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Do Tourism and Institutional Quality Asymmetrically Effects on FDI Sustainability in BIMSTEC Countries: An Application of ARDL, CS-ARDL, NARDL, and Asymmetric Causality Test

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Abstract: The motivation of the study is to investigate the nature of the relationship between institutional quality, tourism, and *FDI* in BIMSTEC nations for the period 1996Q1–2018Q4. Exploring their nature of association, the study performed several panel econometric models, namely Panel ARDL, Nonlinear ARDL, and Toda-Yamamoto causality test, with symmetric and asymmetric effects of institutional quality and tourism. The results of the Wald test confirmed the long-run asymmetric relationship between institutional quality, tourism, and *FDI*, both in the long-run and short-run. Furthermore, directional casualty established a feedback hypothesis explaining the relationship between institutional quality, tourism, and *FDI*.

Keywords: institutional quality; tourism; *FDI*; ARDL; NARDL; asymmetric-causality

1. Introduction

Foreign direct investment (*FDI*) is important for economic progress, especially for developing nations. Hence, developing nations have been keen to accept foreign investment since *FDI* bridges capital, technological expertise, and management gap between domestic and foreign firms. Thus, by allowing *FDI* in the economy, countries can spur their investment possibilities, in the top prioritized area(s), in the economy that eventually expedite the hustle of economic growth in the long run. Furthermore, in globalization, *FDI* is considered an important stimulator of productivity enhancement, technological advancement, and job creation. The study by Quazi [1] advocated that *FDI* accelerates economic growth, playing a vital role in tax revenue, foreign exchange, and development gaps in developing and transition economies.

The motivation of the study is to gauge the role of tourism and institutional development on *FDI* inflows in BIMSTEC Countries. The study implemented both symmetry and asymmetry frameworks of exploring the insight evidence in empirical assessment. The study detected that *FDI* inflows positively augmented further development in tourism and institutional quality in BIMSTEC countries. BIMSTEC is a sub-regional organization comprised of seven South and Southeast Asian nations. Its mission is to foster economic growth, accelerate social advancement, and foster cooperation on issues of mutual concern in the Bay of Bengal. The underlying motivation for selecting BIMSTEC as a panel is sharing the common economic dynamics and economic integration.

Acknowledging the potential effects of *FDI* in the economy, a growing number of studies were performed targeting to discover the key determinants of *FDI* inflows. Empirical literature signifies several macro fundaments including, level of economic development [2,3], financial markets development [4–6], human capital [7–9], quality infrastructure [10], size of the market [11,12], the infrastructure of the host country [13], interest rate [14], the exchange rate [15], inflation [16], trade openness and domestic investment [17], good governance [18], and so on.

The novelty of this study lies in the following actualities. First, in the study, the effect on *FDI* will be investigated by considering the three aspects. As part of the contributions of this study, we employ three dependent variables—flows of *FDI* (% of GDP) and stock of *FDI* and *FDI* volatility. The volatility of *FDI* is measured by the variance of *FDI* following Buchanan et al. [19]. The underlying motivation for selecting three proxies so that broad aspects of the empirical nexus can be investigated and side-by-side unleash conclusive evidence. Second, the long and short-run magnitude of tourism and institutional quality on *FDI* will be investigated applying both PGM-ARDL and CS-ADRL. Third, to our best knowledge, for the first time, asymmetric effects of institutional quality and tourism on *FDI* were investigated by following a nonlinear framework imitated by Shin et al. [20]. Finally, the directional relationship between institutional quality, tourism, and *FDI* is to be assessed by following the non-granger causality framework proposed by Toda and Yamamoto [21] with symmetric and asymmetric effects of institutional quality and tourism in the empirical equation.

Study findings revealed that both institutional quality and tourism positively influence the inflows of *FDI*, especially in the long run. These findings have been confirmed by both panel ARDL and CS-ARDL estimation. Referring to asymmetry assessment, the study findings revealed that the results of the Wald test, both in the long-run and short-run, are statistically significant, implying the presence of an asymmetric relationship between institutional quality, tourism, and *FDI* in BEMISTEC countries during 1996–2018. Furthermore, the causality test disclosed the feedback hypothesis for explaining the causality between institutional quality, tourism, and *FDI* symmetry. The asymmetric casualty tests recognized bidirectional casualty running between negative shocks in institutional quality, tourism, and *FDI*. However, unidirectional causality runs from *FDI* to positive shocks in institutional quality and tourism, respectively.

The paper is structured as follows. Section 2 deals with the empirical literature survey on the nexus between institutional quality, tourism, and *FDI*. Data sources, descriptions of variables, and econometric methodologies are explained in Section 3. Empirical models estimation and their interpretation are reported in Section 4. Finally, summary findings and policy implications are displayed in Section 5.

2. Literature Review

2.1. Nexus between Tourism and FDI

According to existing literature, two lines of evidence are available focusing on the nexus between *FDI* and Tourism. First, *FDI*-led tourism development, suggesting that foreign investors assist a nation in increasing tourism by upgrading tourist attractions and transportation and lodging facilities such as airports and hotels [22–24] and tourism-led *FDI* in the economy [25,26].

International tourism has been one of the world's fastest expanding industries and a significant source of foreign revenue for many nations [27]. Moreover, its effect on a country's economy is often measured in terms of GDP growth. An economy's potential to profit from tourism is contingent upon the availability of (international) money to invest in infrastructure development, particularly transportation and lodging services. In recent years, the tourism industry has risen to become a primary industry, generating an increasingly significant source of foreign money needed to fund development. There are significant impacts on the economy when it comes to tourism growth. While tourism's advantages are not confined to a certain segment of society, the breadth of the population that they reach is greater than those benefits derived from other sectors of the economy [28]. The growth of the tourism industry expedites economic growth, offering employment and sources of income, which eventually increase the standard of living in society. The important role of tourism development in economic prosperity in literature is based on the tourism-led growth hypothesis [29,30]. Tourism development, especially in developing nations, only accelerates export earning with manufacturing industries and assists the services industry to thrive with employment opportunities. Tourism-related sectors are anticipated to see greater inflows of foreign direct investment (*FDI*) as a result of an increase in tourism [29]. Thus, under this assumption, tourism-related *FDI* is considered a key mechanism for economic growth [31].

Referring to tourism-led *FDI*, empirical studies have produced three-line findings. The first line of research established positive effects running from Tourism to *FDI*. In this regard, supporting the demand leading hypothesis, that is, tourism augments the inflows of *FDI* in the host economy, see, for instance, Perić and Radić [32], Katircioglu et al. [33]; Kaur and Sarin [34], Tomohara [31]. On the other hand, the supply leading hypothesis was also established in empirical studies, which suggests that foreign direct investment accelerates tourism development by allowing expansion growth see, for instance, Vorley [35], Ivanovic et al. [36], Siddiqui and Siddiqui [37], Arain et al. [38] and, Arain, Sharif, Akbar, and Younis [38].

The second line of thought supports the "feedback hypothesis", that is, bidirectional causality running between Tourism-*FDI* see, for instance, Arain, Sharif, Akbar and Younis [38]; Satrovic [39]; Salleh et al. [40], Sokhanvar [24]. Finally, the neutral relationship is also observed in the literature; it implies that tourism does not play any role in augmenting the recipients of *FDI* in the host economy. See, for instance, Khoshnevis Yazdi and Shakouri [41].

Samimi, Sadeghi, and Sadeghi [29] conducted a study investigating the role of tourism on *FDI* inflows in Japan data for the 1996–2011 period by utilizing the system GMM estimation. The study findings document the supporting evidence favoring tourism-led *FDI* in Japan. The study findings postulated that increased incoming international tourism has spillover effects that extend beyond the tourism-related industries to other sectors. Further evidence is available in the study of Chang and Chang [42]. The study suggests that growth in inbound tourism can boost *FDI* inflows to tourism businesses and *FDI* inflows to other sectors. The summary of the literature survey is displayed in Table 1. In other words, flourishing inbound tourism may have spillover effects on non-tourism industries.

Table 1. Summary of literature survey.

Author	Time	Country	Methodology	Effects	Causality
Panel-A: Based on Time series					
Perić and Radić [32]	2000 to 2012	Croatia	VAR, TYC	VE+	
Arain et al. [43]	1995 to 2017	China, Russia, Mexico, Spain, and Turkey	GCT	VE−	←→
Katircioglu [44]	1970 to 2005	Turkey	ARDL	VE+	T→*FDI*
Kaur and Sarin [34]	1991 to 2014	India	VAR, GCT	VE+	→
Satrovic and Muslija [45]	1995 to 2015	Turkey	VAR, GCT	VE+	←→
Khoshnevis Yazdi et al. [46]	1985 to 2013	Iran	GCT, ARDL, VAR, VECM	VE+	←→
Sanford, Jr. and Dong [47]	1988 to 1997	USA	TOBIT Model	VE+	
[48]	1995 to 2008	India, China, Pakistan, Russia	Cobb-Douglas production function	VE−	
Salleh, Othman and Sarmidi [40]	1978 to 2008	Malaysia, Singapore, Thailand, China, and Hong Kong	ARDL	VE+	T←→*FDI*
Arain, Han, Sharif, and Meo [43]	1995 to 2017	France, Germany, Italy, the United Kingdom, and the United States	QQ method, Granger causality test	VE+	←→
Muckley [49]	1970 to 2007	Northern Ireland	Granger causality tests	VE−	←→

Table 1. *Cont.*

Author	Time	Country	Methodology	Effects	Causality
Vorley [35]	1990 to 2006	Congo, South Sudan, River Nile, Uganda's West Nile	Graphical representation	VE+	
Ivanovic, Baresa and Bogdan [36]	1993 to 2010	Croatia	Graph	VE+	
Siddiqui and Siddiqui [37]	1979 to 2017	Pakistan	VAR, MARDL, MVECM	VE+	→
Arain, Han, Sharif, and Meo [43]	1995 to 2017	France, Germany, Italy, the United Kingdom, and the United States	QQ method, Granger causality test	VE+	→
Buckley and Geyikdagi [50]	1980 to 1994	Turkey	Theories and explanation.	VE+	
Ma et al. [51]	1983 to 2017	China	Granger causality test, TVP-VAR	VE+	←→
Selvanathan et al. [52]	1995 to 2007	India	VAR	VE+	→
Ravinthirakumaran et al. [53]	1978 to 2015	Sri Lanka	VAR, ARDL, Granger causality test	VE+	→
Subbarao [54]	2000 to 2007	India	Bar diagram data representation	VE+	
Van Parys and James [55]	1997 to 2007	Caribbean	Theories and explanation.	VE+	
Perić and Radić [56]	2000 to 2012	Croatia	ADF test	VE+	→
Bezuidenhout and Grater [57]	2003 to 2012	Africa	Graphical Representation	VE+	←→
Chen [58]	2006 to 2008	China	Graphical Representation	VE+	
Ivanovic, Baresa and Bogdan [36]	1993 to 2009	Croatia	Bar diagram data representation	VE+	
Sharma et al. [59]	1990 to 2007	India	Data representation and discussion	VE+	
Simatupang and Chik [60]	2006 to 2012	Indonesia Sumatra utara	Regression analysis	VE+	←→
Willem te Velde and Nair [61]	1997 to 2003	Caribbean	OLS estimator	VE+	
DALY et al. [62]	1980 to 1993	Australia, Japan	Graphical representation	VE+	
Satrovic and Muslija [45]	1995 to 2015	Turkey	VAR, Granger causality test	VE+	←→
Category B: Based on Panel data					
Fereidouni and Al-mulali [25]	1995 to 2009	OECD Countries	ADF test, Granger cointegration test, Granger causality test	VE+	←→
Barrowclough [63]	2006	39 Small Island Developing States	Bar diagram representation	VE+	
Tomohara [31]	1996 to 2011	Japan	ARDL, GMM	VE+	→
Samimi, Sadeghi and Sadeghi [29]	1995 to 2008	Developing Countries	VECM, PP, ADF	VE+	←→
Peric and Niksic Radic [64]	1995 to 2010	Developing Countries	Graphical Representation	VE+	
Işik [65]	1980 to 2012	D7 Countries	ADF	VE+	→
Fortanier and Van Wijk [66]	123 hotel sample from 2006	Sub-Saharan African countries	Regression analysis	VE+	

Table 1. *Cont.*

Author	Time	Country	Methodology	Effects	Causality
Khoshnevis Yazdi et al. [67]	1995 to 2014	EU countries	ARDL, VAR, ECM	VE+	
Fayissa et al. [68]	1990 to 2005	Latin American countries	GMM	VE+	←→
Sokhanvar [24]	1971 to 2010	Europe	VAR, ARDL	VE−	←→
Phung-Tran and Trang-Le [69]	1980 to 2012	Italy, Spain, Germany, Turkey, and the United Kingdom	Granger causality analysis	n/a	→
Tomohara [31]	1996 to 2011	Japan	GMM	VE+	
Category C: Papers based on Bangladesh					
Das and Chakraborty [70]	2004 to 2010	Bangladesh	GDP Growth Representation	VE+	
Hassan et al. [71]	1991 to 2010	Bangladesh	Graphical analysis of GDP	VE+	
Aktar et al. [72]	2004 to 2010	Bangladesh	VAR	VE+	
Chowdhury and Shahriar [73]	Fully conceptual	Bangladesh	Conceptual	VE+	→

Sources: authors' accumulation. Note. ←→ for bidirectional causality and ←/→ of unitdirectional causality.

2.2. Institutional Quality and FDI Nexus

In recent research, the institutional quality of a host nation has gained increasing attention as one of the major factors in foreign capital investment decisions. Institutional factors such as legal and political systems are considered critical in reducing the risk of opportunism in foreign direct investment (*FDI*). Furthermore, less corruption and a fair, reliable, and efficient bureaucracy assist in attracting foreign direct investment. Nexus between institutional quality and *FDI* has been investigated extensively in the empirical literature, and a growing number of researchers have confirmed positive associations, including Bouchoucha and Benammou [74]; Masron and Abdullah [75]; Masron and Naseem [76]; Shah et al. [77]. Quality institutions, according to Hall and Jones [78], accelerate the growth phenomena by encouraging private investments and improving the overall efficiency of the economic system. The theoretical literature supports the importance of efficient and well-performing institutions in disciplining economic actors' conduct and enacting rules and regulations that restrict opportunism and foster transactional trust in financial transactions, thus increasing foreign investor confidence and *FDI* inflows. In a study by Globerman and Shapiro [79], they contended that stronger institutions may benefit *FDI* inflows by creating favorable conditions for foreign investors. Additionally, they discovered that various metrics of governance quality had a somewhat varied effect on *FDI* inflows. The study of Masron [80] advocated that although raising IQ is a good thing, it does not always translate into greater *FDI*. That is, IQ is a required but not sufficient condition for *FDI* inflows. Ongoing efforts to strengthen ASEAN economies should improve labor markets, natural resource supply stability, and physical infrastructure.

Possessing quality institutions in the economy, countries can have experienced additional benefits for receiving *FDI* in various ways. First, quality institutions and productivity are interlinked in the long run, and the possibility of achieving higher productivity encourages foreign investors to invest in the economy. Second, an unfavorable institutional environment may raise the cost of conducting business. Corruption, for example, may discourage investment by raising the cost of conducting business. Third, since *FDI* entails a large sunk cost, it is susceptible to uncertainty, particularly caused by poor government efficiency. Improper contract enforcement, for example, may raise uncertainty about future returns and, as a result, have a detrimental impact on investment.

Regarding IQ and *FDI* nexus, another group of researchers has observed the adverse association [19,81–83]. In the study of North [84], the study findings postulated that inefficient institutions are responsible for increasing the production costs through disrupting the supply chain, and excessive formalities in obtaining permits can significantly increase production costs.

However, the empirical literature has also exposed neutral effects running between IQ and *FDI*, see [85–87]. Furthermore, the indirect effects of institutional quality on *FDI* inwards are also investigated and established in empirical studies such as human capital, healthy labor force, and the quality of public facilities to promote *FDI* [88]. The study of Michael Michael et al. [89] investigated the moderating effects of institutional quality on inflows of *FDI* in 40 countries in the Sub-Saharan African region over the period from 1996 to 2011. The study findings revealed that institutional quality augmented the inflows of *FDI* by reducing the negative effects of macroeconomic uncertainty. The summary of survey literature is displayed display in Table 2.

Table 2. Summary of literature survey.

Authors	Location	Time	Methodology	Causality
Category A: Based on Time series				
Haile and Assefa [90]	Ethiopia	1974–2004	ADF test	
Ramirez [91]	Not specified	1960–2001	VECM	
Nasrin et al. [92]	Bangladesh	1998–2007	GR	
Esew and Yaroson [93]	Nigeria	1980–2011	VECM	→
Fadhil and Almsafir [94]	Malaysia	1975–2010	ADF	→
Shah, Ahmad, and Ahmed [77]	Pakistan	1980–2012	ARDL	←→
Nguyen and Cao [95]	Vietnam	1996–2011	H-Test	
Hussain and Haque [96]	Bangladesh	1973–2014	VECM analysis	→
Mahmood [97]	Bangladesh	1975–2015	ADF	←→
Category B: Based on Panel data				
Chowdhury and Mavrotas [98]	2 countries	1969–2000	ADF test	←→
Busse and Hefeker [99]	83 developing	1984–2003	GMM	
Hyun [100]	62 developing	1984–2003	System GMM	←→
Mina [101]	6 GCC countries	1980–2002	OLS	
Kostevc et al. [102]	24 transition economies	1995–2002	RA	
Bénassy-Quéré et al. [103]	37 OECD countries	1985–2000	RA	
Daude and Stein [104]	34 countries	1982–2002	OLS	
Rose-Ackerman and Tobin [105]	63 countries	1991–2000	RA	
Hattari and Rajan [106]	24 countries	1990–2005	RA	
Ali et al. [107]	69 countries	1981–2005	RA	
Shahadan et al. [108]	6 Asian countries	2004–2013	OLS method	
Masron and Abdullah [75]	8 ASEAN	1996–2008	OLS	
Fukumi and Nishijima [109]	19 countries	1983–2000	OLS	
Bissoon [110]	45 developing	1996–2005	OLS	
Buchanan Le and Rishi [19]	164 countries	1996–2006	OLS	→
Tun et al. [111]	77 countries	1981–2005	System GMM	
Asiedu [112]	99 developing	1984–2011	System GMM	→
Dang [113]	60 provinces of Vietnam	2006–2007	OLS, GMM	
Fiodendji [114]	30 African countries	1984–2007	ADF	
Cristina and Levieuge [115]	94 developing	1984–2009	PSTR	
Masron and Nor [116]	10 ASEAN countries	2002–2010	ADF	
Herrera-Echeverri et al. [117]	87 countries	2004–2009	RA	
Jude and Levieuge [118]	94 developing countries	1984–2009	PSTR Model	
Asamoah et al. [119]	40 countries	1996–2011	ADF Test	
Kurul and Yalta [120]	113 developing	2002–2012	OLS method	
Kurul [121]	126 countries	2002–2012	System GMM	
Jude and Levieuge [122]	93 developing	1984–2009	System GMM	→
Bokpin et al. [123]	49 African countries	1980–2011	System GMM	
Aziz [124]	16 Arab countries	1984–2012	System GMM	
Van Bon [125]	43 countries	2005–2012	System GMM	→
Asiedu [112]	99 developing	1984–2011	System GMM	→

Source: Authors' accumulation. Note. ←→ for bidirectional causality and ←/→ of unitdirectional causality.

2.3. The Motivation of the Study and Proposed Hypothesis of the Study

Concerning the literature survey, it is apparent that many empirical studies have already been conducted by taking account of several macroeconomic fundamentals with time series and panel data. However, the nexus between institutional quality, tourism, and *FDI* is yet to be investigated, and their possible asymmetry is still undiscovered in the empirical literature.

Furthermore, it is obvious that directional causality is investigated extensively; however, their asymmetric causality relationship is yet to be unleashed. Therefore, with this study, for the first time, the possible asymmetric relationship between Tourism and *FDI* will be investigated by applying the nonlinear framework propose by Shin, Yu, and Greenwood-Nimmo [20] in panel form, and asymmetric directional causality will be assessed by following Toda and Yamamoto [21] causality test with the asymmetry of tourism in the equation. It is expected that the current research findings will contribute towards fulfilling the existing research gap and put another view for explaining the nexus between institutional quality, tourism, and *FDI* that is asymmetry effects. Figure 1 displays the conceptual and hypnotized empirical model for hypothesis testing.

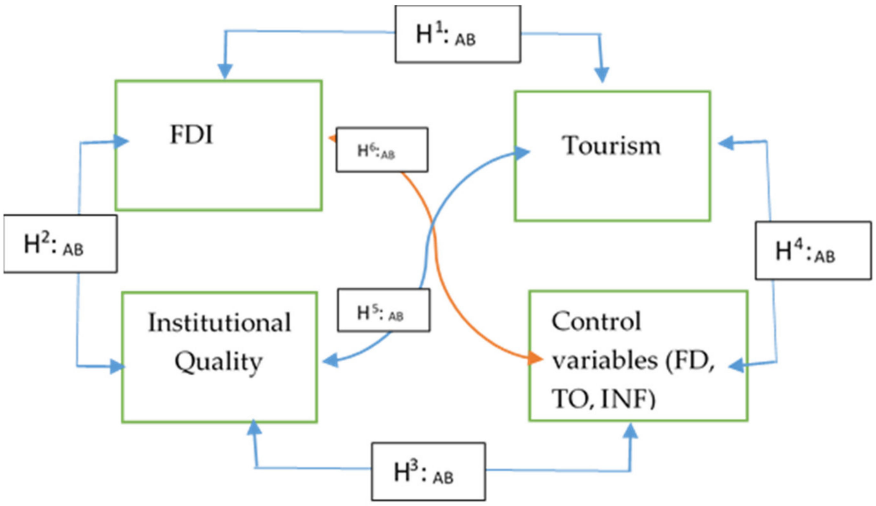

Figure 1. Conceptual and Hypnotized model for hypothesis testing. H^1: $_{AB}$: *FDI* granger causes Tourism and vice versa; H^2: $_{AB}$: *FDI* granger causes Institutional Quality and vice versa; H^3: $_{AB}$: Institutional Quality granger causes C and vice versa; H^4: $_{AB}$: Tourism granger causes Control variables and vice versa; H^5: $_{AB}$: Institutional quality granger causes Tourism and vice versa; H^6: $_{AB}$: *FDI* granger causes Control variables and vice versa.

3. Data and Methodology of the Study

To investigate the dynamic relationships between institutional quality, tourism, and *FDI*, this study considers annual panel data from 1996Q1 to 2018Q4. Except for the proxy variables of institutional quality, all the relevant data were collected from the World D evelopment Indicator published by World Bank. Furthermore, the proxy variables of tourism were collected from Worldwide Governance Indicators (WGI). All the research variables were transformed into a natural log before estimation.

As a dependent variable of the study, the study employed three different proxies, that is, flows of *FDI*, (% of GDP) and stock of *FDI*. The volatility of *FDI* is measured by the variance of *FDI* following [19]. The motivation for selecting three proxies is to explore comprehensive and conclusive evidence so that the study findings can contribute substantially to future literature development on the purported topic.

3.1. Tourism

Gauging tourism effects on *FDI*, in the empirical estimation, it is observed that two measures were used extensively. First, international tourism receipts in current

USD [46,126,127]. Second, International tourist arrival is measured by the number of tourism visitors/million People, see for instance [29,69,128]. However, a growing number of researchers emphasized using international tourism receipts as a proxy for tourism in the empirical estimation, and this study is on the same trajectory.

3.2. Institutional Quality

Measuring institutional quality in the empirical literature, two lines of thought are available. A growing number of empirical studies have utilized a single proxy for IQ in these respective studies see, for instance, Aizenman and Spiegel [129]; Levchenko [130]; Habib and Zurawicki [131]; Wijeweera and Dollery [132]. The second line of empirical findings have been suggesting the use of index measures for institutional quality, which is constructed by taking into account the indicators from World Governance Indicators [133] with the application of Principal component analysis see for an instance Le et al. [134]; Qamruzzaman, Tayachi, Mehta, and Ali [18]; Daude and Stein [104]. In regards to institutional quality measurement, the present study follows the second line of under sting that is the use of the institutional quality index following Qamruzzaman, Tayachi, Mehta, and Ali [18]; Asamoah, Adjasi, and Alhassan [119]; Buchanan, Le, and Rishi [19]. The pair-wise correlation of six indicators of WGI is displayed in Table 3 and the output of PCA is reported in Table 4.

Table 3. Pair-wise correlation of Institutional quality proxies (WGI).

	v	**ps**	**GE**	**RQ**	**L**	**CC**
v	1					
ps	0.725652	1				
GE	0.518462	0.582931	1			
RQ	0.678391	0.640665	0.73532	1		
L	0.709744	0.509499	0.879439	0.799107	1	
CC	0.338795	0.725775	0.837552	0.492579	0.792911	1

Source: Authors' estimation.

Table 4. Principle component analysis.

	Eigenvalues: (Sum = 6, Average = 1)				
Number	Value	Difference	Proportion	Cumulative Value	Cumulative Proportion
v	2.252428	1.188895	0.3754	2.252428	0.3754
ps	1.063533	0.067749	0.1773	3.315961	0.5527
GE	0.995784	0.213037	0.1660	4.311745	0.7186
RQ	0.782747	0.177102	0.1305	5.094493	0.8491
L	0.605645	0.305782	0.1009	5.700137	0.9500
CC	0.299863	-	0.0500	6.000000	1.0000
	Eigenvectors (loadings):				
Variable	PC 1	PC 2	PC 3	PC 4	PC 5
v	0.268545	0.557438	−0.360042	0.689054	−0.091162
ps	0.568638	−0.120562	0.254088	−0.086339	−0.172971
GE	0.515108	−0.076211	−0.212609	−0.280558	−0.594712
RQ	0.392958	−0.301011	0.536961	0.451578	0.314848
L	0.146198	0.755777	0.439561	−0.400875	0.182049
CC	0.404239	−0.084337	−0.528267	−0.272791	0.689795

Source: Authors' estimation.

As a result, following existing literature, see, for instance, Asamoah and Alagidede [135], Globerman and Shapiro [88], the study performed principal components of the six indicators of governance employing factor analysis and construct instructional quality index (IQ). The results of PCI are exhibited in Table 4.

Apart from the target variables, following existing literature see Carkovic and Levine [136] and Hayat [137], the study considers a list of control variables for robustness in empirical estimation such as trade openness (TO) measured by the sum of export and import as a percentage of GDP. Domestic investment (DI) is measured by gross capital formation as a percentage of GDP, inflation (INF) is measured by consumer price index and money supply (M) which is proxied by Broad money as a percentage of GDP.

Considering all proxies representing *FDI* in the empirical equation, the generalized empirical model in panel form can be represented in the following Equations (1)–(3), and different methodologies will be applied for assessment purposes.

$$FDI_{it} = \alpha_t + \beta \text{Inst}_{it} + \gamma \text{Tour}_{i,t} + \mu X_{it} \partial_{i,t} + \varphi_{it} \tag{1}$$

$$FDI\_stock_{it} = \alpha_t + \beta \text{Inst}_{it} + \gamma \text{Tour}_{i,t} + \mu X_{it} \partial_{i,t} + \varphi_{it} \tag{2}$$

$$FDI\_volatility_{it} = \alpha_t + \beta \text{Inst}_{it} + \gamma \text{Tour}_{i,t} + \mu X_{it} \partial_{i,t} + \varphi_{it} \tag{3}$$

The subscripts i and t denote the sample countries (i = 1, 2,..., N) and months (t = 1, 2, . . . , T), respectively. *FDI*, *FDI*_stock, and *FDI*_volatility. *FDI* are inflows of *FDI* as % of GDP, *FDI* stock as a % of GDP and *FDI* volatility is measured by five years standard deviation. Inst indicates a composite index of institutional quality, and Tour represents international tourism receipts. X_{it} for a group of control variables in the equation, which includes trade openness (TO), money supply (M), domestic investment (DI), and inflation (INF), respectively. The results of the descriptive statistics are exhibited in Table 5.

Table 5. Descriptive statistics.

	FI	FS	FV	IQ	TOR	DI	M	TO	INF
Mean	1.629	2.149	0.602	−0.528	3.006	3.431	4.054	3.956	1.607
Median	1.188	2.36	0.317	−0.519	2.987	3.358	4.059	3.919	1.757
Maximum	6.842	4.129	3.381	0.443	3.199	4.238	4.844	4.939	2.768
Minimum	−0.191	−0.357	0.032	−1.943	2.747	2.937	2.965	−1.787	−1.67
Std. Dev.	1.471	1.128	0.698	0.574	0.107	0.281	0.412	0.865	0.703
Skewness	1.431	−0.211	2.071	−0.82	0.106	0.892	−0.044	−4.296	−1.724
Kurtosis	4.889	2.151	7.213	3.417	2.049	3.228	2.557	29.249	7.718
Jarque-Bera	62.795	4.796	186.209	15.275	5.056	17.258	1.086	4068.603	182.147

Source: Authors' estimation.

3.3. Estimation Strategies

3.3.1. Cross-Sectional Dependency Test

The cross-section dependence test is critical in panel data empirical research, particularly when representative nations have similar economic features, such as emerging countries, growing economies, and transition countries. A similar economy is vulnerable to the impacts of any shock in other countries due to trade internationalization, financial integration, and globalization. As a consequence, cross-sectional dependency analysis is often needed in empirical research using panel data. According to existing literature, a number of CSD tests have emerged and been applied for detecting the presence of common dynamics in research units, such as LM_{BP} test was offered by Breusch and Pagan [138], and the test statistics can be derived with the following equation:

$$y_{it} = \alpha_i + \beta_i x_{it} + u_{it} \tag{4}$$

$$i = 1 \ldots \ldots N, t = 1 \ldots \ldots T$$

where y_{it} , x_{it} stands for dependent and independent variables and the subscript of t, and i represent cross-section and period, respectively. Under the circumstance of larger cross-section units in the model, the LM_{BP} test cannot handle the issue. Overcoming the present limitation Pesaran [139] proposed the following modified Lagrange multiplier (CD_{lm}) for examining cross-sectional dependency among research units:

$$CD_{lm} = \sqrt{\frac{N}{N(N-1)}} \sum_{I=1}^{N-1} \sum_{J=i+1}^{N} \left(T\hat{\rho}_{ij} - 1\right) \tag{5}$$

The empirical model with larger N relative to T, CD_{lm} estimation incapacity to manage this issue and resolve the limitation in CF_{lm}, Pesaran [140] offered the following CD test for the situation with larger N than T.

$$CD_{lm} = \sqrt{\frac{2T}{N(N-1)}} \sum_{I=1}^{N-1} \sum_{J=i+1}^{N} \left(\hat{\rho}_{ij}\right) \tag{6}$$

Finally, Pesaran et al. [141] familiarized the improved version of CD_{lm} test known as the bias-adjusted LM test, and the test statistics can be derived using the following equation:

$$CD_{lm} = \sqrt{\frac{2}{N(N-1)}} \sum_{I=1}^{N-1} \sum_{J=i+1}^{N} \left(\frac{(T-K)\hat{\rho}_{ij}^{2} - u_{Tij}}{v_{Tij}^{2}}\right) \vec{d}\,(N,0) \tag{7}$$

where K refers to the number of regresses, u_{Tij} and v_{Tij}^2 specifies the mean and variance of $(T-K)\hat{\rho}_{ij}^2$, respectively.

3.3.2. Panel Unit Root Tests

The study performed several unit root tests to discover the properties of the variable, especially with cross-sectional dependency. Second generation panel unit root tests introduced by Pesaran [142], commonly known as *CADF* and *CIPS* and have been extensively utilized see [143–145]. The Dickey–Fuller Sectional Augmented Statistics (*CADF*) can be expressed as:

$$\Delta X_{it} = \mu_i + \theta_i X_{i,t-1} + \gamma_i \overline{X}_{t-1} + \sum_{k=1}^{p} \gamma_{ik} \Delta X_{i,k-1} + \sum_{k=0}^{p} \gamma_{ik} \overline{\Delta X}_{i,k-0} + \tau_{it} \tag{8}$$

where $Y_{it} - 1$ and $\overline{y}_{t-1}$ stands lagged level average and first difference operator for each cross-section, the *CIPS* unit root test displays in Equation (9).

$$CIPS = N^{-1} \sum_{i-1}^{N} \partial_i(N,T) \tag{9}$$

where the parameter $\partial_i(N,T)$ explain the test statistics of *CADF*, which can be replaced in the following manner:

$$CIPS = N^{-1} \sum_{i-1}^{N} CADF \tag{10}$$

3.3.3. Panel Cointegration Test

The present research used several panel cointegration tests following Pedroni Pedroni [146,147], Kao [148] and the bootstrap panel cointegration method developed by Westerlund [149] to find the evidence of a long-run relationship between variables. The Bootstrap panel cointegration technique is more advantageous if each cross section is composed of condensed time series. Because traditional methods do not take CD into account, they accept the null hypothesis of no cointegration even in the presence of CD.

3.4. Pooled Grouped Mean Estimation

For detecting the impact of tourism and institutional quality on *FDI* inflows, the study considered Panel ARDL familiarized by Pesaran et al. [150], which is capable of identifying both long-run and short-run coefficients in empirical assessment. The first fundamental assumption of PGM is that the error correction term is free from correlation dependency and is normally distributed by regressors. Additionally, the dependent and explanatory variables are related throughout time, which means there will be a long-term correlation between them; finally, the long-term parameters will stay consistent across nations. Pesaran proposed the following ARDL (*p*, *q* . . . . *n*) as an empirical structure:

$$FDI_{it} \ = \ \epsilon_{it} + \sum_{j\ =\ 1}^{p} \beta_{ij} FDI_{i,t-j} \ + \ \sum_{j=0}^{q} \gamma_{ij} X_{i,t-j} \ + \ \epsilon_{it} \tag{11}$$

where,

$$\epsilon_{it} = \omega_t' G_t + \varepsilon_{it} \tag{12}$$

$$X_{i,t-j} = \alpha_i + \beta_{ij} FDI_{\ i,t-j} \ + \ \omega_t' G_t \ + \ \mu_{it} \tag{13}$$

Following Pesaran, Shin, and Smith [150], the following empirical model is used to detect the association between *FDI*, tourism, and institutional quality in panel assessment.

$$\Delta FDI_{it} = \alpha_i + \xi_i \left(FDI_{it-1} - \omega_t' X_{it-1} \right) + \sum_{J=1}^{M-1} \gamma_{iJ} \Delta FDI_{it-J} + \sum_{J=0}^{N-1} \beta_{ij} \Delta X_{it-J} + \mu_{it} \tag{14}$$

where
$\xi_i = -1(1 - \sum_{j-1}^{M} \gamma_{iJ})$, $\omega_t' = \xi_i^{-1} \sum_{j=0}^{N} \beta_{ij}$, $\gamma_{i,j}^{*} = -\sum_{I=J+1}^{M} \gamma_{il}$ for J = 1, 2, ..*M-l*, and $\beta_{i,j}^{*} = -\sum_{I=J+1}^{N} \beta_{il}$ for J = 1, 2, ..*N-l*. $(FDI_{it-1} - \omega_t' X_{it-1})$.

Specify the long-run relationship between foreign direct investment and explanatory variables such as institutional quality, tourism, and a list of control variables. The long-run coefficient denoted by $\overline{\omega} i$; and the speed to the recovery of short-run disequilibrium is explained by the vector of ξi the remaining coefficient (i.e., $\gamma_{i,j}^{*}$, β_{ij}) in Equation (14) represent the short-run dynamics.

3.5. Cross-Sectional ARDL

The presence of cross-sectional dependency among research units has raised inconsistency with traditional panel regression estimation. Thus Chudik and Pesaran [151] proposed an advanced, econometrics technique known as the Common Correlated Effects (CCE) approach for gauging the relationship with panel data, which is the extension of Pesaran [140]. Following the proposed framework, the generalized empirical model is as follows:

$$\overline{FDI}_{it} = \overline{\alpha}_{it} + \sum_{j=1}^{p} \overline{\beta}_{ij} \overline{FDI}_{i,t-j} + \sum_{j=0}^{q} \overline{\gamma}_{ij} \overline{X}_{i,t-j} + \overline{\omega}_t' G_t + \overline{\epsilon}_{it} \tag{15}$$

where, $\overline{\alpha}_{it} = \frac{\sum_{i-1}^{N} \alpha_i}{N}$

$$\overline{FDI}_{t-j} = \frac{\sum_i^N FDI_{i,,\ t-j}}{N}, \ \overline{\beta}_j = \frac{\sum_i^N \beta_{i,\ j}}{N} \quad j = 0, 1, 2 \quad p \tag{16}$$

$$\overline{X}_{t-j} = \frac{\sum_i^N X_{i,,\ t-j}}{N}, \ \overline{\Upsilon}_j = \frac{\sum_i^N \Upsilon_{i,\ j}}{N}, \ J = 0, 1, 2 \quad q \tag{17}$$

$$\overline{\overline{\omega}}_j = \frac{\sum_{i=1}^{N} \omega_i}{N}, \ \overline{\varepsilon}_t = \frac{\sum_i^N \epsilon_{i,\ t}}{N} \tag{18}$$

$$
\begin{aligned}
FDI_{it} &= \overline{\alpha}_{it} + \sum_{j=1}^{p} \overline{\beta}_{ij}\overline{FDI}_{i,t-j} + \sum_{j=0}^{q} \overline{\gamma}_{ij}\overline{X}_{i,t-j} + \overline{\omega}'_t G_t \\
&\downarrow \\
\overline{\omega}'_t G_t &= \overline{FDI}_{it} - \overline{\alpha}_{it} + \sum_{j=1}^{p} \overline{\beta}_{ij}\overline{FDI}_{i,t-j} + \sum_{j=0}^{q} \overline{\gamma}_{ij}\overline{X}_{i,t-j} \\
&\downarrow \\
G_t &= \overline{FDI}_{it} - \overline{\alpha}_{it} + \sum_{j=1}^{p} \overline{\beta}_{ij}\overline{FDI}_{i,t-j} + \sum_{j=0}^{q} \overline{\gamma}_{ij}\overline{X}_{i,t-j} \Big/ \overline{\omega}'_t
\end{aligned} \tag{19}
$$

Thus, the Panel CS-ARDL specification of Equation (15)

$$
\overline{FDI}_{it} = \epsilon_{it} + \sum_{j=1}^{p} \beta_{ij}\overline{FDI}_{i,t-j} + \sum_{j=0}^{q} \gamma_{ij}\overline{X}_{i,t-j} + \sum_{j=0}^{p} \overline{\partial}'_{tj}\overline{Z}_{i,t-j} + \epsilon_{it} \tag{20}
$$

where, $\overline{Z} = \left(\overline{FDI}, \overline{X}\right)$ and $S_{\overline{Z}}$ in the number of lagged cross-sectional average, Similarly Equation (11) can be reparametrized to the effects of ECM presentation of Panel CS-ARDL as follows:

$$
\begin{aligned}
\Delta FDI_{it} = \alpha_i + \; & \xi_i(FDI_{it-1} - \omega'_t X_{it-1}) + \sum_{J=1}^{M-1} \gamma_{iJ}\Delta FDI_{it-J} + \sum_{J=0}^{N-1} \beta_{ij}\Delta X_{it-J} + \sum_{j=1}^{p} \lambda_j \overline{\Delta FDI}_{i,t-j} \\
& + \sum_{j=0}^{q} \delta_j \overline{\Delta X}_{i,t-j} + \sum_{j=0}^{S_{\overline{Z}}} \overline{\partial}'_{tj}\overline{Z}_{i,t-j} + \mu_{it}
\end{aligned} \tag{21}
$$

where $\overline{\Delta FDI}_{t-j} = \frac{\sum_i^N \Delta FDI_{i,\ t-j}}{N}$, $\overline{\Delta X}_{t-j} = \frac{\sum_i^N \Delta X_{i,,\ t-j}}{N}$.

3.6. The Asymmetric Panel ARDL

The study implements a nonlinear framework following Shin, Yu, and Greenwood-Nimmo [20] in panel form to evaluate the asymmetric effects of tourism and institutional quality on *FDI* inflows. Taking into account the positive and negative shocks that are (TOR=, TOR−, IQ+, and IQ−), the following empirical asymmetric equation can be derived:

$$
\begin{aligned}
\Delta FDI_{it} = \beta_{0i} + \; & \beta_{1i}FDI_{it-1} + \beta^{+}_{2i}IQ^{+}_{t-1} + \beta^{-}_{2i}IQ^{-}_{t-1} + \beta^{+}_{3t}TOR^{+}_{t-1} + \beta^{-}_{3t}TOR^{-}_{t-1} + \beta_{4t}DI_{t-1} + \beta_{5t}TO_{t-1} \\
& + \beta_{6t}M_{t-1} + \beta_{7t}INF_{t-1} \\
& + \sum_{J=1}^{M-1} \gamma_{iJ}\Delta FDI\_i_{i,t-J} + \sum_{J=0}^{N-1} \left(\gamma^{+}_{ij}\Delta IQ^{+}_{i,t-j} + \gamma^{-}_{ij}\Delta IQ^{-}_{i,t-j}\right) \\
& + \sum_{J=0}^{O-1} \left(\left(\delta^{+}_{ij}\Delta TOR^{+}_{i,t-j} + \delta^{-}_{ij}\Delta TOR^{-}_{i,t-j}\right)\right) + \beta_{4t}DI_{t-1} + \beta_{5t}TO_{t-1} + \beta_{6t}M_{t-1} + \beta_{7t}INF_{t-1} \\
& + \varepsilon_{it}
\end{aligned} \tag{22}
$$

where $inst^{+}$ & $inst^{-}$ stand for the positive and negative shock of institutional quality, TOR^{+} and TOR^{-} Represents the positive and negative shock of tourism. The long-run coefficients are computed as $`\Upsilon^{+} = \frac{-\beta^{+}_{2i}}{\beta_{1i}}$, $`\Upsilon^{-} = \frac{-\beta^{-}_{2i}}{\beta_{1i}}$, $\mu^{+} = \frac{-\beta^{+}_{3i}}{\beta_{1i}}$, $\mu^{-} = \frac{-\beta^{-}_{3i}}{\beta_{1i}}$, respectively. These shocks are computed as positive and negative partial sum decomposition of institutional quality and tourism in the following ways:

$$
\begin{cases}
IQ^{+}_{i} = \sum_{k=1}^{t} \Delta IQ^{+}_{ik} = \sum_{K=1}^{T} MAX(\Delta IQ_{ik}, 0) \\
inst^{-}_{i} = \sum_{k=1}^{t} \Delta inst^{-}_{ik} = \sum_{K=1}^{T} MIN(\Delta inst_{ik}, 0)
\end{cases} \tag{23}
$$

$$
\begin{cases}
TOR^{+}_{i} = \sum_{k=1}^{t} \Delta TOR^{+}_{ik} = \sum_{K=1}^{T} MAX(\Delta TOR_{ik}, 0) \\
TOR^{-}_{i} = \sum_{k=1}^{t} \Delta TOR^{-}_{ik} = \sum_{K=1}^{T} MIN(\Delta TOR_{ik}, 0)
\end{cases} \tag{24}
$$

The error correction version of Equation (22) is as follows:

$$\begin{aligned}\Delta RE_{it} = \tau_{1i}\xi_{it-1} &+ \sum_{J=1}^{M-1}\gamma_{iJ}\Delta RE_{i,t-J} + \sum_{J=0}^{N-1}\left(\gamma_{ij}^{+}\Delta FD_{i,t-j}^{+} + \gamma_{ij}^{-}\Delta FD_{i,t-j}^{-}\right) + \sum_{J=0}^{O-1}\left(\left(\delta_{ij}^{+}\Delta TO_{i,t-j}^{+} + \delta_{ij}^{-}\Delta TO_{i,t-j}^{-}\right)\right) \\ &+ \sum_{J=0}^{P-1}\left(\mu_{ij}^{+}\Delta CF_{i,t-j}^{+} + \mu_{ij}^{-}\Delta CF_{i,t-j}^{-}\right) + \varepsilon_{it}\end{aligned} \quad (25)$$

3.7. Causality Test with Symmetric and Asymmetric with Toda-Yamamoto

Gauging the possible directional causality between institutional quality, tourism, and *FDI*, this study applied the non-causality test proposed by Toda and Yamamoto [21]. Zapata and Rambaldi [152] claimed that Toda and Yamamoto's non-causality test outperforms the Granger causality test in certain situations. First, a non-causality test requires no cointegration characteristics in the system equation. Second, the MWALD test may examine existing causality between variables when the integration order is I (0) or I (1). Equation (26) showed symmetrical impacts between institutional quality and tourism.

$$\begin{aligned}X_{ti} = \alpha_0 + \sum_{v=1}^{k} &\beta_{1v}FDI_{t-v} + \sum_{j=k+1}^{d_{max}}\beta_{2j}FDI_{t-j} + \sum_{i=1}^{k}\gamma_{1i}IQ_{t-i} + \sum_{j=k+1}^{d_{max}}\gamma_{1j}IQ_{t-j} + \sum_{i=1}^{k}\pi_{1i}TOR_{t-i} \\ &+ \sum_{j=k+1}^{d_{max}}\pi_{1j}TOR_{t-j} + \sum_{i=1}^{k}\tau_{1i}DI_{t-i} + \sum_{j=k+1}^{d_{max}}\tau_{1j}DI_{t-j} + \sum_{i=1}^{k}\varphi_{1i}M_{t-i} + \sum_{j=k+1}^{d_{max}}\varphi_{1j}M_{t-j} \\ &+ \sum_{i=1}^{k}\delta_{1i}TO_{t-i} + \sum_{j=k+1}^{d_{max}}\delta_{2j}TO_{t-j}\sum_{i=1}^{k}\delta_{1i}INF_{t-i} + \sum_{j=k+1}^{d_{max}}\delta_{2j}INF_{t-j} + \varepsilon_{1t}\end{aligned} \quad (26)$$

In the following, integrating the positive and negative shocks of institutional quality $[IQ_i^+,\ IQ_i^-]$ and tourism $(TOR_i^+,\ TOR_i^-)$, the symmetric Equation (26) can be rewritten into an asymmetric Equation (27).

$$\begin{aligned}FDI_{ti} = \alpha_0 + \sum_{v=1}^{k} &\beta_{1v}FDI_{t-v} + \sum_{j=k+1}^{d_{max}}\beta_{2j}FDI_{t-j} \\ &+ \left\{\sum_{i=1}^{k}\gamma_{1i}IQ^{+}{}_{t-i} + \sum_{j=k+1}^{d_{max}}\gamma_{1j}IQ^{+}{}_{t-j} + \sum_{i=1}^{k}\gamma_{1i}IQ^{-}{}_{t-i} + \sum_{j=k+1}^{d_{max}}\gamma_{1j}IQ^{-}{}_{t-j}\right\} \\ &+ \left\{\sum_{i=1}^{k}\pi_{1i}TOR^{+}{}_{t-i} + \sum_{j=k+1}^{d_{max}}\pi_{1j}TOR^{+}{}_{t-j} + \sum_{i=1}^{k}\pi_{1i}TOR^{-}{}_{t-i} + \sum_{j=k+1}^{d_{max}}\pi_{1j}TOR^{-}{}_{t-j}\right\} \\ &+ \sum_{i=1}^{k}\tau_{1i}DI_{t-i} + \sum_{j=k+1}^{d_{max}}\tau_{1j}DI_{t-j} + \sum_{i=1}^{k}\varphi_{1i}M_{t-i} + \sum_{j=k+1}^{d_{max}}\varphi_{1j}M_{t-j} + \sum_{i=1}^{k}\delta_{1i}TO_{t-i} \\ &+ \sum_{j=k+1}^{d_{max}}\delta_{2j}TO_{t-j}\sum_{i=1}^{k}\delta_{1i}INF_{t-i} + \sum_{j=k+1}^{d_{max}}\delta_{2j}INF_{t-j} + \varepsilon_{1t}\end{aligned} \quad (27)$$

4. Empirical Model Estimation and Discussion

4.1. Panel Unit Root, Cross-Section Dependence, and Cointegration Tests

Now, we move to assess variables' order of integration that is the test of stationarity. Several first-generation unit-roots were performed in the study, namely, the LLC test [153], the IPS test proposed by Im et al. [154], the Breitung test proposed by Breitung [155], the Fisher-ADF proposed by Maddala and Wu [156] which have the null hypothesis that all the panel contains a unit root. Besides, the Lagrange multiplier (LM) test proposed by Hadri [157] has the null hypothesis that all panels are stationary; the first generation unit root test results are exhibited in Table 6.

Table 6. First-generation Unit root test.

	LLC	Breitlung	IPS	Fisher-ADF	Hadri	Order of Integration
	PANEL–A: LOWER-INCOME COUNTRIES					
FDI	−2.468 [b]	−1.763 [b]	−12.70 [b]	83.098 [b]	7.313 [b]	I(0) = 5
Δ*FDI*	−9.787 [b]	−17.302 [b]	-	-	-	I(1) = 2
FDI_S	0.85845	1.26841	54.8719	0.33113	7.392 [b]	I(0) = 1
Δ*FDI_S*	−8.85 [b]	−2.874 [b]	−15.293 [b]	334.724 [b]	-	I(1) = 4
FDI_V	4.711	7.22987	6.20027	49.0773	11.921 [b]	I(0) = 1
Δ*FDI_V*	−11.701 [b]	−3.643 [b]	−10.913 [b]	302.364 [b]	-	I(1) = 4
IQ	−1.091	0.274	−0.395	16.393	5.225 [a]	I(0) = 1
ΔIQ	−3.254 [a]	−3.218 [a]	−4.454 [a]	114.32 [a]	2.182 [b]	I(1) = 5
Tor	0.018	0.782	0.475	11.078	5.598 [a]	I(0) = 1
Δtor	−3.481 [a]	−3.481 [a]	−3.481 [a]	−3.481 [a]	3.369 [a]	I(1) = 5
DI	0.418	−0.27	−2.74 [a]	30.728 [a]	2.683 [a]	I(0) = 3
ΔDI	−12.232 [a]	−0.936 [a]	−6.841 [a]	61.868 [a]	2.641 [a]	I(1) = 5
M	−2.888 [a]	3.185	−4.893 [a]	53.049 [a]	6.584 [a]	I(0) 4
ΔM	−7.864 [a]	−9.67 [a]	−3.165 [a]	269.138 [a]	10.025 [a]	I(1) = 5
TO	−1.371 [b]	−0.752	−6.637 [a]	64.879 [a]	2.482 [a]	I(0) 4
ΔTO	−21.592 [a]	−2.857 [a]	−16.245 [a]	93.727 [a]	7.391 [a]	I(1) = 5
INF	2.268	3.812	−0.575	16.310	5.715 [a]	I(0) 1
ΔINF	−2.565 [a]	1.175	−4.636 [a]	46.391 [a]	7.694 [a]	I(1) = 4

Source: Authors' estimation. Note: the superscript a and b denoted the level of significance at 1% and 5%, respectively.

Furthermore, we believe that data are cross-sectionally correlated since the lists of panel countries are geographically and economically connected. Therefore, we performed a cross-sectional dependency test, and the results are reported in Table 7, given that the variable under investigation has a cross-sectional dependency. So, one can assume that *FDI*, tourism, institutional quality, and domestic investment seem to exhibit some dynamisms common to all countries.

Table 7. Cross-section dependency test.

	F_Inflows	F_Stock	F_Volatility
LM_{BP} (Breusch and Pagan, 1980)	236.92 [a]	631.960 [a]	121.298 [a]
LM_{PS} Pesaran (2004)	170.311 [a]	73.41 [a]	87.846 [a]
CD_{PS} Pesaran (2006)	6.954 [a]	4.822 [a]	8.415 [a]
LM_{adj} Pesaran et al. (2008)	42.843 [a]	25.866 [a]	52.943 [a]

Source: Authors' estimation. Note: the superscript a denoted the level of significance at 1% and 5%, respectively.

With regards to the results of the cross-sectional dependency test and following empirical literature including, Gengenbach et al. [158] and Dogan and Aslan [159], we perform a two-panel unit root test, which is predominately applied due to the presence of cross-sectional dependency in the panel data that is augmented cross-sectional *ADF* (*CADF*) and *CIPS* unit root test proposed by Pesaran [142]. The results of the panel unit root tests are exhibited in Table 8. Results of panel unit root tests established mixed order of integration, that is, variables are integrated either at a level I (0) or/and after the first difference I (1).

Table 8. Results of panel unit root test.

	CIPS		CADF	
	At Level	**Δ**	**At Level**	**Δ**
FDI	−1.734	−5.319 [a]	2.122	−4.800 [a]
*FDI*_S	−0.968	−6.094 [a]	−4.343 [a]	−4.343 [a]
*FDI*_V	−2.099	−5.385 [a]	0.063	−3.942 [a]
IQ	−3.761 [a]	−5.944 [a]	−3.726 [b]	−8.006 [a]
TOR	−2.508 [b]	−5.902 [a]	−0.828	−5.904 [a]
DI	−3.085 [b]	−6.905 [a]	1.094	−3.992 [a]
M	−5.045 [a]	−7.034 [a]	−3.223 [b]	4.225 [a]
TO	−1.046	−3.297 [a]	−6.552 [a]	13.045 [a]
INF	−4.715 [a]	−6.190 [a]	−1.262	−9.404 [a]

Source: Authors' estimation. Note: the superscript of a and b indicates the level of significance at a 1% and 5% level, respectively.

In the following, the study performed a residual-based panel cointegration test proposed by Pedroni [146,147] and Kao [148], assessing the possible long-run association between institutional quality, tourism, and *FDI*. The results of the panel cointegration test are reported in Table 9. Alluding to the outcomes, we can postulate the presence of a long-run equilibrium relationship between *FDI*, institutional quality, and tourism since the null hypothesis is rejected at a 1% level of significance. This verdict is valid for all empirical model estimations. The existence of a cointegrating equilibrium relationship between the variables paves the way for uncovering both the short- and long-run dynamics.

Table 9. Panel Cointegration Test.

	Model-1	**Model-2**	**Model-3**
Panel–A: Padroni Cointegration			
Common AR coefficients (within-dimension)			
v-Statistic$_{[}{}^{weighted}{}_{]}$	−5.815 [a]	6.429 [a]	4.435 [a]
rho-Statistic$_{[}{}^{weighted}{}_{]}$	−0.398	−6.269 [a]	3.400 [a]
PP-Statistic$_{[}{}^{weighted}{}_{]}$	−3.112 [a]	−7.742 [a]	−1.636
ADF-Statistic$_{[}{}^{weighted}{}_{]}$	−4.282 [a]	−3.851	−2.281 [a]
v-Statistic	0.072	5.906 [a]	5.026 [a]
rho-Statistic	−2.828 [a]	−7.438 [a]	−0.565
PP-Statistic	−7.736 [a]	−18.104 [a]	−3.667 [a]
ADF-Statistic	1.808	5.109	−1.347
Individual AR coefficients (between-dimension)			
Group rho-Statistic	1.377	−5.141 [a]	−2.325 [a]
Group PP-Statistic	−3.054 [a]	−23.381 [a]	−2.154 [a]
Group ADF-Statistic	−8.764 [a]	−3.185 [a]	−3.307 [a]
Panel–B: KAO estimation			
ADF	−3.531 [a]	−2.297 [a]	−3.434 [a]

Source: Authors' estimation. Note: [a] indicate levels of significance at a 1%.

Additionally, the study performed the Westerlund–Durbin–Hausman panel cointegration test proposed by Westerlund [149], and test results are exhibited in Table 10. Model estimation produces two statistics: Group statistics based on panel homogeneity and Panel statistics based on panel heterogeneity report the summary results of the panel cointegration test. Regarding the associate p-value of test statistics, they are statistically significant at a1% level of significance. These findings imply that inflows of *FDI* will be affected by any changes in institutional quality, tourism, in the economy in the long run.

Table 10. Result of Westerlund-Durbin-Hausman (2008) Panel Cointegration Test.

Test	(1)	(2)	(3)
D-H Group Statistic	4.448 [a]	23.871 [a]	15.598 [a]
D-H Panel Statistic	17.934 [a]	4.943 [a]	6.142 [a]

Source: Authors' estimation. Note: [a] indicates level of significance at a 1% level.

Furthermore, the presence of a long-run relationship can also be assessed by considering the coefficient of ECT in panel PGM estimation. In order to establish a long-run association, the coefficient of ECT should be negative and statistically significant. Referring to the coefficients reported in Column (1) to Column (9), it is observable that all the coefficients are negative in sign and statistically significant at a 1% level. Therefore, we can conclusively postulate that institutional quality, tourism, and *FDI* move together in the long run.

4.2. Results of Panel-ARDL (PGM) Estimations

Table 11 displayed the results of PGM estimation, which includes the long-run and the short-run coefficients in panel-A and Panel-B, respectively. Getting insight into the tested nexus between institutional quality, tourism, and *FDI*, this study has performed nine empirical models based on various proxies for the dependent variable. The Study findings with *FDI* inflows as a percentage of GDP are reported in columns (1)–(3), in terms of *FDI* stock displayed in columns (4)–(6), and *FDI* volatility exhibited in columns (7)–(9).

Table 11. Estimates of Panel Error-Correction Model with PMG method.

	Empirical Model Estimation								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Panel-A: Long-run coefficients								
β	0.440 [b]	-	0.166 [b]	0.536 [a]	-	0.516 [a]	−0.031 [a]	-	−0.246
μ	-	0.240 [b]	0.942 [a]	-	2.230	0.487 [a]	-	−0.413 [a]	−0.196 [a]
α	1.584 [b]	1.273 [b]	1.297 [b]	0.336 [a]	0.946	0.384 [a]	0.518 [a]	0.6113 [a]	0.409 [a]
δ	0.377 [b]	0.059 [a]	1.462 [b]	0.203 [a]	−0.230 [a]	0.147 [a]	−0.240 [a]	−0.339 [a]	−0.581 [a]
ζ	1.724 [a]	1.431 [b]	0.810 [b]	0.771 [a]	0.252 [a]	0.587 [a]	0.209 [a]	0.119 [a]	0.985 [a]
λ	0.254 [a]	0.023 [a]	0.033 [a]	−0.051 [a]	−0.175 [a]	−0.071 [a]	−0.181 [a]	−0.088 [a]	−0.051 [a]
	Panel-B: short-run coefficient								
ECT	−0.473 [a]	−0.589 [a]	−0.680 [a]	−0.163 [a]	−0.205 [a]	−0.182 [a]	−0.255 [a]	−0.261 [a]	−0.250 [a]
D(IQ)	0.289 [b]	-	0.092 [a]	−0.106 [a]	-	−0.104 [a]	0.445 [a]	-	0.473
TOR	-	0.161 [b]	0.124 [a]	-	−1.354 [a]	−0.471 [a]	-	1.72	1.121
D(M)	0.045 *	0.112 [b]	0.186 [a]	−0.042	−0.115 [a]	−0.044 [a]	−0.017 [a]	−0.053	−0.028
D(INF)	0.221 [c]	0.297 [b]	0.379 [a]	0.054 [a]	0.093	0.052 [c]	0.101 [c]	0.1426 [b]	0.196 [a]
D(TO)	0.476	0.593 [c]	0.411 [c]	0.024 [a]	−0.024	0.042 [c]	−0.011 [c]	−0.056 [b]	−0.129 [b]
D(DI)	0.373 [c]	0.146 [c]	0.0213 [b]	0.027 [b]	0.021 [c]	0.012 [b]	0.105 [b]	0.088 [b]	0.073 [b]
C	−1.392 [b]	−4.737 [b]	−8.929 [b]	0.373 [a]	−1.232 [a]	0.075 [a]	−0.228 [b]	0.044 [b]	−1.403 [b]
H-test (*p*-value)	0.982	0.623	0.872	0.554	0.552	0.211	0.831	0.612	0.223

Source: Authors' estimation. Note: [a/b/c] indicates level of significant at a 1%, 5%, and 10% level, respectively. * $p < 0.05$.

The model estimation outcome is displayed in columns (1)–(3), where *FDI* inflows are treated as a dependent variable. In the long run, we observed that both institutional quality (a coefficient of 0.440) in column (1) and tourism (a coefficient of 0.240) in column (2) are positively associated with their respective empirical model. Furthermore, the empirical model outcome with the presence of both independent variables (see, column-(3)), it is apparent that tourism (a coefficient of 0.166) and institutional quality (a coefficient of 0.942) induced inflows of *FDI* with a positive attitude and their coefficients are statistically significant at a 1% level. As such, one can assume that in the long run, inflows of *FDI* in BMISTEC nations can be accelerated by offering a better institutional perspective and internationalization of tourism services. In the short-run (see, Panel-B, Columns (1)–(3)), the effects of institutional quality and tourism are positively linked to inflows of *FDI*. Considering the model output reported in Column (3), it is apparent that both institutional quality (a coefficient of 0.092) and tourism (a coefficient of 0.124) are positively connected with inflows of *FDI*.

The results are reported in columns (4) to (6), where *FDI* stock is considered a dependent variable. In the long run, institutional quality (a coefficient of 0.536) and tourism (a coefficient of 2.230) are positively associated with *FDI* inflows in terms of stock in their respective sole empirical assessment. Furthermore, referring to column (6), where both institutional quality and tourism are incorporated in the equation and unveiled positive effects, that is, institutional quality (a coefficient of 0.516) and tourism (a coefficient of 0.487), on *FDI* stocks. More specifically, if it is possible to implement a 10% acceleration in institutional quality and tourism, such an injection will result in 5.16% of *FDI* stock flows due to the development of institutional quality and 4.87% due to tourism expansion. In the short run, the long-run equilibrium convergence is established in all tested empirical models, implying that the coefficients of ECT are negative and statistically significant. However, considering the short-run elasticities of institutional quality and tourism on *FDI* stock. The study findings suggested a negative association between them, but all the coefficients are statistically insignificant.

Finally, empirical model estimation with *FDI* volatility as the dependent variable and the results are reported in Column (7) to (9). In the long run, in their respective equation, that is a sole model, both institutional quality (a coefficient of −0.031) and tourism (a coefficient of −0.413) exhibited a negative association with *FDI* volatility. Further, referring to results reported in column (9), we observed that both institutional quality (a coefficient of −0.246) and tourism (a coefficient of −0.196) play a negative role. More precisely, these findings suggest that a 10% development in institutional quality and tourism will reduce *FDI* volatility by 2.46% due to institutional quality and 1.96% due to tourism effects in the economy. Referring to the short-run effects reported in Panel-B, a statistically insignificant positive association between institutional quality, tourism, and *FDI* volatility is established.

For the control variables, money supply and trade openness play a positive role in increasing *FDI* inflows and *FDI* stock in the long run. However, insignificant effects are established in the case of *FDI* volatility. The coefficient of control variables, especially in the short-run, exhibited statistically insignificant except domestic investment. Domestic investment augments inflows of *FDI* and *FDI* stocks, but insignificant effects are observed for *FDI* volatility.

4.3. CS-ARDL Estimation

In the following section, the study investigates the long-run and the short-run association between institutional quality, tourism, and *FDI* by performing CS-ARDL since the presence of cross-sectional dependency among researched variables. Table 12 exhibits the results of the long-run and short-run effects on *FDI*. Referring to long-run estimation (see, Panel-A), the noticeable findings are that both institutional quality and tourism are positively associated with *FDI*; these findings are also valid for all empirical model estimations. More specifically, the following results are reported in Columns (3), (6), and (9) with both institutional quality and tourism present in the equation. However, in the case of *FDI* volatility as a dependent variable in the equation, the study findings established a negative association, that is, development in institutional quality and tourism will result in the stability in *FDI* inflows in the long run.

Table 12. Short-run and long-run effects of institutional quality and Tourism on *FDI*.

		FI			**FS**			**FV**	
	[1]	**[2]**	**[3]**	**[4]**	**[5]**	**[6]**	**[7]**	**[8]**	**[9]**
					Panel-A: Long-run coefficients				
IQ	1.246 [a]		0.385 [a]	−1.104 [a]		0.849 [a]	−0.492 [a]		−0.919 [a]
TOR		0.271 [a]	1.086 [a]		−1.668 [a]	0.148 [a]		−0.853 [a]	−0.053 [a]
DI	2.706 [a]	−0.401 [a]	0.230 [b]	0.634 [a]	0.297 [c]	0.535 [c]	0.135 [a]	0.281 [a]	0.034 [a]
M	1.991 [a]	0.115 [a]	0.303 [a]	−1.979 [a]	0.516 [a]	0.655 [a]	1.552 [a]	−0.015 [a]	0.058 [c]
TO	0.235 [a]	0.290 [a]	0.175 [a]	0.842 [c]	−1.429 [a]	−0.603 [c]	1.154 [a]	−0.436 [a]	−0.042 [a]
INF	−0.981 [a]	0.960 [a]	−0.014 [c]	−0.049 [a]	0.027 [a]	−0.077	−0.033 [c]	−0.081 [c]	−0.065 [c]
					Panel-B: Short-run Coefficients				
ETC	−0.096 [a]	−0.069 [a]	−0.113 [a]	−0.242 [a]	−0.164 [a]	−0.122 [a]	−0.093 [a]	−0.117 [a]	−0.331 [a]
IQ	0.246 [a]		1.385 [a]	−0.104		0.150 [a]	0.492 [a]		0.080
TOR		0.494 [a]	0.816 [a]		−0.668	0.992 [a]		0.853 [b]	0.512
DI	−0.981 [a]	−0.261 [b]	−0.782 [a]	0.701 [b]	0.447 [b]	0.132 [b]	−0.361 [b]	0.297 [b]	0.403 [b]
M	0.091 [a]	2.473 [a]	−1.410 [a]	−2.169 [a]	−1.850 [c]	−0.784 [a]	3.810	−0.899 [a]	−0.053 [c]
TO	0.954 [a]	−1.272 [a]	0.296 [c]	0.919 [c]	0.798 [c]	0.269 [b]	−2.894	−0.623	−0.099 [c]
INF	−0.628 [c]	−1.675 [c]	−0.125 [c]	−0.055	0.013 [b]	−0.204 [b]	0.044	−0.085 [c]	0.113
					Panel-C: Diagnostic test				
H-test *p*-value	0.322	0.483	0.226	0.987	0.872	0.623	0.526	0.982	0.831
Observations	644	644	644	644	644	644	644	644	644

Source: Authors' estimation. Note: [a/b/c] indicates levels of significance at 1%, 5%, and 10%, respectively.

In the short run, the coefficients of error correction term, regardless of empirical model investigation, are negative in sign and statistically significant at a 1% level. These findings confirmed the presence of long-run convergence among the variables (see panel-B). Furthermore, analyzing the short-run magnitude running from the institutional quality and tourism, the study findings disclosed positive association (see panel-B, Columns (3), (6), and (9)). Specifically, 10% development in institutional quality will result in further development in *FDI* inflows by 13.58%, and tourism contributes to the process by 8.16%; furthermore, *FDI* stock enhancement will be accelerated by 1.5% due to institutional quality and 9.92% assistance from tourism development. However, the short-run effects from the institutional quality and tourism on *FDI* volatility are statistically insignificant.

4.4. Asymmetric Long-Run and Short-Run Effects Estimation

In the following section, the study investigates the potential asymmetric association between institutional quality, tourism, and *FDI* by following a nonlinear framework introduced by shin. Using the nonlinear equation (see Equation (24)), we performed nine [09} empirical models based on three proxy variables measuring *FDI* and the combined presence of independent variables in the equation. The results of nonlinear ARDL are presented in Table 13, consisting of long-run effects displayed in Panel-A, short-run coefficient inserted in Panel-B, and the result of the Wald test for assessing symmetry reported in Panel-C, respectively.

Table 13. Panel NARDL Estimation.

Dependent Variable→		***FDI* Inflows**			***FDI* Stock**			***FDI* Volatility**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
					Panel-A: Long-run coefficients				
'Υ^{+}	0.066 [a]	-	0.131 [a]	0.271	-	0.253 [a]	−0.032 [a]	-	−0.053 [a]
'Υ^{-}	0.046 [a]	-	0.361 [a]	−0.106	-	−0.021 [a]	−0.227 [a]	-	−0.651 [a]
μ^{+}	-	0.161 [a]	0.877 [a]	-	0.056 [a]	0.033 [a]	-	−0.002 [b]	−0.004 [a]
μ^{-}	-	0.909 [a]	0.226 [a]	-	0.124 [a]	0.881 [c]	-	−0.037 [b]	−0.792 [a]
M	0.166 [a]	0.611 [b]	0.836 [a]	0.713 [a]	0.246 [a]	0.466 [c]	−0.244 [a]	0.818 [b]	0.673 [a]
TO	−0.816 [b]	−0.206 [b]	−0.76 [a]	−0.509 [a]	0.571 [b]	−0.205 [c]	0.119 [a]	−0.377 [b]	−0.521 [a]
DI	−0.112 [b]	−0.272 [a]	−0.229 [a]	−0.447 [a]	−0.725 [b]	0.407 [c]	0.623 [a]	0.242 [c]	−0.276 [c]
INF	0.461 [b]	0.014 [a]	−0.032 [a]	1.069 [a]	0.097 [c]	−0.272 [c]	0.405 [b]	−0.152 [s]	−0.065 [c]

Table 13. *Cont.*

Dependent Variable→	*FDI* Inflows			*FDI* Stock			*FDI* Volatility		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
				Panel-B: Short-run coefficients					
ξ	−0.753	−0.585	−0.705	0.014 ^{a}	−0.039 ^{a}	−0.018 ^{a}	−0.262 ^{a}	−0.229 ^{a}	−0.282 ^{a}
IQ^{+}	−0.143 ^{a}	-	1.068 ^{a}	−0.331 ^{a}	-	0.213 ^{a}	−0.299 ^{a}	-	0.042 ^{a}
IQ^{-}	−1.924 ^{a}	-	−0.022 ^{a}	−0.932 ^{a}	-	−0.682 ^{a}	1.845 ^{a}	-	1.744 ^{c}
TOR^{+}	-	2.004 ^{a}	0.195 ^{a}	−0.331 ^{a}	0.113 ^{a}	0.019 ^{a}	-	−0.016 ^{a}	0.113 ^{a}
TOR^{-}	-	0.329 ^{a}	−0.683 ^{a}	−0.932 ^{a}	−0.421 ^{a}	−0.293 ^{a}	-	0.613 ^{a}	−0.982 ^{a}
M	−0.042 ^{b}	0.028 ^{b}	0.018 ^{a}	−0.139 ^{a}	−0.016 ^{a}	0.009 ^{a}	0.114	−0.015	−0.007
TO	0.365 ^{b}	0.322 ^{a}	0.195 ^{a}	0.079 ^{a}	0.069 ^{b}	0.133 ^{c}	0.118	0.128	0.041 ^{a}
DI	0.254 ^{b}	0.912 ^{b}	0.921 ^{a}	−0.392 ^{a}	−0.031 ^{b}	−0.145 ^{b}	−0.198	0.117 ^{a}	0.257 ^{c}
INF	0.129 ^{b}	0.375 ^{c}	−0.164	0.008 ^{a}	−0.018 ^{b}	0.011 ^{c}	0.105	0.129 ^{a}	−0.098 ^{c}
C	−0.043 ^{c}	−5.67 ^{c}	−0.023 ^{a}	−1.993 ^{b}	−0.003 ^{b}	−0.032 ^{a}	−0.479 ^{a}	−0.357 ^{a}	0.075
				Panel-C: Long-run and short-run Symmetry test					
W_{LR}^{IQ}	20.894 ^{a}	14.092 ^{a}	16.423 ^{a}	21.125 ^{a}	20.793 ^{a}	21.59 ^{a}	25.482 ^{a}	17.951 ^{a}	19.517 ^{a}
W_{LR}^{TOUR}	13.359 ^{a}	20.613 ^{a}	13.725 ^{a}	22.964 ^{a}	19.924 ^{a}	19.378	14.326 ^{a}	18.508 ^{a}	12.225 ^{a}
W_{SR}^{IQ}	24.56 ^{a}	16.802 ^{a}	19.846 ^{a}	12.684 ^{a}	20.486 ^{a}	15.121 ^{a}	15.755 ^{a}	24.759 ^{a}	12.374 ^{a}
W_{SR}^{TOUR}	22.389 ^{a}	24.614 ^{a}	15.759 ^{a}	14.103 ^{a}	25.796 ^{a}	21.587 ^{a}	20.892 ^{a}	14.433 ^{a}	17.699 ^{a}
H− test (p-value)	0.605	0.949	0.704	0.518	0.958	0.732	0.737	0.574	0.241
N− test (p-value)	0.237	0.222	0.411	0.320	0.977	0.748	0.418	0.652	0.735
Log-likelihood	230.14	289.641	277.91	265.06	176.07	134.97	536.978	119.05	209.81

Source: Authors' estimation. Note: $^{a/b/c}$ indicates levels of significance at 1%, 5%, and 10%, respectively.

Referring to Panel-C, the results of the Wald test with the null hypothesis of both long-run and short-run symmetry. It is observable that the test statistics of the Wald test are statistically significant at a 1% level of significance that means asymmetric effects running from institutional quality and tourism towards *FDI*. These conclusions are applicable for all nine (09) tested empirical models.

Now, we analyze the potential effect and their association (see, Panel-A). The results are reported in columns (1) to (3), where *FDI* inflows as a percentage of GDP are treated as a dependent variable. Positive shocks in institution quality (a coefficient of 0.066 in column (1) and a coefficient of 0.131 in column 3) and negative shocks in institution quality (a coefficient of 0.046 in column (1) and a coefficient of 0.361 in column (3)) positively linked with inflows of *FDI*. The study findings suggest that both positive and negative shocks in institutional quality and tourism are critical for inflows of *FDI* in the long run. However, the possessions of negative shocks are greater than the positive shocks in both variables.

On the other hand, observing the positive and negative shocks in tourism see, Column (2) and (3) we observed, see in column (2), that is, the positive (a coefficient of 0.161) and negative shocks (a coefficient of 0.909) and the results in column (3) positive shock (a coefficient of 0.877) and negative (a coefficient of 0.877), positive association with *FDI*. The study findings suggest that tourism recipients' increase or decrease will be critical for maintaining stability in *FDI* inflows in the long run. It is important to maintain the present state and put considerable effort into further development because any possible degradation might produce unwell full consequences.

Referring to the results exhibited in columns (4)–(6), *FDI* stock was treated as a dependent variable in the equation. In the long run, see column (6), positive shocks in institutional quality is positively linked (a coefficient of 0.253) with *FDI* stock, but negative shocks exhibit negative association (a coefficient of 0.021). These findings suggested that *FDI* stock inflows could be accelerated by adopting positive and negative institutional quality changes. However, the elasticity of positive innovation is greater than negative; therefore, policy formulation should understand the fact and do accordingly. In contrast, positive (a coefficient of 0.033) and negative (a coefficient of 0.881) shock in tourism disclosed a positive linkage with *FDI* stock. However, the negative shocks produce greater intensity than positive shocks in tourism. It refers that any deviation in tourism activities adversely affected the trend of *FDI* stock inflows in the economy.

Considering the model output displayed in columns (7)–(9), *FDI* volatility was treated as a dependent variable. In the long run, positive and negative shocks in institutional quality (a coefficient of −0.053, −0.651) and tourism (a coefficient of −0.004, −0.792) are negatively associated with *FDI* volatility, and coefficients are statistically significant. Considering the elasticity of *FDI* volatility, negative shocks in institutional quality and tourism have a higher impact than positive shocks in variables. More specifically, a 10% variation in negative shocks in institutional quality and tourism will increase *FDI* volatility by 6.51% and 7.925, respectively. On the other hand, 10% positive shocks in institutional quality and tourism can reduce *FDI* volatility by 0.531% and 0.04%, respectively. Furthermore, the results reported in columns (7) and (8) also established a negative linkage with *FDI* volatility in both cases of positive and negative shocks in institutional quality and tourism.

In the short run, the coefficients of error correction terms exhibit negative signs and are statistically significant at a 1% level of significance. These findings suggest long-run convergence between institutional quality, tourism, and inflows of *FDI* in selected south Asian countries. Furthermore, referring to short-run elasticities, it is observable that positive shocks in institutional quality are positively linked to *FDI*, that is, a coefficient of 1.068 in column (3), a coefficient of 0.238 in column (6), and a coefficient of 0.042 in column (9) and all the coefficients are statistically significant. At the same time, the coefficients of negative shocks in institutional qualities are statistically insignificant except for *FDI* volatility (a coefficient of 1.744).

The positive and negative shocks in tourism established a mixed relationship with *FDI*. Both coefficients posted in column (3) displayed positive linkage with *FDI* inflows (a coefficient of 2.003 and a coefficient of 0.329). Results posted in column (6), reveal that positive shocks are positively associated (a coefficient of 0.019), and negative shocks are negatively caused (a coefficient of −0.293), and finally, tourism effects on *FDI* volatility exhibited mixed effects, but all the coefficients are statistically insignificant.

4.5. Causality Analysis with Symmetry

The results of the directional casualty test with symmetry effect from institutional quality and tourism are exhibited in Table 14.

Considering the results reported in Panel-A. The study findings established several causal relationships among research variables. However, we are primarily focusing on investigating casualty between *FDI*, IQ, and TOR. Regarding the desired causality, study findings established unidirectional causality running from institutional quality to tourism [IQ→TOR]. Furthermore, the feedback hypothesis hold in assessing causality between institutional quality and *FDI* [IQ←→*FDI*], and tourism and *FDI* [TOR←→*FDI*].

The result is reported in Panel –B, where *FDI* stock is treated as a proxy for the dependent variable. Similar to Panel-A, study findings established several causal relationships but considering the target relationship, that is, causality between *FDI*, IQ, and TOR. It has appeared that the Feedback hypothesis hold in explaining the causality between institutional quality and *FDI* [IQ←→*FDI*], and tourism and *FDI* [TOR←→*FDI*] but neutral effects appeared in the case of institutional quality and tourism [IQ $\neq$ TOU]. Finally, the causality results are exhibited in Panel-C, with *FDI* volatility as a dependent variable in the equation. The study findings established unidirectional casualty running form [TOR→ X *], on the other hand, bidirectional causal relationship disclosed between institutional quality and *FDI* volatility [IQ←→ X *].

Table 14. Causality test results with symmetry assumption.

Panel-A: Dependent Variable as *FDI* Inflows								
	X *	IQ	TOR	M	TO	DI	INF	IQ←→*FDI*; TOR←→*FDI*;
X *	-	13.444 [a]	14.108 [a]	3.18	1.478	3.285	8.381 [b]	INF→*FDI*; INF→IQ;
IQ	12.781 [a]	-	1.265	2.265	5.19	2.122	7.962 [a]	IQ→TOR; M→TOR;
TOR	11.781 [a]	5.294 [c]	-	11.168 [a]	9.818 [a]	14.453 [a]	9.051 [a]	DI→TOR; INF→TOR;
M	6.391 [b]	3.458	0.92	-	47.344 [a]	29.571 [a]	15.572 [a]	*FDI*→M; TO←→M;
TO	3.846	4.131 [c]	3.534	9.014 [a]	-	13.659 [a]	3.127	DI←→M; INF←→M;
DI	3.968	10.09 [a]	1.74	36.345 [a]	8.061 [b]	-	2.124	IQ→TO; DI←→TO; IQ→DI;
INF	1.603	5.398	2.12	20.409 [a]	17.337 [a]	7.328	-	IQ→INF; TO→INF; DI→INF

Table 14. *Cont.*

Panel-B: Dependent variable as *FDI*_stock								
X *	-	6.842 ^{c}	14.068 ^{a}	7.712 ^{b}	12.646 ^{a}	5.274	3.807	TOR←→*FDI*; M→*FDI*;
IQ	11.137 ^{a}	-	2.96	5.461 ^{c}	2.942	3.114	9.447 ^{b}	TO←→*FDI*; *FDI*←→IQ;
TOR	22.572 ^{a}	4.005	-	3.556	3.568	9.645 ^{b}	3.671	INF←→IQ; M→IQ;
M	3.947	3.266	0.758	-	24.266 ^{a}	19.723 ^{a}	6.735 ^{c}	DI→TOR; TO→M; DI←→M;
TO	9.114 ^{b}	2.284	3.254	4.377	-	12.209 ^{a}	1.392	INF←→M; DI←→TO;
DI	4.079	4.201	2.499	20.15 ^{a}	6.487 ^{c}	-	5.208	*FDI*→INF; TO→INF;
INF	10.878 ^{a}	6.416 ^{c}	2.892	42.769 ^{a}	21.918 ^{a}	12.522 ^{a}	-	DI→INF
Panel-C: Dependent variable as *FDI*_volatility								
X *	-	14.166 ^{a}	9.127 ^{b}	1.107	2.111	4.414	14.175 ^{a}	IQ←→ X *; TOR→ X *; INF→
IQ	7.22 ^{b}	-	1.713	2.92	3.245	0.264	3.189	X *; IQ→TOR; TOR←→DI;
TOR	0.542	8.035 ^{b}	-	3.551	2.143	11.142 ^{a}	2.957	TOR→M; TO→M; DI→M;
M	2.72	1.937	31.739 ^{a}	-	8.801 ^{b}	17.505 ^{a}	14.795 ^{a}	INF→M; TOR→TO;
TO	2.89	0.207	16.784 ^{a}	5.438	-	9.057 ^{c}	3.36	DI←→TO;TO→INF;
DI	2.921	5.26	11.414 ^{a}	10.489 ^{a}	5.035	-	4.543	DI→INF
INF	1.458	2.881	0.193	8.338	2.774	7.562 ^{b}	-	

Source: Authors' estimation. Note: the subscripts of $^{a/b/c}$ specify the significance levels at 1%, 5%, and 10%, respectively. * $p < 0.05$.

In the following section, the causality test results considering asymmetry in institutional quality and tourism are exhibited in Table 15. Panel-A reports the results with *FDI* inflows as a dependent variable, Panel-B displays the results with *FDI* stock as dependent variables. Finally, Panel C reports the results with *FDI* volatility as a dependent variable, respectively. Referring to causality results, it appeared that several directional causalities are available, however focusing on the key motivation of the study, the summary results are exhibited in Table 16.

Table 15. Causality with Asymmetric assumption.

0	X	IQ^{+}	IQ^{-}	TOR_P	TOR_N	DI	M	TO	INF
Panel-A: Dependent variable as *FDI* inflows									
X	-	3.805	7.841 ^{b}	2.646	17.28 ^{a}	1.766	1.968	76.873 ^{a}	4.299
IQ^{+}	29.09 ^{a}	-	6.767 ^{c}	6.337	40.126 ^{a}	0.749	2.225	89.745 ^{a}	5.588
IQ^{-}	19.15 ^{a}	3.428	-	6.341	58.541 ^{a}	2.681	3.128	16.612 ^{a}	5.063
TOR^{+}	26.615 ^{a}	4.29	6.865 ^{c}	-	23.773 ^{a}	1.123	1.526	15.817 ^{a}	4.1
TOR^{-}	18.448 ^{a}	2.061	7.403 ^{c}	6.277 ^{c}	-	0.561	2.776	11.106 ^{a}	4.819
DI	12.122 ^{a}	2.951	13.449 ^{a}	6.935	50.763 ^{a}	-	2.321	14.216 ^{a}	4.823
M	19.343 ^{a}	8.221 ^{b}	13.441 ^{a}	3.777	34.051 ^{a}	0.101	-	9.231 ^{b}	8.857 ^{b}
TO	4.205	12.276 ^{a}	9.789 ^{b}	4.849	19.268 ^{a}	0.145	2.325	-	2.244
INF	7.261 ^{b}	8.242 ^{b}	14.048 ^{a}	5.193	9.463 ^{a}	0.726	1.735	59.897 ^{a}	-
Panel-B: Dependent variable as *FDI* stock									
X	-	7.263 ^{c}	3.41	10.673 ^{a}	1.293	57.417 ^{a}	15.506 ^{a}	1.03	15.449 ^{a}
IQ_P	2.265	-	3.152	15.008 ^{a}	1.795	32.242 ^{a}	6.986	4.785	5.106
IQ_N	13.148 ^{a}	13.659 ^{a}	-	19.469 ^{a}	6.555 ^{c}	17.196 ^{a}	61.623 ^{a}	4.792	4.122
TOR_P	2.799	2.751	3.129	-	0.989	22.667 ^{a}	7.079 ^{c}	3.137	2.336
TOR_N	11.413 ^{a}	12.494 ^{a}	1.544	16.603 ^{a}	-	37.764 ^{a}	9.341 ^{b}	2.086	1.465
DI	2.423	11.734 ^{a}	3.036	11.009 ^{a}	3.555	-	9.352 ^{b}	0.72	9.254 ^{b}
M	1.693	19.702 ^{a}	5.688	13.217 ^{a}	2.327	39.595	-	3.37	20.641 ^{a}
TO	2.504	12.326 ^{a}	6.187 ^{c}	9.337 ^{a}	5.178	36.819	7.344 ^{c}	-	3.337
INF	3.613	12.307 ^{a}	4.947	11.577 ^{a}	6.658 ^{c}	51.635	45.284 ^{a}	4.426	-
Panel-C: Dependent variable as *FDI* Volatility									
X	-	13.326 ^{a}	11.314 ^{a}	19.094 ^{a}	38.726 ^{a}	16.104 ^{a}	0.257	6.664	1.792
IQ_P	16.341 ^{a}	-	14.835 ^{a}	13.521 ^{a}	12.196 ^{a}	18.102 ^{a}	0.145	16.34 ^{a}	1.721
IQ_N	15.808 ^{a}	16.608 ^{a}	-	15.587 ^{a}	19.349 ^{a}	68.951 ^{a}	0.287	9.597 ^{b}	0.864
TOR_P	14.352 ^{a}	38.748 ^{a}	8.323 ^{a}	-	14.375 ^{a}	48.296 ^{a}	0.06	13.516 ^{a}	2.185
TOR_N	14.215 ^{a}	15.577 ^{a}	15.535 ^{a}	16.426 ^{a}	-	55.822 ^{a}	0.212	8.507 ^{b}	0.455
DI	19.158 ^{a}	16.339 ^{a}	15.505 ^{a}	18.929 ^{a}	72.046 ^{a}	-	0.337	4.59	3.828
M	4.047	23.96 ^{a}	13.157 ^{a}	12.767 ^{a}	18.268 ^{a}	94.587 ^{a}	-	4.623	2.861
TO	10.324 ^{a}	17.805 ^{a}	18.019 ^{a}	14.029 ^{a}	27.047 ^{a}	89.151 ^{a}	0.292	-	1.417
INF	15.617 ^{a}	15.336 ^{a}	27.007 ^{a}	11.252 ^{a}	57.008 ^{a}	82.368 ^{a}	0.274	12.211 ^{a}	-

Source: Authors' estimation Note: supscripts a, b, c specify the significance level at 1%, 5%, a and 10%, respectively.

Table 16. Summary results of causality test.

Causality	[1]	[2]	[3]
$FDI \leftarrow \neq \rightarrow IQ^{+}$ $IQ^{+} \leftarrow \neq \rightarrow FDI$	$FDI \rightarrow IQ^{+}$	$IQ^{+} \rightarrow FDI$	$FDI \longleftrightarrow IQ^{+}$
$FDI \leftarrow \neq \rightarrow IQ^{-}$ $IQ^{-} \leftarrow \neq \rightarrow FDI$	$FDI \longleftrightarrow IQ^{-}$	$FDI \longleftrightarrow IQ^{-}$	$FDI \longleftrightarrow IQ^{-}$
$FDI \leftarrow \neq \rightarrow TOR^{+}$ $TOR^{+} \leftarrow \neq \rightarrow FDI$	$FDI \rightarrow TOR^{+}$	$TOR^{+} \rightarrow FDI$	$FDI \longleftrightarrow TOR^{+}$
$FDI \leftarrow \neq \rightarrow TOR^{-}$ $TOR^{+} \leftarrow \neq \rightarrow FDI$	$FDI \longleftrightarrow TOR^{-}$	$FDI \rightarrow TOR^{-}$	$FDI \longleftrightarrow TOR^{-}$

Source: Authors' estimation. Note: $\leftarrow \neq \rightarrow$, $\rightarrow$, $\longleftrightarrow$ denotes the non-granger causality, unidirectional causality, and bidirectional causality.

5. Discussion

Tourism is quickly becoming one of the most important businesses in many nations. It is primarily owing to its significant contribution to foreign exchange inflows, national income, and job possibilities, all of which have a significant economic effect on the individual nations. Refers to tourism-led foreign capital investment, the study documented a positive statistically significant association that is tourism positively assists in increasing the inflows of *FDI* in the economy. Our study findings align with existing literature see, for instance, Tomohara [31], Samimi, Sadeghi, and Sadeghi [29], and Perić and Radić [32]. Salleh, Othman, and Sarmidi [40] investigated the impact of tourism development on *FDI* inflows in the south Asian economy by employing ARDL. The study documented the long-run association between tourism development and growth in *FDI*. Moreover, the causality test established unidirectional causality running from tourism to *FDI*. The study of Siddiqui and Siddiqui [37] revealed unidirectional causality between tourism and *FDI* in Pakistan. The study advocated that effective tourism policy implementation can accelerate foreign capital investment in the economy.

Selvanathan, Selvanathan and Viswanathan [52] investigated the dynamic connection between tourism and *FDI* in India from 1995–2007 using quarterly statistical data under VAR estimation. The results indicated a unidirectional causal relationship between *FDI* and tourism and advocated that *FDI* attraction accelerated the development of foreign tourism in India's economy during the past decade. Khoshnevis Yazdi, Homa Salehi, and Soheilzad [46] established that foreign direct investment substantially affects tourist development in developing nations' economies. Inbound tourism generates export income, but it also creates jobs in the service sector via *FDI* because of tourist-related investment. Thus, to promote inbound tourism, it is necessary first to determine the nature of the connection between inbound tourism and *FDI*, as well as whether inward *FDI* flows only to tourism-related sectors, before formulating a more effective strategy based on the degree of correlation.

The growing interest in institutional and political development economics issues has resulted in detailed research on the factors influencing institutional quality [160]. The current study investigated the nexus of institutional quality-led tourism and exposed positive connections in empirical assessment, which is in line with Delgado and McCloud [161], Kim and Choi [162], Qamruzzaman, Tayachi, Mehta, and Ali [18]. Because of good institutional quality, the foreign direct investment (*FDI*) inflows are strong, and foreign direct investment (*FDI*) volatility is low. On the other side, there are drivers of *FDI* outflows that are detrimental, such as corruption and institutional distance between the home and host nations. Quality institutions augmented inflows of *FDI* in the economy in three different manners. First, strong institutions improve productivity potential, which may attract international investment. Second, a dysfunctional institutional framework may drive up the cost of conducting business. For instance, corruption may discourage investment by increasing the cost of conducting business [163]. Third, *FDI* is subject to uncertainty, particularly uncertainty caused by inefficient governance, since it entails a large sunk cost.

For instance, imprecise contract enforcement may raise uncertainty about future rewards, thus discouraging investment from foreign soil.

6. Conclusions

The prominent role of *FDI* is extensively investigated in empirical studies and the key determinants for accelerating the inflows of *FDI*, especially for developing countries. The motivation of the study is to unleash the fresh evidence regarding the nexus between institutional quality, tourism, and *FDI* in BIMSTEC nations during the period 1996Q1–2018Q4. Several econometric methodologies were applied including, panel–ARDL, CS-ARDL, Nonlinear-ARDL, and directional casualty investigated following Toda and Yamamoto [21] with the incorporation of both symmetry and asymmetry effects of institutional quality and tourism. The key findings of this study are reported below:

First, the study began with established variables order of integration by applying both first and second-generation panel unit root tests. The study established mixed order integration, that is, few variables are integrated at a level, and few become stationary after the first difference. Furthermore, a cross-sectional dependency test confirmed the presence of common dynamism among the selected variables.

Second, the study findings with Panel-ADRL confirmed the long-run positive association between institutional qualities, tourism, and inflows of *FDI*. The study findings suggest that further development in institutional quality and tourism activities will result in a positive way in the economy that induces foreign investors and increase possibilities for receiving additional *FDI*. These studies' findings are in line with Turan Katircioglu et al. [33]; Perić and Radić [32]; Khoshnevis Yazdi, Nateghian and Sheikh Rezaie [67]; Buchanan, Le, and Rishi [19]; Jushi et al. [164]. About CS-ARDL, the study findings also ascertain positive relations between institutional quality, tourism, and inflows of *FDI* in BIMSTEC nations, especially in the long run. In respective studies, Alfaro et al. [165] and Bénassy-Quéré, Coupet, and Mayer [103] have argued that the investors prefer to locate the environments of cases where property rights are well protected and the actors are the least corrupt as well that they require a high degree of political stability. Considering an empirical model with *FDI* stocks and *FDI* volatility as a dependent variable, the study findings revealed positive effects from the institutional quality and tourism towards *FDI* stock and negative impact towards *FDI* volatility, especially in the long run. These findings are applicable in both empirical models under panel-ARDL and CS-ARDL.

Third, the study findings with the nonlinear framework of assessing the asymmetric effects, i.e., positive and negative shocks in institutional quality and tourism on *FDI*. Referring to the results of the Wald test to establish possible asymmetric effects on both the long run and short run. The study findings revealed a long-run asymmetric relationship between institution quality, tourism, and FID, which applies to all models. These findings suggest that in the long run, the movement of the effects of each variable might not experience by other variables in the linear form, i.e., increasing independent variables may not result in the same progress in the dependent variable.

Fourth, the results of directional causality among research variables with symmetry and asymmetry effects of institutional quality and tourism in the equation. Concerning the traditional casualty test, i.e., symmetric framework, the study findings hold a feedback hypothesis explaining the relationship between institutional quality, tourism, and *FDI*. The study findings support existing empirical literature including, Chowdhury and Mavrotas [98]; Shah, Ahmad and Ahmed [77]; Arain, Han, Sharif, and Meo [43]. Furthermore, causality tests with the asymmetry of institutional quality and tourism. We observed that the feedback hypothesis explains the casualty between negative shocks in institutional quality and tourism and inflows of *FDI* and *FDI* stock. However, unidirectional causality is also revealed i.e., *FDI* inflows to positive shocks in institutional quality and positive shocks in institutional quality to *FDI* stock. On the other hand, referring to the asymmetry effect of tourism and *FDI*, findings divulged unidirectional causality running from *FDI* to positive shocks in tourism and feedback hypothesis is established between a negative shock in tourism and inflows of *FDI*.

Understanding the study findings, we also proposed the following policy recommendations for future guidance. First, institutional quality tourism emerged as a strategically critical factor for the economy, especially the decision about *FDI*. Policy formulation, therefore, and the promotional, strategic decision-making process by the government and private institutions have to put considerable attention on the present state of institutional quality and tourism in respective countries. Second, countries should use financial and tax incentives, as well as attractive rates to attract *FDI*. Reducing complex procedures (bureaucracy) and defining clear *FDI* policies in tourism is an important part of the process. Local authorities can also help indirectly to promote *FDI* by providing basic infrastructures free of cost to the investor.

The present study possesses certain limitations in terms of data aggregation and economical estimation. For institutional quality, the study considered an index derived from WGI information. Nonetheless, taking other measures might produce diverse findings. Inclusion of other variables such as Human capital development, economic policy uncertainty, and financial volatility can robust the estimation and bring another angle in empirical relationships.

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