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Impact of institutional environment on foreign direct investment inflow to the manufacturing sector in Ethiopia

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Abstract. The purpose of the research presented in the article is to study the impact of the institutional environment on the inflow of foreign direct investment (FDI) into the Ethiopian manufacturing sector. The study uses time series data from 1992 to 2021. using an autoregressive approach. The results show that the development of a right-wing society, along with political stability and a reduction in crime, are two factors of the institutional environment that have a positive and significant impact on the inflow of FDI into the manufacturing sector in the long term. However, the effectiveness of the government had a negative effect. In the short term, the rule of law, control over corruption and the quality of regulation have become factors in the institutional environment that have significantly influenced FDI inflows into the Ethiopian manufacturing sector. The study shows that an enabling institutional environment increases FDI inflows into Ethiopia's manufacturing sector in both the long and short term. Therefore, it is extremely important for Ethiopia to improve the efficiency of public institutions and strengthen the domestic legal framework and legislation. This will help reduce political instability and promote greater accountability and transparency among government officials, thereby attracting more foreign direct investment from developed and developing countries. Moreover, due to its strategically preferred location in the Horn of Africa and the huge number of available and trained workforce, as well as the improvement of the institutional environment suitable for business, Ethiopia is very attractive as an investment destination.

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Влияние институциональной среды на приток прямых иностранных инвестиций в производственный сектор Эфиопии

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Аннотация. Целью представленного исследования является изучение влияния институциональной среды на приток прямых иностранных инвестиций (ПИИ) в производственный сектор Эфиопии. В исследовании используются данные временных рядов с 1992 по 2021 г. с применением авторегрессионного подхода. Результаты показывают, что развитие правового общества, наряду с политической стабильностью и снижением преступности, являются двумя факторами институциональной среды, которые оказывают положительное и значительное влияние на приток ПИИ в производственный сектор в долгосрочной перспективе. Однако эффективность правительства имела отрицательный эффект. В краткосрочной перспективе верховенство закона, контроль над коррупцией и качество регулирования стали факторами институциональной среды, которые существенно повлияли на приток ПИИ в производственный сектор Эфиопии. Исследование показывает, что благоприятная институциональная среда увеличивает приток ПИИ в производственный сектор Эфиопии как в долгосрочной, так и в краткосрочной перспективе. Поэтому для Эфиопии крайне важно повысить эффективность государственных учреждений и укрепить внутреннюю правовую базу и законодательство. Это поможет снизить политическую нестабильность и способствовать повышению подотчетности и прозрачности среди государственных служащих, тем самым привлекая больше прямых иностранных инвестиций из развитых и развивающихся стран. Более того, благодаря своему стратегически предпочтительному расположению на Африканском Роге и огромному количеству доступной и обучаемой рабочей силы, а также улучшению институциональной среды, подходящей для бизнеса, Эфиопия очень привлекательна как направление для инвестиций.

Ключевые слова: институциональная среда, прямые иностранные инвестиции, производственный сектор, Эфиопия

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Introduction

The institutional environment of a country is an aggregate of economic, social, political, and legal contracts or agreements that substantiate the foundation for production and exchange in a country (Oxley, 1999). In other words, a conducive business climate is among the essential determinants affecting the inflow of foreign direct investment to the host country (Lim, 2001). In the institutional fitness theory, Wilhelms (Wilhelms, 1998) argues that institutional environment variables affect the inflow of FDI to the host country. Additionally, the OECD (2002) suggests that incentives are not necessary to attract FDI as long as good governance conditions are in place. Furthermore, the presence of strong and functioning governance frameworks in any nation boosts investor trust and makes investments considerably more substantial (Raza, Shah, Arif, 2021).

Dunning (Dunning, 2002), as quoted by Subasat and Bellos (2013), suggests that institutional factors such as economic freedom and good governance are increasingly influencing FDI decisions as the objectives of multinational corporations (MNCs) shift from market and resource acquisition to efficiency enhancement. This implies that while traditional determinants like natural resources, inexpensive labor, and robust infrastructure are becoming less critical, less conventional drivers like governance and economic freedom are gaining importance. Institutional elements like political constraints, property rights protection, and corruption are significant determinants of FDI inflows, as per Richards and Nwankwo (2005). Hout (2007) further argues that corrupt practices, which are associated with poor governance, distort government expenditure and result in uneven national growth and development.

Many academics disagree with the widely held belief that nations with strong institutional frameworks or good governance typically attract higher levels of FDI. Moskalev (2007), Habib and Zurawicki (2002), and Henisz (2000), for instance, contend that inadequate governance need not always equate to a lack of protection for investors. Multinational corporations (MNCs) strategically adapt to the local business climate in poorly governed environments, offering bribes to get business contracts. Therefore, bad governance might potentially present MNCs with more prospects for investment. Li (2005), on his part, argues that big MNCs as well as politicians and policy makers engage in rent-seeking activities when there is inadequate governance. The explanation behind this is that relation-based institutions are frequently ruled by strong individuals who have a bias toward large corporations. Furthermore, Subasat and Bellos (2013), come to the same conclusion: in certain transitional economies, inadequate governance attracts FDI rather than acts as a barrier for multinational corporations.

Just as there are theoretical debates, the empirical literature on the relationship between institutional quality and FDI inflow remains unresolved. For example, numerous researchers, including Ali, Fiess, and MacDonald (2010); Globerman, Shapiro,

and Tang (2004); and Globerman and Shapiro (2002), have discovered that countries with good governance can attract more FDI inflows. This suggests that countries with weak governance policies are unable to protect investments and therefore fail to attract more FDI. Ahmad et al. (Ahmad, Ahmed, Atiq, 2018) also found that institutions play a crucial role in attracting FDI inflows in Pakistan. Peres et al. (2018) found that institutional quality significantly and positively influences FDI only in developed countries, while it is insignificant in developing countries.

On the other hand, if a strong institutional environment or governance is one of the primary factors in attracting higher inward FDI or governance really matters, Mengistu and Adhikary (2011) have questioned why China attracts higher levels of FDI despite having a number of governance challenges, such as a weak legal system and issues of transparency and accountability. Subasat and Bellos (Subasat, Bellos, 2013) used a panel gravity model to investigate whether the fascinating and distinctive results for transition economies hold true for a subset of Latin American nations. Their findings indicate that weak governance encourages FDI in transition economies and Latin American countries.

FDI in flow in Ethiopia has shown promising increment over the years, with inconsistency in its pattern, investment type, and limited domestic investment sources. Moreover, FDI in Ethiopia has been concentrated on the manufacturing sector, which accounts for the majority (50,4 %) of the total FDI operational investment projects and about three-quarters (73,3 %) of capital invested in the country over the period 1992–2020. Though the manufacturing industry is a total growth factor for other economic sectors (Su, Yao, 2017), the contribution of the manufacturing sector to Ethiopia's GDP also remained low. For instance, the annual report of NBE (2022) indicates that the contribution of the entire industrial sector to Ethiopian GDP is about 29,3 percent, while that of the manufacturing industry accounts for only 4.61 percent.[1] The report by UNIDO[2] also ranks Ethiopia 143 globally based on its regional and global competitive industrial performance (CIP) index and was among the bottom list of Sub-Saharan African countries.

The quality of the institutional environment of Ethiopia in attracting and retaining quality FDI for economic growth is crucial. Moreover, many empirical studies related to FDI inflow to Ethiopia focus on the impacts of macroeconomic determinants of FDI. These include, among others, the study conducted by Haile and Assefa (Haile, Assefa, 2006), Solomon (2008), Liya (2016), Fantaye (Fantaye, 2016), Deresse (Deresse, 2020), and Ergano and Rambabu (Ergano, Rambabu, 2020). There is limited work on the impact of the institutional environment on FDI inflow to the manufacturing sector of Ethiopia. This study attempted to fill the gap in the literature by investigating the impact of the institutional environment on FDI inflow to the manufacturing sector in Ethiopia using time series data

[1] Annual Report 2021-2022. National Bank of Ethiopia. Retrieved September, 15, 2023, from https://nbe.gov.et/annual-report/

[2] Annual Report — 2018. UNIDO. Retrieved September, 15, 2023, from https://www.unido.org/resources-publications-flagship-publications-annual-report/annual-report-2018

for the period 1992 to 2021. The study applied the Autoregressive Distributed Lag (ARDL) regression model. The main hypothesis tested in this study is that conducive institutional environment enhances FDI inflows to the manufacturing sector in Ethiopia both in the long-and short-run.

Related Literature

There seems to be a consensus in the theoretical framework that FDI increases economic growth, productivity, and efficacy gains. For instance, De Gregorio (De Gregorio, 2005) noted that an increase in the FDI flow increases the growth rate by filling the saving, foreign exchange, and revenue gaps as well as serving as a vehicle in transferring advanced technological and management skills to the host nation. However, Nunnenkamp and Spatz (2003) expressed their critique towards the perspective advocating for developing nations to rely on FDI as a means to foster economic development. The researchers reached the determination that the effects of FDI on economic growth are uncertain due to the utilization of aggregated FDI data. The growth impacts of FDI become uncertain when FDI is disaggregated and the compatibility of different types of FDI with the economic environment of the host country is taken into account.

The empirical study of Haile and Assefa (Haile, Assefa, 2006) on the determinants of FDI in Ethiopia found that liberalization of trade and regulatory regimes had significant positive impacts on FDI inflow FDI to Ethiopia, while macroeconomic instability (measured by inflation) and poor physical infrastructure (measured by telephone lines per 1000 people) had statistically significant negative impacts. Similarly, Sunday and Lydie (2006) found that infrastructure development, market size (GDP per capita), trade openness, human capital development, and economic growth were the most significant determinants of FDI in Cameroon. Nevertheless, exchange rate, political risk, inflation rate, debt burden, and the creation of an export-processing zone did not have any influence on FDI inflow to the country. Moreover, Gharaibeh (2015) found that general government consumption expenditures, inflation rates, annual interest rates, labor force, trade openness, population growth, and public education exerted statistically significant positive impact on inward FDI in Bahrain.

In their study, Fan et al. (2009) examined the influence of governance on foreign direct investment (FDI) in China relative to other countries. They discovered that good governance, which is a broader definition of corruption, increases investment levels and encourages FDI due to the country's lucrative business environment. In their provincial-level investigation into China's FDI and corruption. Additionally, Cole, Elliott, and Zhang (2009) discovered a favorable correlation between government initiatives to combat corruption and FDI influx. In other words, FDI was drawn to provinces with strong governance and zero tolerance for corruption. Furthermore, Mengistu and Adhikary (2011) findings on the relationship between indicators of governance and FDI using panel data of fifteen Asian countries strongly confirm that the only factors that significantly increase FDI inflows into the sample countries are political stability and absence of violence, rule of law, the ability to combat corruption, and the effectiveness of the government. Using data from

1995 to 2009, Alemu (2012) examined the impact of corruption on FDI inflow for 15 Asian nations, including China. The study indicated that for every 1 percent rise in corruption, there was a 9,1 percent point decrease in FDI inflow.

Buchanan et al. (2012) conducted a study that examined the correlation between institutional quality and levels and volatility of foreign direct investment (FDI). The study utilized panel data including 164 countries over the period of 1996 to 2006. The findings of their inquiry provide evidence that FDI inflows are positively and considerably influenced by high institutional quality. However, everything else being equal, there is a considerable inverse correlation between institutional quality and the volatility of FDI. Moreover, the study conducted by Nguyen and Cao (2015) revealed a positive correlation between the quality of institutions and the influx of FDI into Vietnam. However, the results of the Nondo et al. (2016) study on the influence of institutional quality on FDI inflow into SSA nations are at odds with those of other research, since their analysis indicates that FDI and institutional quality do not correlate significantly. Furthermore, Ullah and Khan (2017) investigated the connection between FDI and institutional quality in South Asian nations and discovered that, in contrast to Central Asia and SAARC, institutional variables are crucial in drawing FDI inflows to the ASEAN region.

Likewise, the empirical study of Hossain and Rahman's (2017) used panel data from eighty distinct developing nations between 1998 and 2014 and employed a range of panel data analysis techniques, to examine the connection between governance and foreign direct investment. The study found that all the components of governance, including voice and accountability, political stability and reduced violence, government effectiveness, regulatory quality, rules of law, and corruption control, had positive and significant impact on foreign direct investment inflow to the sample developing nations. Additionally, it was shown that several control variables exhibited positive and statistically significant influence on the influx of FDI in developing countries. These variables include gross domestic product (GDP), trade openness, inflation rate, telephone mainlines, literacy rate, and agglomeration. The study by Ahmad et al. (2018), however, is very different from other research on the connection between FDI inflows and institutional quality because, in contrast to earlier research, this study examined whether institutional quality influences FDI inflows to Pakistan's primary, manufacturing, and service sectors over the long and short term. The key finding of the study suggests that institutional quality significantly influences the attraction of FDI in Pakistan's manufacturing and services sectors in the long-run. However, this relationship does not hold true for the primary sector. Yet, the findings showed that institutional quality had no immediate effect on these industries in the short-run. Finally, they suggested the Pakistani government to prioritize measures targeted at improving the quality of the institutions.

Empirical studies present varying data concerning the relationship between the nexus of corruption and the influx of foreign direct investment. Egger and Winner (2005) conducted a study that revealed a positive correlation between corruption and foreign direct investment (FDI). Their findings led them to conclude that corruption acts as a catalyst for FDI in a total of 73 host countries, encompassing both developed

and less developed nations. Moreover, Moustafa (2021) found significant positive relationship between FDI and corruption in Egypt both in the short and long run; implying that perceived corruption facilitates FDI inflows into Egypt. In general, the above findings indicate the 'helping hand' hypothesis holds. Although corruption has been associated with some positive effects on foreign direct investment (FDI), it is important to consider other studies that present contrasting findings. For instance, Habib and Zurawicki (2002) conducted an analysis on the correlation between corruption and FDI across 89 developed and less developed countries. Their research revealed that corruption tends to hinder FDI, thus supporting the notion that the "grabbing hand" hypothesis holds true within the countries examined. Similarly, the findings of Castro and Nunes (2013) for in 73 countries, Navickas et al. (2016) for 15 EU countries, and Bouchoucha and Benammou (Bouchoucha, Benammou, 2018) for 41 African countries also support the 'grabbing hand' hypothesis. Furthermore, Hakimi and Hamdi (2017) analyzed the impact of corruption on investment and growth in 15 Middle East and North African (MENA) countries and found that corruption affects both domestic investment activities and FDI inflows to the region adversely and significantly. In contrast to the above bi-polar findings, Görgülü and Akcay (2015) cited by Habib and Zurawicki (2002) did not find significant relationship between corruption and FDI to less developed countries. The findings of Alakbarov and Bayar (2021) show that control of corruption has no statistically significant impact on the attraction of foreign direct investments in their study.

Materials and methods

Following the work of Awadhi et al. (2022), the functional notation for institutional environment-FDI inflows to the manufacturing sector relationship is given in the form of a long-linear empirical model that can be specified as:

$$\ln MSFDI_t = \alpha + \beta_i \ln CONTVAR + \beta_i INENV_t + \varepsilon_t \ldots \quad (1)$$

Where, $\ln MSFDI_t$ is the dependent variables and is FDI inflow to the manufacturing sector as a ratio of total FDI inflows to the country, $\ln CONTVAR_t$ is a set of macroeconomic control variables and $INENV_t$ is the abbreviation for the six World Bank governance indicators, used as proxy for institutional environment/ quality variables. In this study, two macroeconomic variables were used as control variables and the choice of variables is guided by previous studies. The suffix *ln* in front of the above macroeconomic variables indicates that the variables are transformed into natural logarithm so that the slope coefficients can be interpreted as elasticities. However, since the $INENV_t$ variables are indices of institutional environment they are not transformed into natural logarithm.

In this study*, time series data was collected from 1992 to 2021,* based on data availability, and Autoregressive Distributed Lag (ARDL) regression models based on Bound cointegration test introduced by Pesaran (1996), Pesaran and Smith (1999) and further developed by Pesaran, Shin, and Smith (2001) was employed to *generate*

meaningful long-run and short-run relationship. The ARDL approach offers several advantageous features compared to other conventional cointegration methods, such as the Johansen cointegration techniques. Unlike the Johansen approach, which necessitates all variables to be integrated at the same order, the ARDL approach enables more flexibility in accommodating variables with different integration orders. The ARDL test procedure yields reliable outcomes regardless of whether the variables are integrated at order zero I (0), integrated at order one I (1), or mutually co-integrated (Pesaran, Shin, Smith, 2001). Additionally, this method yields robust and reliable outcomes when employing limited time-series data to estimate both long-term and short-term coefficients. Third, it addresses issues of endogeneity (Pesaran, Smith, 1999; Pesaran, Shin, Smith, 2001). Consequently, the small sample size and the various orders of integration of the study variables make the ARDL model the most suitable method for this study. As a result, equation (1) is expanded to include all the level and first difference forms of the variables in the ARDL ($p, q_1, q_2, \ldots, q_8$) model as follows.

$$\Delta \ln MSFDI_t + a_0 + \sum_{i=1}^{p} \beta_1 \Delta \ln MSFDI_{t-i} + \sum_{i=0}^{q} \beta_2 \Delta \ln RGDPY_{t-i} + \sum_{i=0}^{q} \beta_3 \Delta \ln CPI_{t-i} +$$

$$+ \sum_{i=0}^{q} \beta_4 \Delta \ln VACT_{t-i} + \sum_{i=0}^{q} \beta_5 \Delta \ln PSAV_{t-i} + \sum_{i=0}^{q} \beta_6 \Delta \ln RUoL_{t-i} + \sum_{i=0}^{q} \beta_7 \Delta \ln CCRT_{t-i} +$$

$$+ \sum_{i=0}^{q} \beta_8 \Delta \ln GEFF_{t-i} + \sum_{i=0}^{q} \beta_9 \Delta \ln REQU_{t-i} + \delta_1 \ln MSFDIG_{t-i} + \delta_2 \ln RGDPY_{t-i} +$$

$$+ \delta_3 \ln CPI_{t-i} + \delta_4 VACT_{t-i} + \delta_5 PSAV_{t-i} + \delta_6 RUoL_{t-i} +$$

$$+ \delta_7 CCRT_{t-i} + \delta_8 GEFF_{t-i} + \delta_9 REQU_{t-i} + \varepsilon_t \ldots . \qquad (2)$$

Where, the symbol Δ indicates first difference of the variables. Where, t is the time subscript; α is the constant, β_t are the coefficients associated with the study variables, and ε_t is the error or stochastic term used to capture the random observations, and it is assumed to possess normal properties of zero mean, as well as non-serial correlation and constant variance assumptions. The variable $\ln MSFDI_{t-1}$ in ARDL ($p, q_1, q_2, \ldots, q_8$) model (2) above is the lagged value of the dependent variable. Whereas, p and q on top of the summation indicate the optimal lag of the dependent and independent variables (In their order). *Table 1 below shows the description of the variables and postulated relationship between the dependent and independent variables as ordered in ARDL model (2).*

Next to finding the long-run association between variables using ARDL model (2), the ARDL approach uses the error correction model (ECM), which is representation derived from ARDL ($p, q_1, q_2, \ldots, q_8$) model (2), to obtain the short-run dynamic parameters. The ECM is specified in equation (3) below.

$$\Delta \ln MSFDI_t = a_0 + \sum_{i=1}^{p} \beta_1 \Delta \ln MSFDI_{t-i} + \sum_{i=0}^{q} \beta_2 \Delta \ln RGDPY_{t-i} +$$

$$+ \sum_{i=0}^{q} \beta_3 \Delta \ln CPI_{t-i} + \sum_{i=0}^{q} \beta_4 \Delta VACT_{t-i} + \sum_{i=0}^{q} \beta_5 \Delta PSAV_{t-i} + \sum_{i=0}^{q} \beta_6 \Delta RUoL_{t-i} +$$

$$+ \sum_{i=0}^{q} \beta_7 \Delta CCRT_{t-i} + \sum_{i=0}^{q} \beta_8 \Delta GEFF_{t-i} + \sum_{i=0}^{q} \beta_9 \Delta REQU_{t-i} + \omega ECT_{t-1} + \varepsilon_t \ldots . \quad (3)$$

Where, ECT_{t-1} in equation (3) above is the error correction term lagged for one period, Δ is the coefficients for measuring the speed of adjustment and β_t is the white noise terms of the short-run model. According to Johansen (1988), the error correction term indicates the speed of adjustment of the deviation of the dependent variables from their long-run values due to any short-run disequilibrium after a shock or how quickly/slowly the relationship returns to its equilibrium path and it should have a statistically significant coefficient with a negative sign.

The estimation procedures followed in this study follow six steps. It begins with examination of the time series characteristics or properties of the data for stationarity or lack thereof (nonstationary) before proceeding with the estimation of ARDL model (2). The standard unit root test estimation that are used in applied time series economics work are based on the hypothesis:

H0: The series contains a unit root or is non-stationary

H1: The series doesn't contains a unit root or is stationary

Time series data is "stationary" if the distribution of its mean and variance are constant or remains unchanged over time. Whereas a nonstationary series means its variance grows with time (Phillips, Perron, 1988). To this end, the conventional Augmented Dickey-Fuller (ADF) resulted from augmenting test tool developed by Dickey and Fuller (1981) and Phillips–Perron — PP (1988) tests were employed. Usually, ADF test yields superior results than PP test, if the data set has no missing observations and structural breaks; whereas PP test yields superior results than ADF test, if the dataset have some missing observations and structural breaks (Greene, 2003).

According to Pesaran et al. (2001), optimal lag selection is the second step in autoregressive distributive lag (ARDL) approach. Thus, the optimum lag of dependent and independent variables is determined using Akaike Information Criterion (AIC) by altering the lag imposed on ARDL model (2) till the optimal lag for the ECM is obtained. Third, the bound cointegration test based on the ARDL model was performed using unrestricted constant and the level form of the variables based on observed lags ($p, q_1, q_2, \ldots, q_8$) for dependent and independent variables to check if variables included in the ARDL model (2) empirically give meaningful long-run equilibrium relationships and generate the long-run coefficients. In order to integrate the short run dynamics with long run model, the ECM, specified in equation (3), was estimated using first difference of the variables to allow for delayed response in the fourth step (Table 1).

Table 1

Description of variables and Postulated relationship

Variable name	Description	Postulated Relationship	
Dependent variable		**Long run**	**Short run**
ln $MSFDI_t$	It is the ratio of FDI inflow to the manufacturing sector to total FDI in the country and transformed to natural logarithm. The data on these variables is obtained from Ethiopian Investment Commission (2022)		
Δ (ln *MSFDI*)	The first difference of real ln $MSFDI_t$		
	Independent variables		
ln RGDPYt	It is real GDP per capital income in Ethiopian Birr, obtained by dividing GDP (at constant 2011 price) by midyear population and transformed to natural logarithm. This variable is a proxy for market size of the country	Positive	
Δ (ln RGDPY)	The first difference of real GDP per capita		Positive
lnCPIt	It is the natural logarithm of consumer price index and transformed to natural logarithm. This variable is a proxy for inflation rate or macroeconomic instability in the country. It is collected from NBE (2022)	Negative	
Δ (ln CPIt)	The first difference of inflation rate		Negative
VACTt	It is an index used as a measure of voice and accountability in the country	Positive	
Δ (VACTt)	The first difference of VACT		Positive
PSAVt	It is an index used as a measure of political stability and absence of violence in the country	Positive	
Δ (PSAVt)	The first difference of PSAV		Negative
RUoLt	It is an index that measure the rules of law in the country	Positive	
Δ (RUOLt)	The first difference of RUOL		Positive
CCRTt	It is an index that measure control of corruption and bureaucratic red tape or delays in the country	Negative	
Δ (CCRTt)	The first difference of CCRT		Negative
GEFFt	It is an index used to measure Government effectiveness	Negative	
D (GEFFt)	The first difference of GEFF		Negative
REQUt	This variable is an index used as a measure of regulatory quality	Positive	
Δ (REQUt)	The first difference of regulatory quality index		Negative

Note: All the six institutional environment variables are collected from World Bank (2022) World Governance indicators database.

To ensure the validity of the ARDL regression models utilized in this work, several crucial residual diagnostic tests were conducted in the fifth phase. These tests included assessing autocorrelation or residuals independence, homoscedasticity, normality, and absence of model misspecification. To assess the stability of the regression equation overtime, two model stability tests, specifically the Recursive Residuals (CUSUM) test and the Recursive Residuals Square (CUSUM Q) graphic test, were conducted, as recommended by Pesaran et al. (2001). Stability tests are seen suitable in empirical investigations employing time series data, particularly in situations where there exists uncertainty regarding the timing of potential structural shifts. The determination of the stability tests was contingent upon the placement of the plot in relation to the 5 % critical bound. All estimations in this investigation were conducted utilizing Eviews 12 statistical software.

Results and Discussion

The time series properties of the underlying data were estimated in their original level and first difference forms using the conventional Augmented Dickey—Fuller (ADF) and Phillips—Perron (PP) tests (Phillips, Perron, 1988). Initially, the tests were run with the inclusion of solely the constant term, followed by the inclusion of both the constant term and time trend. The results of the unit root tests are displayed in Table 2. The analysis of the unit root results for the dependent variable and two control variables in Table 2 is based on ADF tests, as recommended by (Greene, 2003) due to the absence of missing observations and structural breaks in the dataset. The ADF unit root test results indicate that the t-statistics for the level of the variables were lower than the critical values for ADF test, except for the dependent variable, ln $MSFDI_t$. Therefore, we reject the null hypothesis that the series, representing FDI inflow to the manufacturing sector in Ethiopia, has a unit root at a significance level of 5 percent. This suggests that the variable is integrated of order zero, or I (0). However, it is worth noting that the two control variables were found to be integrated of order one, or I (1).

Nevertheless, the findings of the PP unit root test reveal that all the six institutional environment variables, which have missing observations for the years 1997, 1999, and 2001, and exhibit structural discontinuities in the dataset, were non-stationary in their level. In contrast, the results of both the ADF and PP tests for the change or first difference of the six institutional environment variables indicate that the null hypothesis of a unit root or non-stationary is rejected at a significance level of 5 percent, suggesting that they are I (1) variables. Therefore, the variables included in the ARDL model are a combination of I (0) and I (1).

Moreover, the ADF and PP tests results in Table 2 revealed that adding the time trend does not improve the stochastic nature of the data (see column 3 and 5). For example, the level PSAV was stationary at 10 % level significance when only constant term included in the ADF and PP test but becomes non-stationary when constant and time trend were included. Moreover, the first difference of LnRGDPY, VACT, PSAV, and

CCRT were stationary at higher significance level when only constant term included compared to with constant and time trend. Therefore, based on the ADF and PP unit root test results, it can be inferred that only a constant term should be included in the estimation of ARDL model (2).

Table 2

Unit Root Test Results based on ADF and PP Test

Variables	ADF Unit root Test statistics		PP Unit root Test statistics		Order of Integration
	Only Intercept	With Trend & Intercept	Only Intercept	With Trend & Intercept	
ln *MSFDI*	–4.4403***	–4.4580***	–4.5879***,	–4.5809***	I (0)
Δ (ln *MSFDI*)	–9.0754***	–8.8720***	–13.2445***	–13.3643***	
LnRGDPY	1.0935	–4.5905**	0.9383	1.4616	I (1)
Δ (LnRGDPY)	–3.8368***	–4.2337**	–3.8956***	–4.2215**	
LnCPI	2.2761	–1.1781	1.8352	–1.2247	I (1)
Δ (LnCPI)	–3.2952**	–2.2777**	–3.2877**	–4.0791**	
VACT	–1.2987	–1.0600	–1.6451	–1.0169	I (1)
Δ (VACT)	–4.1756***	–4.0008**	–4.1747***	–4.7309***	
PSAV	–2.8770*	–2.7935	–3.0182*	–2.8731	I (1)
Δ (PSAV)	–3.4760**	–0.6753	–2.4696**	–2.9918	
RUoL	–1.0578	–3.0015	–0.6964	–2.9793	I (1)
Δ (RUoL)	–4.8451***	–4.6853***	–7.8225***	–7.2526***	
CCRT	–0.6381	–2.7377	–0.8525	–2.7888	I (1)
Δ (CCRT)	–3.3944**	–3.5773*	–3.3490**	–3.5453*	
GEFF	–2.0502	–1.8872	–1.9753	–1.7623	I (1)
Δ (GEFF)	–5.6143***	–5.7801***	–5.5770***	–5.7801***	
REQU	–4.3344***	–4.0723**	–2.3356	–2.2355	I (1)
Δ (REQU)	–5.7189***	–5.6128***	–5.7047***	–5.6122***	

Source: Authors calculation.

Note: Δ shows the variable is differenced once. MacKinnon (1996) critical values ADF unit root test statistics are used here; *shows significant at 1 percent; ** significant at 5 %; and *** significance at 1 %.

Given the small sample size, specifically 23 years for institutional environment variables, an ARDL model was applied to the dependent variable and eight independent variables. This was done by imposing one period lag in the

estimation of the ARDL ($p, q_1, q_2, \ldots, q_8$) model (2). In doing so, we obtained the optimal lag length for selected ARDL model, long-run coefficients, and bound cointegration test results. That is, as can be seen from the graph depicting for the AIC results for 20 top ARDL models in Appendix (1), the optimal lag length for the selected ARDL model shown in the first line is ARDL (1,1,1,1,0,1,1,0,1) specification. Further, the estimation of ECM model provides evidence that the lag length for selected ARDL model minimizes the Akaike Information Criterion (AIC) confirming the appropriateness of the optimal lag of the variables.

The Bound cointegration test results and long-run coefficients obtained from the regression of ARDL model (2) are summarized in Tables 3 and 4, respectively. The results in Table 3 below rejects the null hypothesis of no cointegration among variables is rejected since the F-statistic of 6.9624 is greater than the upper bound critical value of I (1) series at 10 % (2.85), at 5 % (3.15), at 2.5 % (3.42), and 1 % (3.77) level of significance. Therefore, we conclude that there is long run relationships among the variables included in the ARDL model (2).

Table 3

Results of Bound cointegration in ARDL

F-Bound Test	F-statistics	Significance Levels	Critical Values	
			I (0)	I (1)
F-statistics	6.9624	10 %	1.85	2.85
Number of explanatory variables *k*	8	5 %	2.11	3.15
		2.5 %	2.33	3.42
		1 %	2.62	3.77

Source: Authors calculation.

Table 4 presents long-run coefficients for selected ARDL Model (1,1,1,1,0,1,1,0,1), obtained after estimation of ARDL model (2). The results indicate that both Real GDP per capita (lnRGDPY) and inflation rate (lnCPI) have the expected signs. The long-run results indicate that the estimated elasticity of real GDP per capita income for FDI inflow to the manufacturing sector is statistically significant at 5 % level significance with magnitude greater than unity, indicating that it is highly elastic to changes in real GDP per capita income. Similar to ours, previous studies reported that FDI respond positively and significantly to changes in market size, proxy by real GDP per capita income of the host country. On the other hand, the estimated elasticity of inflation (macroeconomic stability) is negative and statistically significant with magnitude greater than unity, indicating that the FDI inflow to the manufacturing sector is highly sensitive to changes in inflation in the long-run. These findings are consistence with that of Haile and Assefa (Haile, Assefa, 2006), Sunday and Lydie (2006), and Gharaibeh (2015) who concluded that increase in the market size is conducive for attracting FDI to the host countries but increase in inflation is regressive.

Table 4

Long-run coefficients for Selected ARDL Model (1,1,1,1,0,1,1,0,1)

Variables	Coefficient	Std. Error	t-Statistic	p-value
lnRGDPY	8.4324	1.4974	5.6311	0.0111**
lnCPI	–3.5592	0.6692	–5.3185	0.0130**
VACT	3.3757	0.7378	4.5752	0.0196**
PSAV	1.7462	0.3183	5.4864	0.0119**
RUoL	2.2840	1.0168	2.2463	0.1103
CCRT	–1.5594	1.1420	–1.3655	0.2655
GEFF	–1.6073	0.4763	–3.3742	0.0433**
REQU	1.6507	1.0668	1.5472	0.2198
C	–53.2165	10.9915	–4.8416	0.0168**

Source: Authors calculation

Note: Values in table above are rounded into 2 decimal places. *,**, and *** under p-value refer significance at 10 %, 5 %, and 1 %, respectively.
Though one period lag was used in the estimation of ARDL model (2), the estimation result and the AIC determined that the lag length of variables for the selected ARDL model is (1,1,1,1,0,1,1,0,1) specification. That is, in the estimation of the short-run ECM model, the optimum lag for the dependent variable (FDI inflow to the manufacturing sector) as well as real GDP per capita, inflation rate, voice and accountability, rules of law, control of corruption, and regulatory quality was one while that of political stability and government effeteness variables was zero.

The long run results in Table 4 above indicate that the impact of voice and accountability of the government as well as political stability and absence of violence on FDI inflow to the manufacturing sector was positive and statistically significant at 5 % level significance. On the other hand, the long run impact of government effectiveness FDI inflow to the manufacturing sector in Ethiopia was negative and significant at 5 % level significance. The result implies that public services provided by the government in Ethiopia are not conducive to attract FDI inflows to the manufacturing sector. The long run coefficients of rules of law and regulatory quality were positive but statistically insignificant. The implication is that, though not to the extent of discouraging foreign investors from taking risks, the legal structures in the country pertaining to property rights protection and enforcing contracts failed to encourage FDI inflow to manufacturing sector significantly in the long-run. Moreover, the positive coefficient of regulatory quality also indicates that a stable government guarantees policy continuity; hence, regulatory quality and FDI inflows are positively correlated. On the other hand, the impact of corruption on FDI inflow to the manufacturing sector was negative and insignificant in the long run. This finding supports Görgülü and Akcay (2015) and Bayar and Alakbarov (Alakbarov, Bayar, 2021) show that control of corruption has no statistically significant impact on FDI flow to less developed countries. Further, the insignificant negative impact of control of corruption on FDI inflow to the manufacturing sector in Ethiopia is not surprising because it supports the report of UNCATD (2022) that corruption in Ethiopia is relatively low compared to the regional level.

The error correction representation (short run dynamics) model results of the selected ARDL model is presented in Table 5. It is interesting to note that there is no remarkable directional difference between the long run and ECM models results on the impact of real GDP per capita and inflation on FDI inflow to the manufacturing sector in Ethiopia, though more elastic in the short-run. For example, the first difference of real GDP per capita affected FDI inflow to the manufacturing sector positively and significantly at 1 % level significance, denoting that a 1 % increase in real GDP per capita resulted in about 28 % increase in FDI inflow to the sector in the short-run. Moreover, in line with the long run results, inflation rate (macroeconomic instability) affected FDI inflow to the manufacturing sector negatively and significantly at 1 % level significance. That is, a unit increase in consumer price index of the country (In natural logarithm) reduced FDI inflow in the manufacturing sector in the short run by about 4.6 percentage point.

Table 5

Short-run parameters of Selected ARDL Model (1,1,1,1,0,1,1,0,1)

Variables	Coefficient	Std. Error	t-Statistics	p-value
Δ (lnRGDPY)	27.9656	1.6118	17.3508	0.0004***
Δ (lnCPI)	–4.6278	0.3138	–14.7494	0.0007***
Δ (VACT)	0.5707	0.4033	1.4149	0.2520
Δ (RUoL)	10.5297	0.7358	14.3100	0.0007***
Δ (CCRT)	–12.6952	0.9897	–12.8166	0.0010***
Δ (REQU)	–2.4144	0.4677	–5.1621	0.0141**
ECT (–1)	–2.5947	0.1555	–16.6882	0.0005***
R-squared	0.9695	Mean dependent variable		0.0404
Adjusted R-squ.	0.9542	S.D. dependent variable		0.6038
S.E. Regression	0.1293	Akaike information criterion		–0.9767
Sum squared resid.	0.2005	Schwarz information criterion		–0.6288
Log likelihood	16.2787	Hannan—Quinn criterion		–0.9178
Derbin-Watson-stat.	3.1824			

Source: Authors calculation.

Note: ECM (–1) is the lagged error correction term. Δ denotes difference operator.

Table 5 also indicate that Contrary to the long run, the impact of voice and accountability on FDI inflow to the manufacturing sector was found to be positive but insignificant in the short-run. The results also indicate that rule of law (RUoL) is the

only institutional factor that significantly increase FDI inflows into the manufacturing sector in Ethiopia at 1 % level significance. This finding is consistent with that of Alemu (Alemu, 2012) and Hossain and Rahman's (Hossain, Rahman, 2017) findings for developing countries. Unlike the long-run, however, control of corruption (CCRT) and government regulatory quality (REQU) affected FDI inflow to the manufacturing sector in Ethiopia negatively and significantly at 1 and 5 % level significance, respectively. The impact of corruption confirmed that the "grabbing hand" hypothesis holds true in the short-run. This finding is in harmony with the findings of Benammou (Bouchoucha, Benammou, 2018) that corruption tends to impede FDI flow to the sample African countries. Nevertheless, our findings on the impact of regulatory quality on FDI inflow to the manufacturing sector in Ethiopia contradicts the findings of Hossain and Rahman's (2017) that all institutional quality variables, including regulatory quality, had positive and significant impact on foreign direct investment inflow to the sample developing nations.

The coefficient of error correction term (ECT_{t-1}) in its first lag obtained from the short-term model has the expected negative sign and its magnitude is –2,5947, which is infinitesimally low. The low coefficient implies that the speed of adjustment after shock to equilibrium is low. Furthermore, it can be inferred that the speed of adjustment from the preceding year's disequilibrium in FDI inflow to the manufacturing sector to current year's equilibrium can be achieved but at a lower speed. Furthermore, the coefficient of determination (adjusted R-Square) indicates that about 95,4 % of the variation in FDI inflow to the manufacturing sector model has been explained by the combination of macroeconomic control and institutional environment explanatory variables included in the short run model. Thus, the explanatory power of the variables included in the short run model is regarded as very high. The value of Akaike information criterion (AIC) is lower than that of Schwarz criterion (SC) and Hannan — Quinn criteria (HQC) confirmed that one period lag is an optimal length for the dependent variable in ARDL models used in this study. Moreover, the Durbin — Watson statistics of autocorrelation is 3,18, suggesting that the model is free from autocorrelation problem (Table 6).

Table 6

Summary of Diagnostic Test Results

Test	Null Hypothesis	F-stat	Prob.	Decision
Serial correlation (BG LM TEST)	Residuals are not serially correlated	11.2081	0.0788	Fail to reject
Hetrokedasticity (BPG)	Residuals are homoscedastic	1.7176	0.3648	Fail to reject
Normality (JB)	Residuals a are normality distributed	0.3728	0.8299	Fail to reject
RESET (Ramsey functional form)	No miss specification in the model	1.3058	0.3707	Fail to reject

Source: Authors Calculation

Note: BPG—Breusch—Pagan—Godfrey, BPG—Breusch & Godfray, JB—Jarque Bera.

The results of numerous diagnostic tests performed to find the potential errors in the ARDL models is shown in Table 6 above. The Breusch—Godfrey serial correlation LM test performed to identify the existence of serial autocorrelation between the current value of the regression residuals and lagged values signify absence of serial autocorrelation among the residuals in the ARDL models. Furthermore, the Breusch—Pagan—Godfrey (BPG) test confirmed the assumption that the errors are homoscedastic and independent of the repressors. Further, the Jarque—Bera (JB) test of normally proves normality of the residuals. Finally, Ramsey's RESET test fails to reject the assumption that the model has no omitted variables. In general, the diagnostic tests performed revealed that the ARDL models used in this study have passed all the exhaustive post-estimation diagnostic tests successfully.

In order to evaluate the stability of the long-run coefficients together with short-run dynamics, the cumulative sum (CUSUM) and cumulative sum of squares (CUSUM Q) graphic tests were applied to plot the residual of ECM (see Appendix 2). As can be seen in the graphs in Appendix 2, the plots of both CUSUM and CUSUMSQ statistics moved between the critical bounds at the 5 % significance level and did not cross the lower and upper critical limits. Particularly, the latter stability test indicates that the estimated the long-run and short-run coefficients are stable overtime.

Summary and Conclusions

It's an indisputable reality that nations with stronger institutional systems are more likely to attract foreign direct investment. This is because savvy investors are discerning when choosing where to allocate their resources. They seek out stable and secure environments where their investments can thrive. Accordingly, they prefer to steer clear of countries where corruption is rampant, rules and regulations are poorly upheld, and administrative processes are overly complex and burdensome. In order to feel confident in their investment decisions, individuals and companies need assurance that the laws and regulations in place are consistently and fairly enforced. They do not want to fall victim to corrupt practices that impede their business endeavors. Additionally, they strive to avoid bureaucratic red tape that disrupts their operations and drives up costs. If a country fails to meet these basic requirements, investors will ultimately look elsewhere to grow their Financial portfolio. The primary objective of this research was to examine the impact of the institutional environment on the influx of foreign direct investment (FDI) in Ethiopia's manufacturing sector. To fulfill this goal, the study utilized key macroeconomic factors over a period of 1992 to 2021, namely market size (measured by GDP per capita income) and the inflation rate. Furthermore, six institutional environment indices were assessed, namely voice and accountability, political stability and absence of violence, rule of law, control of corruption and bureaucratic delays, government effectiveness, and regulatory quality. These variables were selected based on their relevance and availability of data. Additionally, the study aimed to test the hypothesis that a conducive institutional framework has a positive impact on FDI.

The ARDL bound test for cointegration confirms the existence of long-term relationship among the variables included in the ARDL model for FDI inflow to the manufacturing sector. The estimation results of selected ARDL model indicate that better macroeconomic conditions such as higher market size (real GDP per capita) and lower macroeconomic instability (inflation rate) were detrimental for attracting FDI inflow to the manufacturing sector in Ethiopia both in the long run and short run. The findings from both the long-run and short-run estimations present contrasting perspectives about the influence of institutional environment variables on FDI inflows into Ethiopia's manufacturing sector. The findings from the long-term regression reveal that three key institutional environment variables, namely government accountability and transparency, political stability and absence of violence, and government effectiveness, have significant role in attracting FDI into Ethiopia's manufacturing sector. The findings shown here align with the research conducted by Ahmed et al. (Ahmad, Ahmed, Atiq, 2018), which suggests that the quality of institutions plays a crucial role in attracting FDI in the manufacturing sector over an extended period. Additionally, these findings are consistent with the conclusions drawn by Buchanan et al. (2012), who give empirical evidence supporting the notion that favorable institutional quality has a positive and substantial impact on FDI. In contrast, the enduring adverse influence of government effectiveness on FDI inflow towards the manufacturing industry implies that there is a need for enhancements in the current inefficiencies of government policy development and execution. These improvements are necessary to foster greater FDI attraction overall, with a specific focus on the manufacturing sector in the long term.

In the short run, the institutional environment variables of rule of law, control of corruption, and regulatory quality had a negative impact on FDI inflow to the manufacturing sector in Ethiopia. Hence, it is imperative for the government to prioritize the enhancement of the legal system to guarantee the efficacy of contract enforcement, safeguard property rights, bolster law enforcement agencies and judicial institutions, and foster increased trust and compliance among economic actors. This strategic emphasis is crucial for attracting greater FDI to the manufacturing sector within a limited timeframe. An area of attention that should be considered is the implementation of an efficient anti-corruption policy that is conducive to enhancing the extent to which public power is utilized for private gain and fostering investor trust. Furthermore, it is imperative to establish effective regulatory mechanisms that can effectively eradicate market-unfriendly policies, such as government intervention and limitations on capital mobility. Additionally, there is a pressing need to address the prevailing regulatory inefficiencies within the nation, specifically those pertaining to customs clearance for imports and exports. By doing so, it will be possible to cultivate a conducive business and investment climate, stimulate private sector investment, and attract a greater influx of foreign direct investment in the short run.

The findings of this study suggest that the inflow of FDI into Ethiopia's manufacturing sector is contingent upon the implementation of sound macroeconomic

policies and the establishment of supportive institutional frameworks. These frameworks are characterized by enhanced transparency and accountability within the government, political stability, the absence of violence, a robust legal system, efficient measures to combat corruption, effective governance, and improved regulatory standards. This assertion aligns with the findings of Alemu (Alemu, 2012), Nguyen and Cao (2015), Ullah and Khan (2017), and Hossain and Rahman (2017), who have provided robust evidence supporting the notion that various indices of governance or institutional quality significantly influence the entrance of FDI into the host nation. However, the results presented in this study are in contrast to the findings of Nondo et al. (Nondo, Kahsai, Hailu, 2016), who concluded that variables related to institutional quality do not have a substantial impact on FDI inflows in countries in Sub-Saharan Africa (SSA). Hence, the results of this study unequivocally affirm our hypothesis that a favorable institutional environment positively impacts FDI inflows to the manufacturing sector in Ethiopia, both in the short run and long run.

It's crucial for Ethiopia to focus on improving its institutional environment to effectively attract more foreign direct investment (FDI) into the manufacturing sector. This includes addressing issues such as ethnic conflict, political violence, and instability to improve the political landscape. Enhancing the quality of government institutions is also important. Efforts should also be made to improve the legal system and strengthen internal laws and legislation. The government should take sincere steps to increase transparency, combat corruption among government officials, and promote accountability. Addressing government ineffectiveness in providing public services and improving civil service and regulatory mechanisms of institutions are also key areas that need attention. It's worth noting that Ethiopia has a lot of potential for attracting FDI due to its abundant and low-cost trainable labor and strategic location in the Horn of Africa. By making these improvements, Ethiopia can attract more FDI from various developed and emerging economies to its manufacturing sector.

The authors acknowledge two limitations in this study. The first is the limited availability of short time series data, which may hamper the reliability of econometric analysis. Particularly, the data for six institutional environment indicators — voice and accountability, political stability and reduction of violence, rule of law, control of corruption, government effectiveness, and regulatory quality — were obtained from the World Bank governance indicators database. However, these data exhibit missing values not only for the years 1992–1995 but also for 1997, 1999, and 2001. Despite having time series data spanning 23 years, the estimation of ARDL models only considers data from 2002 onwards, covering a 20-year period. The second is the use of aggregate FDI inflow data for five manufacturing industries — metal and energy, chemical and construction inputs, textile, leather, and food and beverage — rather than analyzing data for each major industries separately. Hence, the use of aggregate FDI data as a dependent variable may not accurately reflect the impact of individual institutional environment variables on FDI inflows within the five key manufacturing sectors.

Therefore, it is recommended that future research employ scientific forecasting techniques to address the issue of missing values in institutional environment variables over a 7-year span. This would allow for the estimation of the influence of each institutional environment variable on FDI inflow within the five key sub-sectors of the manufacturing sector.

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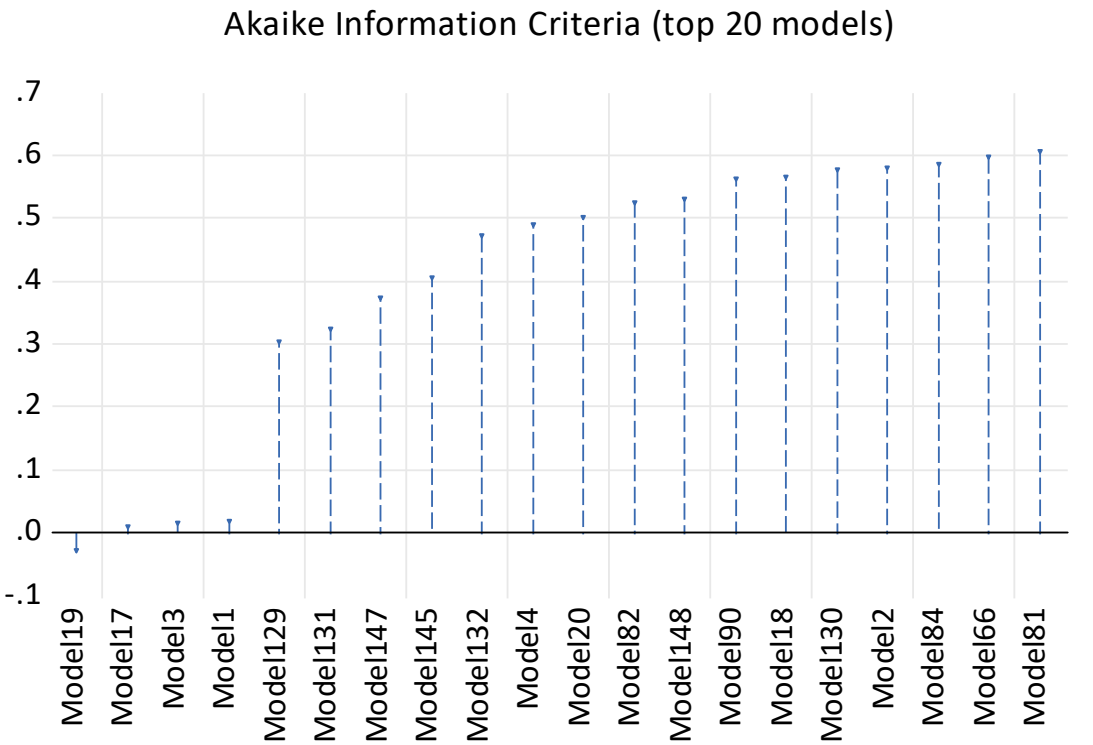
Appendix 1. Akaike Information Criterion for ARDL Model lag selection

The Akaike information criterion (AIC) used in this study to determine the optimal lag length indicates that the optimal lag for ARDL 20 models begin with 1, suggesting that the optimal number of lags for variable lnMSFDI is one.



Model19: ARDL(1, 1, 1, 1, 0, 1, 1, 0, 1)
Model17: ARDL(1, 1, 1, 1, 0, 1, 1, 1, 1)
Model3: ARDL(1, 1, 1, 1, 1, 1, 1, 0, 1)
Model1: ARDL(1, 1, 1, 1, 1, 1, 1, 1, 1)
Model129: ARDL(1, 0, 1, 1, 1, 1, 1, 1, 1)
Model131: ARDL(1, 0, 1, 1, 1, 1, 1, 0, 1)
Model147: ARDL(1, 0, 1, 1, 0, 1, 1, 0, 1)
Model145: ARDL(1, 0, 1, 1, 0, 1, 1, 1, 1)
Model132: ARDL(1, 0, 1, 1, 1, 1, 1, 0, 0)
Model4: ARDL(1, 1, 1, 1, 1, 1, 1, 0, 0)
Model20: ARDL(1, 1, 1, 1, 0, 1, 1, 0, 0)
Model82: ARDL(1, 1, 0, 1, 0, 1, 1, 1, 0)
Model148: ARDL(1, 0, 1, 1, 0, 1, 1, 0, 0)
Model90: ARDL(1, 1, 0, 1, 0, 0, 1, 1, 0)
Model18: ARDL(1, 1, 1, 1, 0, 1, 1, 1, 0)
Model130: ARDL(1, 0, 1, 1, 1, 1, 1, 1, 0)
Model2: ARDL(1, 1, 1, 1, 1, 1, 1, 1, 0)
Model84: ARDL(1, 1, 0, 1, 0, 1, 1, 0, 0)
Model66: ARDL(1, 1, 0, 1, 1, 1, 1, 1, 0)
Model81: ARDL(1, 1, 0, 1, 0, 1, 1, 1, 1)

Appendix 2. Model Stability tests, 2019–2021