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Article

Sources of Financial Development and Their Impact on FDI Inflow: A Panel Data Analysis of Middle-Income Economies

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Abstract: The present research aimed to investigate the long-run and short-run effects of different sources of financial development on FDI inflow for middle-income economies during the period of study, 1980 to 2020. An annual frequency of data was obtained for the required set of variables from WDI and the IMF. The estimations revealed no cross-sectional dependence, a significant cointegration, and the stationarity of FDI inflow at first difference, while the explanatory and controlled variables were as mixed level. It validated the panel ARDL estimations methods such as mean group, pooled mean group, and a dynamic fixed effect for testing the required set of hypotheses. The Hausman test confirmed the consistency and efficiency of the dynamic fixed effect as the method of estimations. The panel estimations revealed the significance of financial market development, inflation rate, trade openness, and real economic growth as the most critical factors for FDI inflow in middle-income economies. The policymakers should consider these factors for making their policies regarding FDI inflow in their economies. Future research may consider time series ARDL for each independent middle-income country. The findings of the study are generalized only to middle-income economies rather than higher-income and lower-income countries.

Keywords: FDI inflow; financial development; panel data; ARDL; middle-income countries

JEL Classification: C55; E44; F21



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1. Introduction

The word “FDI inflow” refers to a commercial purchase decision, a significant stake inside or purchase of a multinational entity completely, in a plan to enlarge its activities to a new territory (Zhao 2003). In recent decades or so, foreign direct investment has attracted considerable attention from academic and policy-making experts, thus becoming very important across a country, especially in developing and less developed countries (Dal Bianco and Loan 2017). FDI inflows are indeed a substantial source of foreign financing for many developing nations, and hence provide an effective element for achieving sustainability and private industry growth (Asongu et al. 2018). For developing and advanced nations, FDI is crucial (Asamoah et al. 2019). Developing-country businesses require global finance and skills in their plan to enlarge, organize, and lead their worldwide sales (Khan and Khan 2019).

According to Collison et al. (2017), the classical theories related to FDI emerged during the 1960 to 1980 period, and the FDI flows from devolved and underdeveloped nations have strongly advanced these theories. They argued that FDI in developing nations is a newer phenomenon; therefore, they suggested that these theories were insufficient to explain the recent spike in investment from developing markets due to their unique investment characteristics. However, Vasyechko (2012) argued that there was no doubt that FDI theory contributed significantly to our knowledge of FDI in emerging markets.

The study required to test two components of financial developments: financial institution development and financial market development. Therefore, the study required to test the resource-based theory (for financial market development) and institutional theory (for institutional development) for the target population. The resource-based theory states that international corporations consider the following resources for making their investment in host countries: strategic assets, the efficiency of sourcing global FDI, markets, and their resources (Behrman 1972). Furthermore, in the institutional theory, companies operate in a complex context (Meyer and Rowan 1977). As a result, the company's decisions are influenced by institutional influences in its society. Tax systems, subsidies, access to finance, and other economic and financial considerations all influence the corporations' strategic decisions.

The study of FDI inflow has become a puzzle as its determining factors have been studied for many decades (Acquah and Ibrahim 2020). Some of the factors are significant in one region, while the others are significant in other regions and time zone. However, financial development is considered one of the important factors for attracting foreign investment to any country (Dimitrova et al. 2020). Based on income level, the countries are divided into three major categories: low-income, middle-income, and high-income economies. The higher-income economies are already in a position to invest their funds in the development of their economies (Islam et al. 2020). The low-income economies are unable to attract much foreign investment (Lee et al. 2020). However, middle-income economies are in a position to attract an increasing level of foreign investment in their economies if they consider an appropriate level of financial development (Osei and Kim 2020). Financial development is a universal strategy used for attracting foreign investment in middle-income countries (Yusuf et al. 2020).

Financial development not only requires the development of the overall financial system but also requires the development at an institutional and market level in these middle-income economies (Ahmed and Jahanzeb 2021). As a result, it enhances the overall inflow of foreign investment in these economies. The role of financial development as an important factor in enhancing the FDI inflow in any economy is well established in previous research studies (Ahmed and Jahanzeb 2021; Islam et al. 2020; Chen et al. 2020; Khan and Khan 2019; Sirag et al. 2018). However, the FDI inflow based on sources of financial development is still a puzzle, especially in the middle-income economies (Smith 2021; Shahbaz et al. 2021; Nguyen and Lee 2021; Asamoah et al. 2022). Financial development is based on two sources: institutional financial development and market financial development. The past studies, especially in the case of middle-income economies, could not consider which source of financial development had a greater impact on attracting foreign investment for short-term and long-term tenure.

The trend analysis for the FDI inflow in middle-income countries is reported in Figure 1. It indicates that FDI inflow was lowest in the year 1989 with 19% of GDP on average in middle-income economies. The same was highest in the year 2009 at 412% of GDP on average for the same group of economies. Figure 1 indicates two major phases of FDI inflow in middle-income economies: 1990–2008 with an average increasing trend and 2009–2020 with an average decreasing trend. Similarly, the trend analysis of major categories of financial development is reported in Figure 2. IFD stands for institutional financial development as a percentage of GDP. Similarly, MFD stands for market financial development as a percentage of GDP. Finally, the OFD stands for overall financial development as the aggregate of IFD and MFD. All three sources of financial development show an increasing trend. However, market financial development reports its highest level in the year 2008 with an average MFD of 18.88 as a percentage of GDP. However, with a decline for a short period, it started to increase again in 2014. On the other hand, IFD and OFD have an increasing trend during the period of study while reporting some temporary and short-term declines.

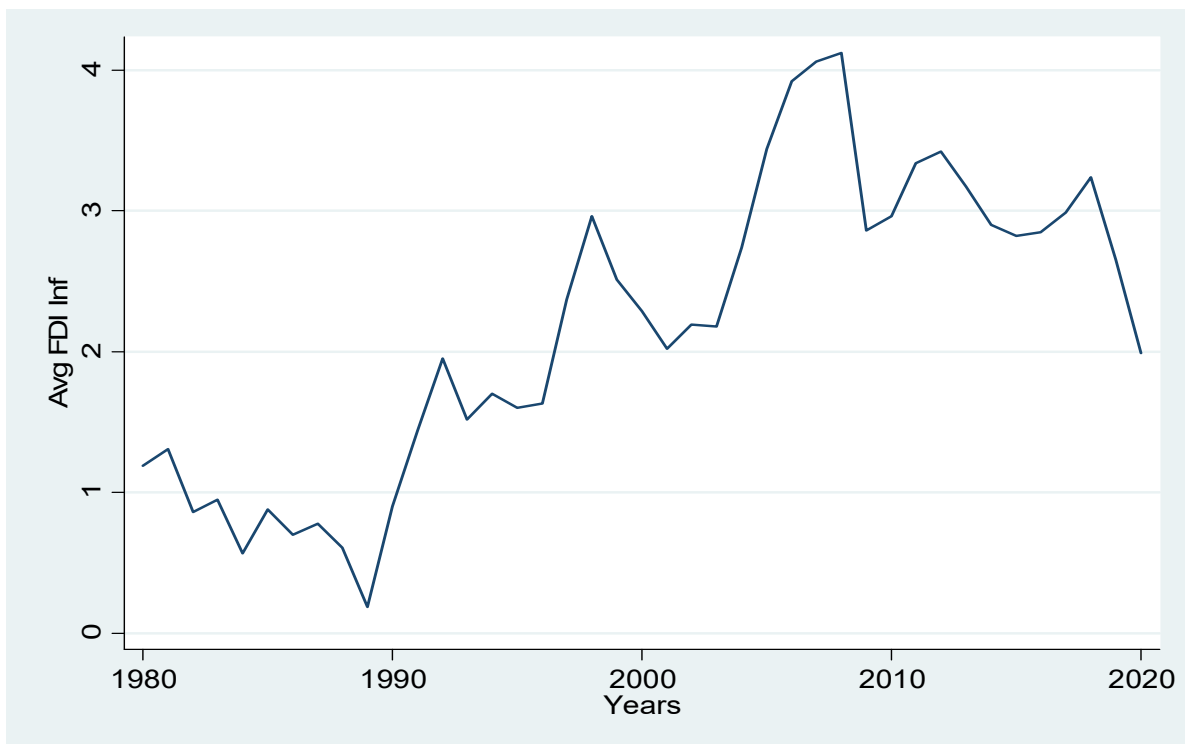


Figure 1. Trend line for FDI inflow in middle-income countries.

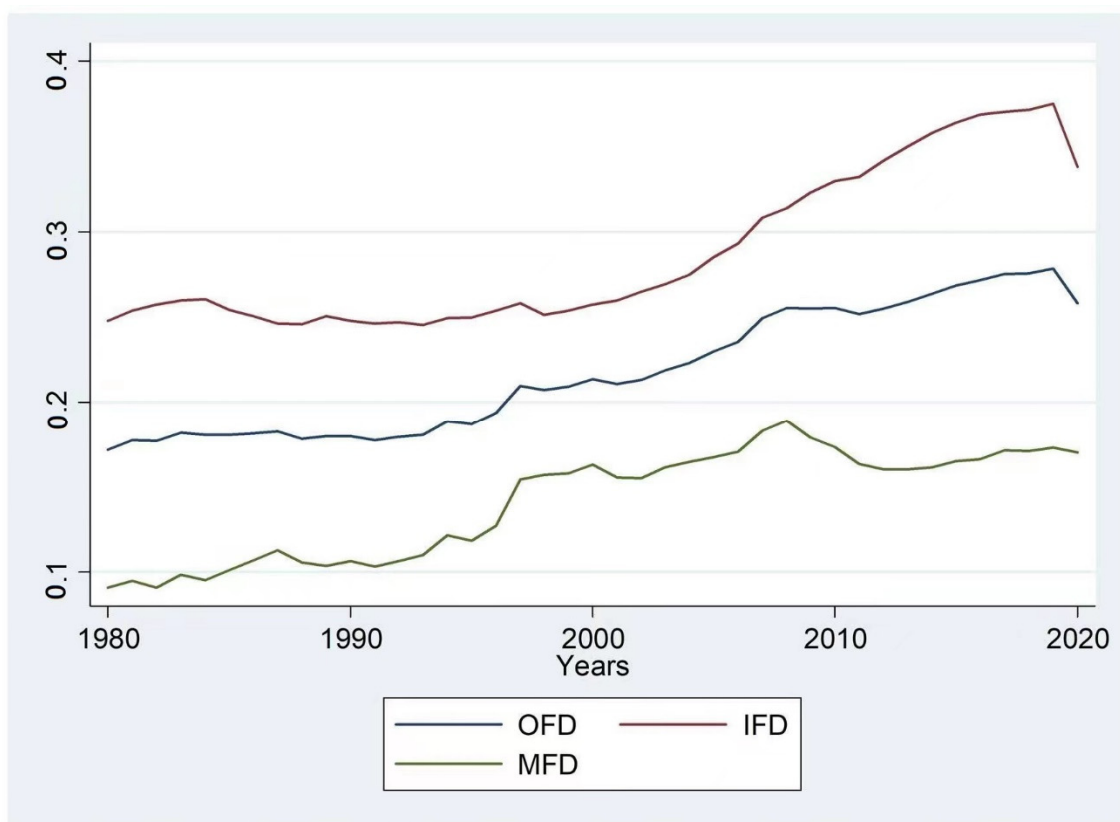


Figure 2. Trend line for financial development in middle-income countries.

The study is meant to explore the impact of two leading sources of financial development, financial institutions and financial market development, on the FDI inflow for middle-income economies. Therefore, the specific aims of the study are as follow

1. *To investigate the role of financial institutions' development in determining the FDI inflow for the panel of middle-income economies.*
2. *To explore the impact of the financial market's development on FDI inflow for the panel of middle-income economies.*
3. *To examine the impact of overall financial development on FDI inflow for the panel of middle-income economies.*
4. *To evaluate the role of other macroeconomic and control variables, such as inflation rate, trade openness, and economic growth, in determining the FDI inflow for the panel of the target population.*

The study focuses on achieving the primary and secondary research objectives using the following research questions.

- (i) *What is the role of financial institutions' development in determining the FDI inflow for the panel of middle-income economies?*
- (ii) *How does the financial market's development impact the FDI inflow for the panel of middle-income economies?*
- (iii) *How does the overall financial development impact the FDI inflow for the panel of middle-income economies?*
- (iv) *How do other macroeconomic and control variables such as inflation rate, trade openness, and economic growth determine the FDI inflow for the panel of middle-income economies?*

Keeping in view the literature, theoretical evidence, and requirements of the study, the following hypotheses need to be tested

H₁: *There is a significantly positive impact of financial institutions' development on FDI Inflow.*

H₂: *There is a significantly positive impact of the financial market's development on FDI Inflow.*

H₃: *There is a significantly positive impact of the overall market's development on FDI Inflow.*

H_{4a}: *There is a significantly negative relationship between inflation rate and FDI Inflow.*

H_{4b}: *There is a significantly positive relationship between trade openness and FDI Inflow.*

H_{4c}: *There is a significantly positive relationship between economic growth and FDI Inflow.*

The outcomes of this research are important for policymakers in middle-income economies. The outcomes may enhance the careful consideration of financial development, institutional, financial market, and overall, as important determinants of FDI inflow along with inflation, trade openness, and economic growth as the other macroeconomic/control variables for the same, in the middle-income region at the aggregate level.

[Yuxiang and Chen \(2011\)](#) concluded that financial development plays a strong and statistically significant role in determining the FDI inflow in Brics nations. [Özmen \(2007\)](#) found a positive role of financial development in explaining the FDI inflow. It was inferred from the study that foreign direct investment could be attracted with the positive flow of financial development in an economy. Furthermore, [Aghion et al. \(2009\)](#) also concluded there was similar evidence of an optimistic link between financial development with FDI inflow. However, some studies concluded with either a negative link ([Ang 2009](#)) or a weak relationship ([Ersoy \(2011\)](#)) or sometimes, with a strong inverse relationship ([Lin and Ye 2011](#)). The positive link between financial development and FDI inflow is also confirmed in many studies, e.g., ([Choong 2012](#); [Caglayan et al. 2013](#); [Asongu 2014](#)).

Because of the transfer of technology embedded in FDI, as well as the massive amount of foreign capital involved, host markets are expected to profit from capital flows ([Mijiyawa 2015](#)). The infusion of foreign capital into the host nation may contribute to the development of capital stock, while staff training may contribute to the nation's professional development ([Sahin and Ege 2015](#)). To put it another way, FDI can help any country to

develop by increasing financial development—natural and institutional capital—or by increasing overall productivity levels (Aziz and Mishra 2016). According to the latest era of investigations, FDI inflows should be between various industries because multinationals want to avoid unauthorized access to prospective competitors yet gain from technology transfer to potential suppliers (Fauzel 2016). Limitations in these domains may limit the domestic firms' ability to absorb emerging innovations and react to foreign players' risks and solutions (Boateng et al. 2017). Similarly, positive relationships were discovered between financial development and FDI inflow from some research studies (Bayar and Gavriltea 2018b; Nkoa 2018; Henri et al. 2019; Canh et al. 2020; Olorogun 2021; Nguyen and Lee 2021; Shahbaz et al. 2021). An adverse and statistically significant influence on financial development was reported for the source of the FDI inflow use (Gitone 2014). On the contrary, a significant and statistically positive influence for the above relationship was reported by (Mehrra et al. 2015), (Belaid et al. 2019), and (Eren et al. 2019; Asamoah et al. 2022; Smith 2021).

Inflation is a significant financial factor. High inflation is considered a marker of macroeconomic unsteadiness, as it may prompt depreciation of money, which decreases the estimation of genuine income and buying influence inside the host nation for speculators and makes investment unattractive for the host nation. A study revealed a negative and statistically significant link between the inflation rate with FDI inflow (Desbordes and Wei 2017). A similar negative impact on the inflation rate was discovered in the studies of (Asamoah et al. 2019; Camarero et al. 2020; Smith 2021; Gopalan et al. 2019; Arif et al. 2020; Canh et al. 2020; Dimitrova et al. 2020; Gao et al. 2021; Hoang et al. 2021; Nguyen and Cieřlik 2021; Rafidi and Verikios 2021).

Trade openness is considered to significantly affect FDI, as government trade liberalization arrangements make business conditions helpful for foreign investments, and foreign financial specialists are more pulled in towards a host nation that has the least or no capital control and financial amicable methods (Taylor 2000). The findings of previous studies highlighted an adverse statistically significant connection between the trade openness and the use of FDI inflow (Azad et al. 2014); (Belaid et al. 2019) and (Ergun et al. 2019). On the contrary, a positive and statistically significant influence on the said relationship was found by (Omri and Nguyen 2014), (Omri et al. 2015), (Akar 2016), (Akarsu and Gümüőođlu 2017), (Chen 2018), and (Yahya and Rafiq 2019; Smith 2021; Maryam and Mittal 2020).

Generally, the **gross domestic product (GDP)** as a measure of economic growth is defined as the value of all market and some nonmarket goods and services produced within the geographic borders of a given country. The influence of economic growth was found negatively significant for FDI inflows by (Marques et al. 2011); (Mehrra et al. 2015); (Akar 2016); (Abdullahi and Maji 2019); (Ergun et al. 2019); (Khan et al. 2019). On contrary, a positive relationship was found to be statistically significant between economic growth and the FDI inflow use (Azad et al. 2014), (Omri et al. 2015), (Akarsu and Gümüőođlu 2017), (Papież et al. 2018), (Chen 2018), (da Silva et al. 2018), (Belaid et al. 2019), (Alola et al. 2019), (Mengova 2019), (Khan et al. 2019), (Damette and Marques 2019), (Yahya and Rafiq 2019), and (Eren et al. 2019; Zeytoonnejad Mousavian et al. 2021; Siddikee and Rahman 2020). Moreover, Table 1 summarized the previous studies for detail review.

Table 1. Summarized Findings from Various Studies.

Sr #	Authors	Variables	Population	Period	Estimation Methods	Main Findings
1	Kumari and Sharma (2017)	Determinants of FDI	20 countries	1990–2012	Static panel	Trade openness (positive and significant).
2	Rjoub et al. (2017)	Financial reforms and FDI determinants	Sub-Saharan countries	1995–2013	Static panel	Trade openness and GDP (positive and significant).
3	Yimer (2017)	Political, macroeconomic, and institutional factors of FDI	Ethiopia	1970–2013	ARDL	Trade openness (positive and significant).
4	Pradhan et al. (2018)	Financial development, FDI, and control variables	G-20	1990–2014	Static ARDL	Financial development, economic growth (positive and significant).
5	Saini and Singhanian (2018)	FDI determinants	20 countries (developed and developing)	2004–2013	GMM	Trade openness and economic growth (positive and significant).
6	Sirag et al. (2018)	FDI, financial development, and economic growth	Sudan	1970–2014	OLS and DOLS	Financial development, economic growth (positive and significant).
7	Nasir et al. (2019)	FDI, financial development, economic growth, and climate	ASEAN region	1982–2014	Ols, DOLS, and FMOLS	Financial development (positive and significant).
8	Canh et al. (2020)	Uncertainty and FDI	21 economies	2003–2013	2 SLS panel estimation	Economic policy uncertainty (negative and significant).
9	Kurtović et al. (2020)	FDI determinants	Postcommunist economies	2007–2017	GMM	Economic growth (positive and significant).
10	Abdouli and Hammami (2020)	FDI, financial development, economic growth, and environment	Middle-East countries	1980–2014	Simultaneous equation models	Economic growth, financial development, and institutional quality (positive and significant).
11	Taşdemir (2020)	FDI determinants	MENA region	1995–2017	Static panel	Financial depth, and trade openness (positive and significant).
12	Shahbaz et al. (2021)	FDI determinants, financial development, transport infrastructure, education, and consumption	France	1965–2017	ARDL	Financial development (negative and significant).
13	Smith (2021)	FDI inflow, financial development, and uncertainty	France	2014–2020	ARDL	Financial development (positive and significant), and uncertainty, inflation (negative and significant).
14	Nguyen and Lee (2021)	FDI inflow, financial development, and uncertainty	Global	1996–2017	GMM	Financial development (positive and significant), and uncertainty and inflation (negative and significant).
15	Asamoah et al. (2022)	FDI, uncertainty, and financial development	40 African countries	1990–2018	GMM	Financial development, exchange rate, and trade openness (positive, sig), uncertainty (negative, sig).

2. Methodology

The present study requires estimating the long-run and short-run impact of three sources of financial development, institutional financial development, market financial development, and overall financial development, on FDI inflow for a panel of 53 middle-income countries in 1980–2020. Additionally, the study controls the impact of inflation, trade openness, and real growth rate for the FDI inflow in the target population. For achieving the basic objective of the study, the panel data estimation procedure in general, and more specifically, the panel ARDL method, was applied by reviewing the past literature for

this purpose. The panel data ARDL model requires $N > 25$, and $T > 25$ as the first condition. The second condition for the confirmation of this model is that a cross-sectional dependence should not be present in the data. The final and the most important condition for the application of panel ARDL is the existence of stationarity in the data at the first difference for the dependent variable and at level/first difference/mixed for the independent and control variables.

The application of the panel ARDL method requires some steps. The first step for this purpose consists of descriptive statistics which are used to summarize the data of the study. The second step is to estimate the Pearson correlation. The third step is to estimate the cross-sectional dependency. Similarly, the fourth step is to estimate the panel unit root tests. Furthermore, the fifth step is to estimate the optimal lag length for the 53 middle-income economies. Additionally, the sixth step requires estimating the panel cointegration. The final step is to estimate the panel ARDL using mean group (mg), pooled mean group (pmg), and dynamic fixed effect (dfe) along with the Hausman specification test for choosing between them. The reason for choosing the panel ARDL estimation methods was because the basic objective of the study was to estimate the long-run and short-run impact of sources of financial development on the FDI inflow for a panel of middle-income economies. The panel ARDL as a method of estimation requires estimating the long-run and short-run impact of the independent variable(s) on the dependent variable.

The dependent variable of the study was the FDI inflow, which is measured as the net inflow of FDI as a percentage of GDP. The data for this variable were available on the World Development Indicators (WDI) website in annual frequency from 1970 to 2020. Similarly, the main independent variables of the study were institutional financial development, market financial development, and overall financial development as a percentage of GDP. The data for these sources of financial development were available on the International Monetary Fund website (IMF) from 1980 to 2020. The control variables of the study were the inflation rate (with GDP deflator as an annual percentage), trade openness (trade as a percentage of GDP), and the real growth rate (real GDP in percentage). The data for these variables were available from World Development Indicators (WDI) on an annual frequency from 1960 to 2020. However, for the common basis of analysis, the data were taken from 1980 to 2020 on an annual frequency.

The basic panel data model was used in the study by following the econometric modeling as in [Nguyen and Lee \(2021\)](#), which examined the long-run relationship between financial development and FDI inflow at the global level.

$$FDI\ Inflow = \beta_0 + \beta_1(Financial\ development) + \beta_2(Inflation\ rate) + \beta_3(Trade\ Openness) + \beta_4(Real\ Growth\ Rate) + \varepsilon \quad (1)$$

To create the uniformity and normality in the data, the basic model was transformed into a log model as follows:

$$LnFDI\ Inflow = \beta_0 + \beta_1(LnFinancial\ development) + \beta_2(LnInflation\ rate) + \beta_3(LnTrade\ Openness) + \beta_4(LnReal\ Growth\ Rate) + \varepsilon \quad (2)$$

The model was then transformed into a panel data model by adding “*it*” as the subscripts, where “*i*” refers to the cross-section (countries), and “*t*” refers to the time dimension. The model was as follows:

$$LnFDI\ Inflow_{it} = \beta_0 + \beta_1(LnFinancial\ development)_{it} + \beta_2(LnInflation\ rate)_{it} + \beta_3(LnTrade\ Openness)_{it} + \beta_4(LnReal\ Growth\ Rate)_{it} + \mu_{it} \quad (3)$$

Finally, the model was transformed into a panel ARDL model to fulfill the basic requirement of the study to estimate the long-run and short-run impact of financial development sources on the FDI inflow for a panel of 53 middle-income economies.

The general panel ARDL model (p, q, q, q, q, q) was:

$$Y_{it} = \sum_{j=1}^p \lambda_{ij} Y_{i,t-j} + \sum_{j=0}^q \delta_{ij} X_{i,t-j} + \mu_i + \varepsilon_{it} \quad (4)$$

Here, Y_{it} = FDI inflow, X_{it} = $K \times 1$ vector of independent and control variables such as financial development (overall, institutional, and market), inflation rate, trade openness, and real growth rate. The independent and controlled variables are purely allowed to be stationary at level, first difference, or both. Similarly, p = optimal lag order for the dependent variable, while q = optimal lag order for the independent and controlled variables. λ_{ij} = the slope to measure the changes in the lagged dependent variables, δ_{ij} = $K \times 1$ slope coefficient for the independent and controlled variables. However, μ_i = fixed effect in the panel. Finally, ε_{it} = error term.

The parameterized panel ARDL model (P, q, q, q, q, q) was:

$$\Delta Y_{it} = \varnothing_i Y_{i,t-1} + \beta_i X_{i,t} + \sum_{j=1}^{p-1} \lambda^*_{ij} \Delta Y_{i,t-j} + \sum_{j=0}^{q-1} \delta^*_{ij} \Delta X_{i,t-j} + \mu_i + \varepsilon_{it} \quad (5)$$

The methods of estimations under the panel ARDL model are mean group, pooled mean group, and dynamic fixed effect. Pesaran et al. (1999) stated that panel ARDL estimations can be executed by considering the mixed-order stationarity for independent variables and the first-order stationarity for the dependent variable. The complete measure, data source, symbol, data availability, and reference for the measurement of this variable are reported in the following Table 2.

Table 2. Variable Measurement.

Type	Symbol	Variable Title	Measurements and (Data Source)	Data Availability	References
Outcome	FDII	Foreign direct investment	FDI net inflow as a percentage of GDP (WDI)	1970–2020	(Nguyen and Lee 2021)
Input	FIND	Financial development	Overall financial development index (FD-IMF)	1980–2020	(Rjoub et al. 2017; Shahbaz et al. 2017; Bayar and Gavriltea 2018a; Malarvizhi et al. 2018; Nguyen and Lee 2021).
	OFD	• Overall financial development	Financial institution index (FD-IMF)		
	FID	• Financial institution	Financial market index (FD-IMF)		
	MFD	• Financial market			
Control	INFR	Inflation rate	Inflation with GDP deflator as an annual percentage (WDI)	1960–2020	(Azam and Haseeb 2021; Nguyen and Lee 2021).
	TOP	Trade openness	Trade as a percentage of GDP (WDI)	1960–2020	(Azam and Haseeb 2021; Nguyen and Lee 2021).
	RGR	Economic growth	The growth rate of real GDP at an annual percentage (WDI)	1960–2020	(Azam and Haseeb 2021; Nguyen and Lee 2021)

3. Results

Table 3 indicates the summary statistics of this study in the form of mean, standard deviation, kurtosis, skewness, minimum, maximum, and the number of observations for the panel of 53 middle-income countries. The table reports that the FDI inflow had an average value of 2.04 as a percentage of GDP for the 53 middle-income economies from 1980 to 2020 with a standard deviation of 0.53. Similarly, the financial development as indicated by overall financial development, institutional financial development, and market financial development reported an average value for the study period for the target population of 0.22, 0.29, and 0.14, respectively. Furthermore, the average inflation rate from 1980 to

2020 for the target middle-income economies was 14.16 with a standard deviation of 3.23. Additionally, the trade openness estimated on average during the study period for the target population was 66.72 with a standard deviation of 40.07 as a percentage of GDP. Finally, the real growth rate indicated an average value of 3.11 with a standard deviation of 4.19.

Table 3. Descriptive Statistics.

	Mean	Std	Kurtosis	Skewness	Min	Max	N
<i>FDI inflow</i>	2.04	0.53	2.41	0.60	−9.77	15.59	2173
<i>OFD</i>	0.22	0.14	1.12	1.25	0.03	0.74	2173
<i>IFD</i>	0.29	0.13	1.18	1.12	0.04	0.76	2173
<i>MFD</i>	0.14	0.17	0.71	1.26	0.00	0.74	2173
<i>INFR</i>	14.16	3.23	4.27	1.20	−3.20	96.15	2173
<i>TOP</i>	66.72	40.07	1.26	0.86	0.00	274.97	2173
<i>RGR</i>	3.11	4.19	6.16	−0.22	−26.34	34.86	2173

Table 4 reports the correlation analysis for the variables of the study. It indicates a positive and statistically significant association between OFD and FDII, and between FID, and FDII. However, the table does not support the significance of a positive association between market financial development and FDI inflow in middle-income economies during the period of study. Additionally, the inflation rate was negatively and significantly associated with FDI inflow. Furthermore, the trade openness and real growth rate were positively and significantly associated with FDI inflow from 1980 to 2020 for middle-income economies.

Table 4. Correlation Matrix.

	<i>FDII</i>	<i>OFD</i>	<i>FID</i>	<i>FMD</i>	<i>INFR</i>	<i>TOP</i>	<i>RGR</i>
<i>FDII</i>	1						
<i>OFD</i>	0.0697 0.0012	1					
<i>IFD</i>	0.0982 0.0000	0.8606 0.0000	1				
<i>MFD</i>	0.0051 0.8132	0.8025 0.000	0.4866 0.000	1			
<i>INF</i>	−0.2037 0.0000	−0.0992 0.0000	−0.1573 0.0000	−0.0221 0.3023	1		
<i>TOP</i>	0.3072 0.0000	0.0372 0.0828	0.0935 0.0000	0.0474 0.0273	−0.2698 0.0000	1	
<i>RGR</i>	0.0435 0.0424	0.0172 0.4225	0.0156 0.4677	0.0151 0.4824	0.0182 0.3968	−0.0098 0.6479	1

An important assumption of panel data is testing the cross-sectional dependency to decide on the generation of the panel unit root test (De Hoyos and Sarafidis 2006, Sarafidis and Wansbeek 2012). If the cross-sectional dependency is present, the second generation of panel unit root is required, otherwise, the first-generation unit root such as LLU and IPS panel tests are required (Sarafidis and Wansbeek 2012). The LM test is required in case $T > N$, however, the LM test is not desirable in the case of $T < N$ (Pesaran 2021). The present study indicated $T = 41$ and $N = 53$; therefore, the LM test was not recommended. Table 5 indicates the types of tests as recommended by Pesaran (2021), as per the requirement of this study. The null hypothesis was “cross-sectional dependence”. Table 5 indicates that all three types of tests rejected the null hypothesis and we concluded that there was no cross-sectional dependency.

Table 5. Cross-Sectional Dependency.

Test	Test Statistics	<i>p</i> -Value	Decision
Pesaran	24.84	0.000	No cross-sectional dependence
Frees	4.076	0.000	No cross-sectional dependence
Friedman	244.943	0.000	No cross-sectional dependence

Table 6 reports the first-generation panel unit root test using the Levin–Lin–Chu, Im–Pesaran–Shin, and Breitung tests. The first-generation unit root tests assumed that individuals (countries) were independent of each other, and some amount of heterogeneity was accepted across these individuals (countries). The null hypothesis of these tests was that the panels contained a unit root, while the alternative hypothesis stated that the panels were stationary. The table reports that the FDI inflow, overall financial development, and financial market development were not stationary at level using the three types of panel unit root tests. However, the financial institutional development, inflation, trade openness, and real growth rate were stationary at level. Similarly, all the variables were stationary at first difference. The stationarity of the dependent variable (FDI inflow) at first difference while the stationarity of independent variables at level, and at first difference (mixed) validates the application of the panel ARDL method for the estimation of the hypothesis of the study.

Table 6. First Generation Panel Unit Root Tests.

Variables	At Levels			At First Difference		
	Levin–Lin–Chu	Im–Pesaran–Shin	Breitung	Levin–Lin–Chu	Im–Pesaran–Shin	Breitung
<i>FDI inflow</i>	−1.49	−1.98	−1.30	−4.21 ***	−4.11 ***	−5.14 ***
<i>OFD</i>	−1.84	−1.50	0.04	−5.19 ***	−5.93 ***	−4.16 ***
<i>FID</i>	−3.04 **	−2.79 *	−0.46	−4.85 ***	−3.35 ***	−3.14 **
<i>FMD</i>	−2.29	−2.93	0.32	−4.82 ***	−5.81 ***	−8.96 ***
<i>INF</i>	−5.99 ***	−13.17 ***	−9.53 ***	−8.40 ***	−26.12 ***	−23.13 ***
<i>TOP</i>	−2.62 *	−0.95	−2.48 *	−7.87 ***	−5.94 ***	−15.05 ***
<i>RGR</i>	−5.84 ***	−2.74 *	−1.78	−7.94 ***	−3.47 ***	−4.96 ***

*** Significance at 1% level. ** Significance at 5% level. * Significance at 10% level.

The optimal lag for each sampled country from the middle-income economies is reported in Table 7 as per each variable (p, q, q, q, q, q, q). The most frequent/common optimal lag between the 53 middle-income economies was chosen based on the AIC. The optimal and most frequent lag for the dependent variable FDI inflow was 1, while the lag for the OFD, FID, FM, INF, and TOP variables was also 1. The optimal and most frequent lag for the growth rate was 0.

A panel cointegration test is required to avoid spurious regression estimates. If the test shows cointegration, it means the estimates are stable. The null hypothesis is there is no co-integration. The study used Pedroni and Westerlund tests for assessing the cointegration of the panel data. Table 8 reports significant estimates for both Pedroni and Westerlund, which confirm the cointegration of the panel data.

Table 9 reports the panel ARDL estimations using pmg, mg, and dfe. The table reports the short-term and long-term impact of financial development sources (OFD, IFD, and MFD) on FDI inflow for a panel of 53 middle-income economies from 1980 to 2020. The Hausman test confirmed the consistency and efficiency of the dynamic fixed effect as the model of estimation using the panel ARDL method.

Table 7. Optimal Lag (1,1,1,1,1,0).

Countries	FDII	FD	FI	FM	INF	TOP	GRT
Algeria	1	2	2	1	1	3	4
Bangladesh	3	2	2	1	1	1	0
Bolivia	1	1	1	1	2	1	3
Botswana	1	4	4	1	1	1	3
Brazil	1	3	3	1	3	1	3
Cameroon	2	4	4	1	0	1	0
Colombia	1	1	1	2	2	1	4
Congo, Rep.	1	1	1	1	0	2	0
Costa Rica	2	1	1	1	3	2	3
Côte d'Ivoire	1	1	1	4	0	1	1
Dominican Republic	2	1	1	1	3	4	0
Ecuador	2	4	4	1	2	1	0
Egypt, Arab Rep.	1	1	3	1	1	2	0
El Salvador	2	2	2	2	1	1	3
Eswatini	2	2	3	1	2	1	1
Fiji	2	1	1	1	1	1	0
Gabon	0	1	1	1	1	3	0
Ghana	1	4	1	3	1	1	1
Guatemala	1	1	1	1	3	1	1
Guyana	1	2	2	1	1	1	1
Honduras	3	3	1	1	1	2	1
India	3	2	1	1	1	1	0
Indonesia	4	3	1	2	1	1	1
Iran, Islamic Rep.	1	1	1	2	4	3	0
Iraq	2	3	1	1	1	2	0
Jamaica	2	1	1	4	4	1	2
Jordan	2	1	1	1	1	2	0
Kenya	4	1	2	1	1	1	0
Malaysia	0	3	3	2	0	2	1
Mauritania	2	1	1	1	2	3	2
Mauritius	1	2	1	2	4	2	1
Mexico	3	3	1	2	2	1	1
Morocco	2	1	1	1	3	1	0
Myanmar	1	1	1	4	1	4	0
Nicaragua	2	2	2	1	1	1	0
Nigeria	2	4	4	1	1	1	1
Pakistan	1	4	3	4	1	1	0
Panama	1	2	2	1	1	2	1
Papua New Guinea	1	1	4	2	0	1	2
Paraguay	2	1	1	3	2	1	0
Peru	1	1	2	1	3	4	1
Philippines	1	1	4	3	4	2	2
Senegal	2	2	1	3	1	2	0
Solomon Islands	1	3	3	4	3	1	2
South Africa	3	1	4	1	2	1	2
Sri Lanka	1	1	1	1	0	1	0
Sudan	2	2	2	1	1	1	2
Suriname	3	2	2	1	1	1	1
Syrian Arab Republic	3	1	1	1	1	1	1
Thailand	1	1	4	1	1	1	0
Tunisia	1	3	1	3	2	1	3
Turkey	3	1	1	1	1	1	0
Zambia	1	1	1	1	1	1	1
Mode	1	1	1	1	1	1	0

Table 8. Panel Cointegration Test.

Pedroni Test		Statistic		Westerlund Test	
	Panel	Group			
v	0.2241		Gt	−3.100 ***	
Rho	−5.139 ***	−3.145 ***	Ga	−5.884 ***	
t	−15.43 ***	−16.18 ***	Pt	−19.573 ***	
Adf	−10.99 ***	−9.375 ***	Pa	−5.343 ***	

*** Significance at 1% level.

Table 9. Panel ARDL Estimations.

	Pooled Mean Group	Mean Group	Dynamic Fixed Effect
Long run			
OFD	0.147 (0.393)	−8.715 (31.78)	0.683 (0.748)
IFD	0.269 (0.307)	7.834 (30.50)	0.275 (0.624)
MFD	0.451 *** (0.116)	0.940 (2.092)	0.442 ** (0.198)
INF	−0.0311 (0.0444)	−0.201 ** (0.0808)	−0.152 ** (0.0750)
TOP	0.665 *** (0.131)	1.247 *** (0.412)	0.557 *** (0.141)
RGR	0.0139 * (0.0455)	0.0429 * (0.0682)	0.0275 * (0.0895)
Short run			
EC	−0.431 *** (0.0294)	−0.741 *** (0.0358)	−0.392 *** (0.0174)
ΔOF	22.83 (20.37)	34.43 (25.37)	0.0467 (0.583)
ΔIFD	25.23 (19.40)	36.23 (23.95)	0.190 (0.521)
ΔMFD	2.680 (2.503)	1.777 (3.140)	0.233 (0.158)
ΔINF	−0.0526 ** (0.0279)	−0.0479 ** (0.0270)	−0.00348 ** (0.0012)
ΔTOP	0.655 * (0.269)	0.227 (0.289)	0.0608 * (0.0389)
ΔRGR	0.0317 (0.0265)	0.0169 (0.0322)	0.0355 ** (0.0178)
Constant	−0.191 ** (0.0754)	−4.885 (11.95)	0.168 *** (0.0325)
Hausman test (MG and PMG)	3.72 (0.7142)		
Hausman test (DFE and PMG)		14.27 ** (0.0267)	
Observations	2120	2120	2120

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Estimations of panel ARDL approaches (mg, pmg, and dfe) were executed using the xtmp command in Stata. The optimal lag structure was (1,1,1,1,1,0) with the order of variables as FDI inflow, overall financial development (OFD), institutional financial development (IFD), market's financial development (MFD), inflation rate (INF), trade openness (TOP), and real growth rate (RGR). The Hausman test indicates the acceptance of a dynamic fixed effect (DFE) as the final approach in the panel ARDL method. A total number of 53 middle-income economies with an annual data range of 1980–2020 were included as a panel in the estimations.

Table 9 reports a positive but insignificant long-run as well as the short-run impact of financial institutions' development on FDI inflow for a panel of 53 middle-income economies using pmg, mg, and dfe. This finding rejected the first hypothesis and concluded that institutional financial development did not significantly contribute toward attracting the FDI inflow in the target population. The table also reports a positive and highly significant long-run impact of market financial development on FDI inflow for the target population using pmg and dfe only. However, the same could not significantly impact the FDI inflow in the short run using any of the three approaches. The long-run positive and significant impact of the financial market development on FDI inflow accepted the second hypothesis. Therefore, it was inferred from the findings that the development of the financial market strongly contributed to attracting the FDI inflow in middle-income

economies during the period of study. Similarly, a positive but insignificant impact in the long run and short run on FDI inflow for a panel of 53 middle-income economies using pmg, mg, and dfe. From the findings, we rejected the third hypothesis and we concluded that aggregate financial development did not significantly contribute to attracting FDI inflow for the target population neither in the long nor in the short run.

Table 9 also reports a negative and significant long-run impact using mg and dfe and the same negative and significant short-run impact using all three approaches of the panel ARDL method. We accepted the fourth hypothesis with the same negative and statistically significant impact in the short run and long run. From the finding, we concluded that an increase in the rate of inflation caused a decrease in the FDI inflow for the panel of 53 middle-income economies for the period of study. Furthermore, the table reports a positive and statistically highly significant impact of trade openness on FDI inflow in the long run, using pmg, mg, and dfe as the methods of estimation for the panel of 53 middle-income economies. However, the trade openness impacted positively with a weak significance in the short run on FDI inflow using pmg and dfe as the methods of estimation in the panel ARDL method. We accepted the fifth hypothesis and concluded that increasing the level of trade openness could strongly contribute to attracting FDI inflow for the target population for the period of study more strongly in the long run and weakly in the short run. Finally, the table reports a positive but weak impact of the real growth rate in the long run on FDI inflow using the pmg, mg, and dfe approaches in the panel ARDL method. However, the same impacts were positively significant using dfe in the short run on the FDI inflow. We accepted the sixth hypothesis with the same positive and significant impact of the real growth rate on FDI inflow. We concluded that the real growth rate had a weak impact in the short run and a significant impact in the long run, using dfe as the method of estimation of the FDI inflow for the selected 53 middle-income economies for the period of study.

4. Discussion

The findings from the panel ARDL estimations confirmed a positive and statistically significant impact of financial market development for attracting FDI inflow in middle-income economies from 1980 to 2020 in the long run as well as in the short run. We accepted the relevant hypothesis showing the same positive and significant relationship between both variables. However, the financial institutional development and aggregate financial development could not significantly contribute to attracting the FDI inflow in the target population. This finding of a positive and significant impact of financial market development on FDI inflow is consistent with similar evidence from several studies ([Smith 2021](#); [Nguyen and Lee 2021](#)). It infers that financial market development can have a significant role in increasing the level of FDI inflow in middle-income economies in the short run and the long run as well.

The panel ARDL method further indicated a negative and statistically significant impact of the inflation rate on FDI inflow in the long run as well as in the short run for the middle-income economies during the period of study. We accepted the relevant hypothesis showing the same negative and statistically significant relationship between both variables in the study. These findings of a negative and statistically significant impact of the inflation rate on FDI inflow is consistent with similar evidence from some studies ([Azam and Haseeb 2021](#); [Nguyen and Lee 2021](#); [Smith 2021](#); [Asamoah et al. 2022](#)). It infers that an increasing level of inflation can discourage foreign investors to invest in any host economy in the case of middle-income countries during the period of study.

The estimations also revealed a positive and highly significant impact of trade openness in the long run and a positive but weak impact in the short run on FDI inflow. We accepted the relevant hypothesis indicating a similar positive relationship between the variables of the study. These findings of a positive and significant impact, in the long run, are consistent with similar evidence from many studies ([Paul and Jadhav 2020](#); [Azam and Haseeb 2021](#); [Asamoah et al. 2022](#); [Smith 2021](#)). It infers that an increasing level of trade

openness can strongly impact FDI inflow in middle-income economies in the long run. However, the same can weakly attract FDI inflow for the target population in the short run.

Finally, the estimations confirmed a weak significant positive impact on the real growth rate in the short run but a strong positive and highly significant impact in the long run on FDI inflow for the target population using the dynamic fixed effect. We accepted the relevant hypothesis and concluded that the real growth rate could strongly attract FDI inflow in middle-income economies from 1980 to 2020 in the long run. However, the same can weakly attract FDI inflow during the short run. This finding is consistent with similar findings from several studies ([Asamoah et al. 2022](#); [Zeytoonnejad Mousavian et al. 2021](#); [Smith 2021](#); [Nguyen and Lee 2021](#); [Paul and Jadhav 2020](#)).

5. Conclusions, Recommendations, and Limitations

This study aimed to examine the long-run and short-run impact of three different sources of financial development on FDI inflow controlling the inflation rate, trade openness, and real growth rate for middle-income economies from 1980 to 2020. The data were collected from the World Development Indicators and International Monetary Fund using an annual frequency and the period of 1980–2020. The data were analyzed using descriptive statistics, a correlation analysis, a cross-sectional dependency test, a first-generation unit root test, a cointegration test, an optimal lag, and panel ARDL estimations. The estimations revealed that there was no cross-sectional dependency, with stationarity of dependent variable at first difference and independent variables at level and first difference, which validated the estimations using the panel ARDL approaches (mg, pmg, and dfe). Furthermore, the cointegration was confirmed using the Pedroni and Westerlund approaches. The optimal lag was selected using the most frequent lag length for all 53 economies in the middle-income group. The Hausman test confirmed the consistency and efficiency of the dynamic fixed effect model as the method of estimation using the panel ARDL method. The findings concluded that financial market development can have a significant role in increasing the level of FDI inflow in middle-income economies in the short run and the long run as well. It validated the resource-based theory for middle-income economies. However, financial institutional development and aggregate financial development could not significantly contribute to attracting FDI inflow in the target population. It infers that the institution-based theory of financial development is not valid for middle-income economies. Similarly, the increasing level of inflation could strongly discourage foreign investors to invest in middle-income countries as host economies during the period of study. Furthermore, an increasing level of trade openness could strongly impact the FDI inflow in middle-income economies in the long run. However, the same could weakly attract FDI inflow for the target population in the short run. Finally, the real growth rate could strongly attract FDI inflow in middle-income economies from 1980 to 2020 in the long-run period.

The findings of the study have greater practical implications for middle-income economies. The policymakers in the target population should enhance and develop their financial markets to attract foreign direct investment. Additionally, they need to make some policy guidelines for decreasing the rate of inflation and enhancing the trade openness and real economic growth for increasing the level of foreign investment in their economies. Future researchers are recommended to estimate time series ARDL for each country to critically evaluate the sources of financial development for attracting FDI inflow to middle-income nations. Additionally, the future study may also enhance the number of control variables to boost the amount of variation in the FDI inflow. Furthermore, the institutional development theory still needs to be tested and is open for further research on each individual country using a time series analysis. The findings of this study are generalized to middle-income economies due to their specific level of income. The findings can neither be applicable to higher-income economies nor lower-income economies due to a greater heterogeneity of their income dynamics.

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