but susceptible to external shocks.

The findings of this study can now be summarized as follows: (i) global uncertainty impacts adversely and significantly on FDI inflows to Africa; (ii) economic governance institutions in Africa considerably intensify the adverse effect of global uncertainty on FDI inflow to the region resulting to negative net effect; and (iii) natural resource endowment, market size and initial level of FDI significantly promote FDI inflow in Africa, while the roles of financial development and trade openness as determinants of FDI inflow in Africa remained muted. We subjected the models in this study to four diagnostic checks to assess the validity of the GMM models.[4] The checks include the Arellano and Bond (1991) second-order (AR2) test for serial

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[4] First, the null hypothesis of AR2 is expected not to be statistically significant. Second, the null hypothesis of Sargan and Hansen tests are expected not to be rejected for the validity of the instrument to hold. It is worthy to note that in principle, the Sargan test is not robust but not weakened by instruments, whereas the Hansen test is robust but weakened by instruments. Our regressions follow Roodman (2009b) and collapse the instrument matrix in order to limit the instrument proliferation and ensure that the number of cross sections is greater than the number of instruments in all the models. Third, the null hypothesis of Difference in Hansen Test (DHT) is expected not to be rejected in order to confirm that the Hansen test is valid. Fourth, the null hypothesis of the Wald test is expected to be statistically significant.

correlation and the Sargan and Hansen tests of over-identifying restrictions, the Difference in Hansen Test (DHT) for exogeneity of instruments, and Wald test for the joint validity of estimated coefficients. All the information criteria in all the models strongly prove the fitness of the models and that our results are appropriate for inference and policy (Roodman 2009a).

5 Conclusion

Given that Africa has not fared well in attracting foreign direct investments in the last decade compared to other regions of the world, especially during periods of high uncertainty occasioned by one crisis or the other, this study investigated the impact of global uncertainty and economic governance institutions on FDI inflow to Africa, the moderating effect of economic governance institutions on the global uncertainty-FDI relationship in Africa, and other significant drivers of FDI inflow to Africa. The study used the system GMM modeling framework and a panel of 46 African economies over the period 2010–2019. The study established that global uncertainty has a significant dampening effect on FDI inflow to Africa, and that economic governance institutions in Africa amplify this effect instead of mitigating it. An important policy implication of this finding is that policymakers in Africa should understand that the quality of economic governance institutions on the continent is an important ingredient for attracting FDI inflows. Indeed, the weak economic governance institutions on the continent may be responsible for the persistently low FDI inflows to Africa compare to other regions of the world. Thus, there is need for structural transformation in Africa in order to strengthen the economic governance institutions and fizzle out the notion that Africa is a high-risk investment zone. This is particularly important since FDI inflow to Africa is very responsive to global uncertainty. Furthermore, this study also established that natural resource endowment, market size, and initial FDI inflows are robust drivers of FDI inflows to Africa. Hence, policy reforms on the continent should also be aimed at enhancing the socioeconomic environment to a level that can engender high competitive advantage. Specifically, policymakers in Africa should take urgent steps to strengthen the quality of economic governance institutions as a means of mitigating the excruciating effect of global uncertainty on FDI inflows to Africa.

Appendix

Computing the net effect of world uncertainty on FDI inflow

If we take, for example, Column (6) in Panel 1 of Table 3, we computed the net effect using Eq. (3) as:

$$\frac{\partial FDI_{it}}{\partial WUI_{it}} = -0.339 - 0.367 GOVE \tag{5}$$

Note, from the descriptive statistics in Table 2, the average level of government effectiveness (GOVE) which is the main proxy for institution in this study is found to be at 35.9% (i.e., -0.705 in units ranging from approximately -2.5 to 2.5). Therefore, we compute the net effect by substituting the average value of GOVE into Eq. (4) as thus:

$$\frac{\partial \text{FDI}_{it}}{\partial \text{WUI}_{it}} = -0.339 - 0.367(0.359) = -0.471$$
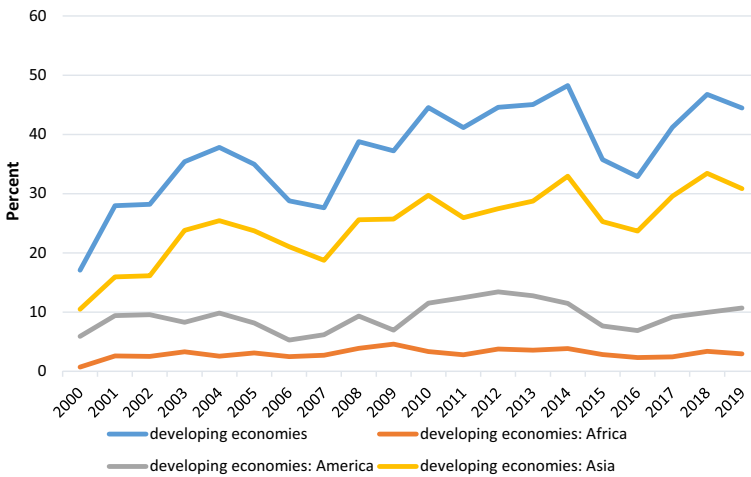
See Figs. 1, 2, 3 and 4.
See Tables 4, 5.

Fig. 1 Trend in % Share of World FDI Inflows to Developing Regions, 2000–2019. Source: Authors' computation with data from UNCTAD database
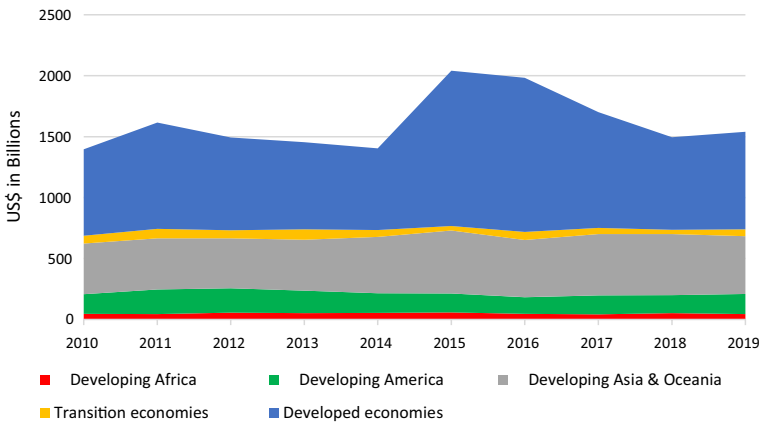
Fig. 2 FDI Inflows by Regions through Time. Source: Authors' computation with data from UNCTAD database
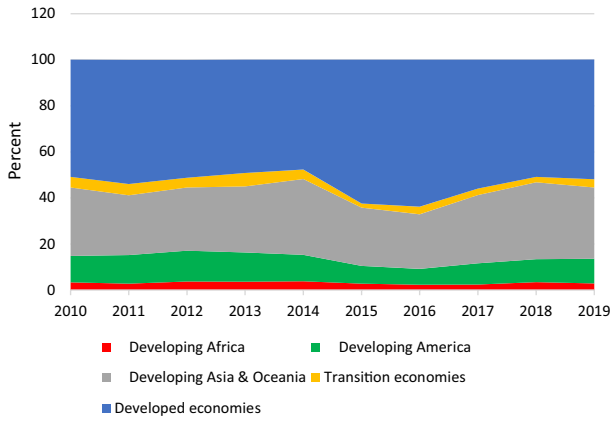
Fig. 3 FDI Percentage share in world FDI flows by Region through Time. Source: Authors' computation with data from UNCTAD database
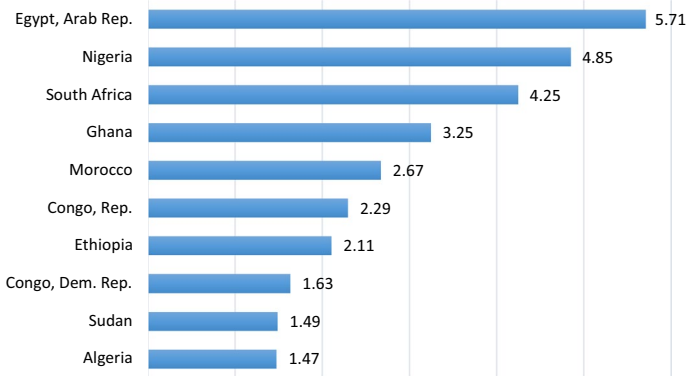

Fig. 4 Top Ten Recipients of FDI Inflows in Africa for the Period 2010–2019 (US $ Billions). *Source* Authors' computation with data from World Development Indicators

Table 4 FDI Inflows by Region, 2010–2019 (US\$ Billion and Percent) *Source* Authors' computation with data from UNCTAD database

Group of Economies	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Billions of US$										
Developing economies	622	665	666	656	677	730	652	701	699	685
Developing Africa	47	45	56	52	54	58	46	42	51	45
Developing America	161	201	200	185	161	156	137	156	149	164
Developing Asia & Oceania	415	419	410	418	462	516	469	503	500	475
Transition economies	64	79	65	84	57	37	66	50	35	55
Developed economies	710	871	763	716	670	1274	1265	950	761	800
Percentage share in world FDI flows										
Developing economies	44.6	41.2	44.6	45.0	48.2	35.7	32.9	41.2	46.8	44.5
Developing Africa	3.3	2.8	3.7	3.6	3.8	2.8	2.3	2.4	3.4	2.9
Developing America	11.5	12.4	13.4	12.7	11.5	7.7	6.9	9.2	10.0	10.7
Developing Asia & Oceania	29.7	25.9	27.4	28.7	32.9	25.3	23.7	29.6	33.4	30.9
Transition economies	4.6	4.9	4.3	5.8	4.1	1.8	3.3	2.9	2.3	3.6
Developed economies	50.9	53.9	51.1	49.2	47.7	62.4	63.8	55.9	50.9	52.0

Table 5 Annual Average Institutional Quality Indicators by regions (2010–2019) *Source* Authors' computation with data from World Economic governance Indicators Database. Regions are ranked from 1 to 6, where 1 describes the highest institutional quality and 6 describes the lowest institutional quality

Regions	East Asia & Pacific	Europe & Central Asia	Latin America & Caribbean	Middle East & North Africa	South Asia	SSA
Number of Countries	19	30	25	12	7	45
Control of Corruption	−0.30	−0.25	−0.32	−0.68	−0.38	−0.61
Rankings	2	1	3	6	4	5
Government Effectiveness	−0.32	0.04	−0.24	-0.65	−0.34	−0.76
Rankings	3	1	2	5	4	6
Regulatory Quality	−0.49	0.15	−0.15	−0.69	−0.49	−0.64
Rankings	4	1	2	6	3	5

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