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A study on the moderating role of national absorptive capacity between institutional quality and FDI inflow: evidence from developing countries

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ABSTRACT

Numerous studies on foreign direct investment (FDI) as a prime element of capital flow and external finance contribute to foreign physical stock of capital, knowledge spillovers, transfer of technology, and recipient countries' employment. Developing economies need FDI to boost their economic growth. This study explores the moderating role of national absorptive capacity between FDI inflow and institutional quality (control of corruption, government effectiveness, political stability and the absence of violence, regulatory quality, rule of law, voice and accountability) on a panel of 113 developing countries for 2000–2019. Hausman fixed-effect and random-effect estimation are used in the analysis. The results show that national absorptive capacity (AC) moderates the relationship between FDI inflow and institutional quality dimension. To check robustness, we formed an index of institutional quality (OIQ) dimensions through principal component analysis (PCA) and regressed, demonstrating that AC moderates the relationship between OIQ and FDI. Subsequently, taking BRICS + Pakistan as a sample, we find that the results hold. This study will help form FDI-friendly policy in developing countries.

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1. Introduction

A massive increase in foreign direct investment has occurred recently (Zhu et al., 2020). Global FDI flow declined to $1.39 in 2019 from $1.41 trillion in 2018 (Shan et al., 2018). The United States remains the largest FDI recipient, attracting $251 billion in inflows, followed by China with $140 billion and Singapore with $110 billion. FDI flow to developing economies continued unchanged in 2019 at an estimated $695 billion, thus showing that these countries continued to absorb more than half of world FDI. Under neoliberalism, the flow of technology from developed economies

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towards developing economies as FDI has increased capital flow in developing countries (Burns et al., 2014). Both neoclassical (exogenous) growth models and empirical work reveal the positive relationship between FDI and GDP, through transfer of knowledge, skills, capital, and technology (Herzer et al., 2008; Kusek & Silva, 2018; Romer, 1990; Barro & Sala-i-Martin, 1997), as FDI-led growth inspires the assimilation of new technologies in recipient countries' production.

The subsequent link between FDI and endogenous growth was explained by Borensztein et al. (1998): to attract FDI, the host country should have the minimum necessary infrastructure, capital, and education, along with a stable banking system and politics. Since the 1990s, researchers using new econometric techniques and panel data analysis have reached a consensus on the FDI–growth correlation. If new revenue is managed adequately for growth, FDI can be a strong economic growth feature (Bezuidenhout, 2009), crucial for the economic development and welfare of developing countries. Thus, a transparent regulatory framework to promote its growth is desirable.

According to endogenous growth theory, investments in human capital, knowledge, and innovation are essential for economic growth. This theory focuses on spillover effects and positive externalities (Grossman & Helpman, 1991; Barro & Sala-i-Martin, 1997). However, some studies also suggest that FDI-led growth is contingent on other factors: level of economic development (Blomström & Kokko, 2003) level of development of financial markets Azman-Saini et al. (2010), liberal markets, trade openness, and technology gap. All these factors are related to absorptive capacity (AC). In addition, Butkiewicz and Yanikkaya (2006) found that countries with better institutional structure demonstrate better economic performance, with institutions meaning 'sets of common habits, routines, established practices, rules, or laws that regulate the interaction between individuals and groups' (Edquist, 1997). Institutions create a milieu and culture for innovation, learning, and building a knowledge stock, and establish the ground rules for interaction among various economic actors (Freeman, 1992). Rodrik (2000) demonstrated that efficient institutions contribute more to economic growth than location or trade. Thus, the accumulation of national AC Casillas et al. (2009) through FDI can improve a country's institutional quality by helping it to absorb the experience.

This study investigates the moderating effect of NAC between institutional quality and FDI in developing economies. The main incentive to FDI inflow in a country is institutional structure. Nevertheless, absorption level, which we expect to moderate the effect of institutional structure, varies across countries, and its effect should too.

The organization of this paper is as follows. The following section explains the key concepts, NAC and FDI. It is followed by a literature review, the methodology, empirical analysis, evidence from typical countries, and a discussion.

2. (N)AC and FDI

(N)AC is a firm's (country's) capability to identify the importance of new, external knowledge, assimilate it, and apply it commercially (Cohen & Levinthal, 1990). It is fundamentally cognitive in nature. An individual's AC includes prior related

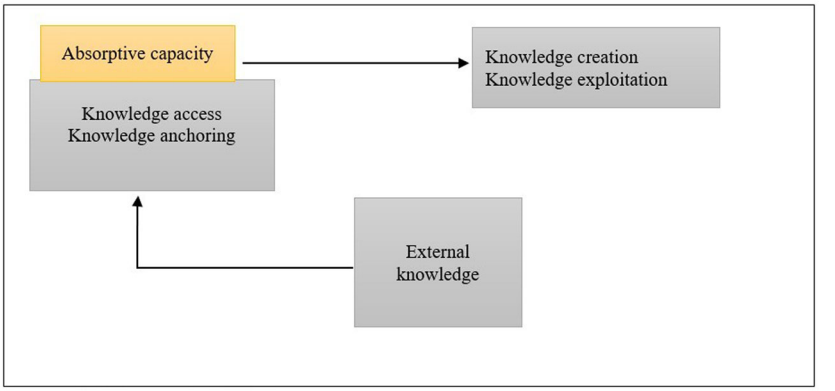

Figure 1. Model of absorptive capacity.
Source: (Mahroum et al. 2008)

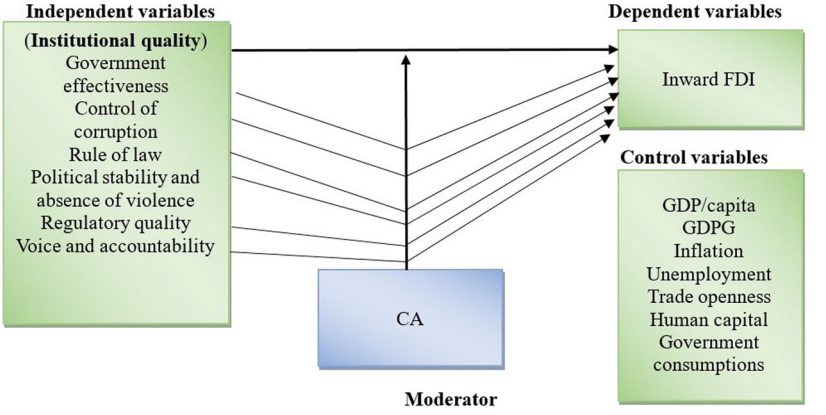

Figure 2. Conceptual framework.
Source: Made by Author

knowledge and background. A firm's AC is its capability to absorb outside expertise and use it in a finished product. AC is defined concerning time by different scholars and researchers. Cohen and Levinthal (1990) defined it as a firm's ability to value, assimilate, and apply new knowledge; Mowery et al. (1996) described it as a broad combination of skills necessary to deal with implicit transfer of knowledge components and amend imported knowledge. An enormous diversity of FDI country origin local production units get exposed to various technology and management, brought by foreign firms.

A firm's technological and strategic arrangements deviate across countries. When foreign firms penetrate an emerging market, they carry heterogeneous technologies and management practices with them. Experience in a technologically based market facilitates local firms' openness and their learning from foreign firms (Kim, 1995; Zahra & George, 2002; Blomström et al., 1994).

Initially, the AC concept was twofold (individual and structural), but recent studies have recognized three levels. (Figures 1 and 2)

1. Organizational-level AC deals with the direction of structural activity and procedures which promote individual AC within organizations. It is the capacity of a particular organization or unit of an organization to aggregate knowledge from outside, and is interdependent with individual AC.
2. National-level AC is not just the aggregation of industries or enterprises located in the country but reflects a country's creativity and competitiveness in the world economy. According to Dunning and Narula (2003), NAC of a country should be analysed vertically and horizontally: industrial AC within and among industries, scientific AC (including knowledge raised in universities and research institutes), and institutional-administrative and public-policy AC.

All four knowledge/AC types are essential for developing national AC and innovation, determining its scale, intensity, speed, and enablement of choices.

Between firm-level productivity and NAC, we need to determine the minimum essential level of AC. National AC is not the aggregation of AC of firms inside the country; instead, we measure it using patent applications and R&D.

Developing countries have limited access to formal education, capital, and technical training and inadequate industrial structure, complicating the AC creation necessary for growth. AC in developing countries relies on two main factors: (1) degree of exposure to advanced technology from abroad and (2) ability to absorb and adapt to that technology. Key pillars of NAC in developing countries are effective education, finance, governance, and pro-development policies, which facilitate new ideas, new products, spillovers, and economic benefits from trade and FDI.

2.1. Significance of the study

Through globalization, the economies of the world opened up new ways to attract FDI. The endogenous growth model provides theoretical support for such strategies, as it suggests that FDI spillover to domestic firms positively impacts productivity and growth (Grossman & Helpman, 1991; Barro & Sala-i-Martin, 1997). Studies show that FDI has a positive relationship with national economic development but that FDI-led growth is contingent on other factors: level of economic development (Blomström et al., 1994), development of financial markets (Azman-Saini et al., 2010), liberal markets, trade openness, technology gap, and institutional quality. All these factors are related to AC.

2.2. Theoretical significance

This study's main novel, theoretical contribution will be the moderating role of AC between FDI and institutional quality in developing countries. It also adds theoretically (and empirically) by using a sample of 113 developing countries, larger than that in previous studies, and by expanding the number of institutional quality dimensions considered.

2.3. Practical significance

The study's results can inform policies for growth and development, as follows: helping develop effective policies to attract FDI in developing countries; assisting them to

improve their institutional framework and boost their capabilities; through increased FDI, enabling developing countries adopt new technologies (i.e., tech spillover); and aiding developing countries enhance their AC level to benefit from this spillover. To sum up, this study investigates the relationship between FDI and institutional quality with AC as a moderator in developing countries.

3. Literature review

3.1. Literature related to institutional quality and FDI

Endogenous growth theories emphasize that FDI is a crucial determinant of economic growth and source of technology transfer from developed to developing countries. North (1991) divided institutions into formal institutions such as 'rule of law and constitutions' and informal ones like 'standards of behaviour, conventions, and self-imposed codes of conduct'. Wu et al. (2012) asserted that better institutional structure, specifically rule of law, effectiveness of government, and control of corruption, reduces costs and prompts an efficient business environment to improve bilateral trade. Attracting FDI is an essential economic growth element in developing countries (UNCTAD, 2014).

Abreo et al. (2021) ascertained the role of institutional quality in Colombian trade to Latin America. The findings show a big difference between Colombia's and trade partners' institutional quality, particularly rule of law and regulatory quality. Sabir et al. (2019) examined institutions and FDI using a panel data set for low, lower-middle, upper-middle, and high-income countries for 1996–2016 and confirmed the positive impact of institutional quality on FDI in all groups of countries. The amplitude of the coefficients of institutions is leading than in developing countries. Yakubu (2020) explored institutional quality and FDI in Ghana for 1985–2016 using an autoregressive distributed lag approach, and found a strong, significant long-run positive relationship between institutional quality and FDI. In Vietnam, better institutions lead to positive, significant economic growth, while corrupt institutions have an insignificant negative impact.

The institutional structure of developing countries is poorer than in developed countries, which is a hurdle for FDI-led growth. Kurul and Yalta (2017) believed that institutional quality is critical for FDI magnetism, but only above a certain institutional quality level. Aziz (2018) studied institutional quality and FDI inflows in 16 Arab countries for 1984–2012, and found that economic freedom, ease of doing business, and international country risk guide (ICRG) had positive, significant impacts on FDI. Moreover, a successful MNE in a country indicates a suitable environment for attracting FDI. Finally, Kurul and Yalta (2017) confirmed that institutional quality affects FDI positively in 126 developing countries for 2000–2012.

3.2. Moderating role of AC

The benefits of FDI depend upon the level of AC. Only a few studies have checked the positive moderating behaviour of AC at organizational level; according to

(Jiménez, 2010), 68% of studies used AC as an independent variable, 24% as a dependent variable, and only 5% as a moderator.

Kohlbacher et al. (2013) noted that the moderating role of AC associates with close-fitting internal R&D and that outside knowledge is critical in harnessing the corresponding effects. Fernald et al. (2017) found that partnerships with and acquisitions of biotech firms negatively affect big pharma's innovation capabilities on average. Similarly, Ologbo and Chukwuekezie (2013) established that AC moderates the relationship between organizational learning and organizational effectiveness. C. Kim et al. (2011) held that balance of resources of counterparts, combined with AC, drives joint ventures. Noor et al. (2016) stated that AC and entrepreneurial orientation have substantial effects on TIC and that AC moderates the relationship between TIC and OE. Gonzalez-Campo (2015) believed that generally (with a few exceptions), both sectors have a low level of AC.

Sultana and Turkina (2020) studied the importance of AC in moderating the relation between technological advancement position and global FDI, and found that the core position in global FDI is due to technological advancement and that knowledge intensity has a strong moderation effect. Similarly, Vu and Ho (2020) used generalized two-stage least square (2SLS) with IV regression to establish that FDI plays a vital role in developing provinces due to four core components: level of openness, infrastructure, human capital, and AC of local firms.

Danquah et al. (2018), in the big pharma context, used data from 1970–2010 for 18 SSA countries to show that coefficients of interaction terms of proxies for technology transfer and AC are negative and statistically insignificant, and confirmed a moderating role of AC.

Djeflat et al. (2015) examined AC and demand for innovation as drivers of emerging innovation systems (Högel et al.) in Gulf Cooperation Council (GCC) and Maghreb countries, using primary and secondary data from international organizations; the study found that innovation in these countries suffers from low AC, R&D, new technology, higher education graduates, and researchers.

Lew and Liu (2016) asserted that inward FDI exercises a 'crowding-out' effect on domestic firms' innovation capability, while AC has a strong, significant impact on use of knowledge spillovers for innovation. García et al. (2012) reiterated that exporters are more productive than non-exporters with more interaction in the international market, because that interaction grants them more outside knowledge, based on data for 1534 Spanish firms over 1990–2002, and also averred that exporting firms benefit more from exporting, and hinted at AC's importance for acquiring foreign knowledge.

The moderating role of AC means that firms can exploit outside knowledge with a certain level of AC. Khan et al. (2019) used survey-based data from 155 auto parts manufacturers in Pakistan to show that domestic firms' realized AC empowers them to develop exploitative and exploratory innovation. The mediating role of AC is not limited to innovation and productivity, but also appears in performance. Chaudhary (2019) analysed the mediating role of AC and the entrepreneurial coordination relationship between strategic flexibility and organization performance using data from 272 small businesses in India, and found that potential AC strengthens the

relationship between firm performance and entrepreneurial orientation. Likewise, Shan et al. (2018) found that internal social networks, AC, and innovation are essential for not only the prosperity of the firm but also its survival, using questioner-based data from 279 new ventures in China, and that AC plays a fully mediating role between innovation and internal social networks. Similarly, Rahimi (2014) examined the effect of technology parks on the association among AC, the transfer of technology, and social capital technology in Malaysia, and affirmed a mediating effect of AC in the relationship between transfer technology performance and social capital.

AC and institutional theory are both fertile research areas in management and organization studies, but with very different research backgrounds. Still, both ideas share a common understanding of adoption and diffusion of new knowledge. Proeger (2020) investigated knowledge spillovers and AC, carrying out in-depth interviews with the firm's representatives about the interrelated organizational system, institutional arrangements, shared values, and economic incentives related to the institutional structure for knowledge spillovers in German SMEs. The study identified institutional characteristics connected to the dual system of vocational training, regulatory measures, and economic incentives, equally imposing and fostering broad knowledge spillovers.

Rose (2014) explored internationalization-related AC development in Indonesian manufacturing sector exporting firms. 'How do institutions matter?' The study concluded that indirect or secondary experience contributes more than the firm's own experience in the development of international market AC. Indirect experience feeds Indonesian manufacturing exporters in both positive and negative ways.

Attracting FDI to regions where the innovation level is low will be more effective than doing so where innovation is high. Miguélez and Moreno (2015) emphasized that the invasion of inventors is a sign of wealthier regions, and that AC adds quality to distant knowledge groups transported by movement and linkages. Lau and Lo (2015) investigated the significance of regional innovation systems (RISs) and AC for innovation performance, covering three main RIS elements: regional innovation initiatives (RII), knowledge-intensive business service (KIBS), and sources of value chain information. Data for the study were collected through a mailed survey. The study found that KIBS improves the acquisition process, sources of value chain information enhance the acquisition and assimilation process, and RII improves the transformation process, together leading to healthier performance. Blalock & Simon (2009) examined firms' capabilities to affect their inclination to benefits from downstream FDI, and found that firms with more robust production capabilities take advantage of a reduced amount than others. Moreover, a firm with good AC benefits more.We studied innovations as a factor in AC for FDI spillover across regions of the Russian Federation, focusing on FDI effects on regional productivity, existence of spillover, and the role regional AC plays in these processes. The study used panel data from the years 2007–2011 and a random effects model. The results emphasized that innovations increase total factor productivity due to productivity spillovers from FDI.

3.3. Shortcomings

There are a few shortcomings in the literature: small samples, lack of attention to the moderating role of NAC in the relationship between FDI and institutional quality, and limited number of institutional quality dimensions considered.

(1) Previous studies used institutional quality dimensions as one variable by making an index through the econometric technique of principal component analysis (PCA).

This study dealt with the shortcomings of previous research, using a sample of 113 developing countries. It uses NAC as a moderator between FDI and institutional quality, and employs all six dimensions of institutional quality from WGI, and the economic freedom index as institutional quality variables.

3.4. Hypothesis development

Ahlquist (2006) showed that democratic countries induce more FDI than authoritarian or centralized government countries. Authoritarian countries have a considerable risk of nationalization, while democratic countries have little such risk, which is an inductive step toward attracting FDI. Gani (2007) emphasized that corruption-reducing policies, political stability, and government effectiveness positively impact FDI inflow in Latin American countries. Wei (2000) stressed that corruption and FDI have a negative relationship due to location preference, cost of doing business, and uncertainty. The concept of AC is still developing. Ali et al. (2018) studied the effect of organizational structure on AC in single and dual learning modes. Hale and Long (2007) emphasized that there is no systematic positive spillover effect on Chinese productivity. The impact of FDI on a host economy will be more effective if there is a gap in technology between home and host countries (Findlay, 1978).

'When AC is used as a moderator variable, the dependent variable tends to be innovative' (Murovec & Prodan, 2009). AC has an amplifying effect on the innovative process's factors (Guimaraes, 2016). If the institutions in a country are weak, then FDI enters through merger and acquisition, and only existing assets transfer to the host country, with no additions to their capital flow and no immediate effect on growth (Jude & Levieuge, 2015). This study incorporates all six dimensions of institutional quality to analyse it; thus, the following hypotheses are proposed.

H1: AC moderates the existing relationship between institutional quality and FDI in developing countries.

To check the individual impact of each institutional dimension, the following sub-hypotheses, from *H1a* to *H1f*, are proposed under *H1*.

H1a: AC moderates the existing relationship between the control of corruption and FDI in developing countries.

H1b: AC moderates the existing relationship between government effectiveness and FDI in developing countries.

H1c: AC moderates the existing relationship between political stability and absence of violence and FDI in developing countries.

H1d: AC moderates the existing relationship between regulatory quality and FDI in developing countries.

H1e: AC moderates the existing relationship between the rule of law and FDI in developing countries.

H1f: AC moderates the existing relationship between voice and accountability and FDI in developing countries.

4. Model and variables

We present the methodology and empirical procedure used to check the moderating role of AC between FDI inflow and institutional quality in selected developing countries. Data are taken from 113 countries (see Appendix) for 2000–2019. The data estimation tests are the Hausman test, pooled mean group, correlation matrix, robustness test, and other diagnostic tests.

4.1. Regression model

$$FDI_{\text{it}} = \beta_0 + \beta_1 lnAC_{i,t} + \beta_2 INSQ_{i,t} + \beta_3 (AC \times INSQ) + ln\beta_4 X_{i,t} + €, \qquad (1)$$

where

AC = absorptive capacity,

INSQ = institutional quality (control of corruption, government effectiveness, political stability, and absence of violence, regulatory quality, rule of law, voice, and accountability),

X= control variable, and

€= error terms.

4.2. Measurement of variables

FDI: The data source is 'FDI net inflows as a percentage of GDP', UNCTAD and World Bank (WDI).

4.2.1. Institutional quality

To analyse institutional quality, data are collected from the World Bank's world governance indicators, developed by Kaufmann et al. (1999). This data set is then divided into subsets covering various aspects of a country's institutions: control of corruption, government effectiveness, political instability, absence of violence, rule of law, and regulatory quality.

1. **Control of corruption:** 'Specifies the observation of corruption, for instance, the illegal actions by bureaucrats, bribery, including the illicit payment by investors from foreign to local authorities'.

2. **Government effectiveness (GE):** 'It includes the bureaucracy quality, civil services competencies, government commitment toward policy implementation, liberty from political pressure'.
3. **Political stability and absence of violence (PSAV): '**This indicator measures government presence in the office for work to measure and remove the risk of government illegally and violently'.
4. **Regulatory quality (**Marquis and Raynard (2015)**):** 'Deals with the unfriendly market policies, price controls, and inappropriate supervision of banks'.
5. **Rule of law (RL):** 'Internments insights of the level to which proxies have sureness in and take by the instructions of society'.
6. **Voice and accountability (VAC): '**Internments the level by which the country's peoples select their governments, freedom of expression, media freedom, and liberty of associations'.

4.2.2. Economic freedom index (EFI)

'Basic institutions that protect the liberty of individuals to pursue their own economic interests result in greater prosperity for the larger society' (Samaroudi, et al., 2020).

4.2.3. Gross fixed capital formation (GFCF)

'Gross fixed capital formation (formerly gross domestic fixed investment) includes land enhancements, plant, apparatus, and tools purchases; roads, railways, schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings' (WDI, 2020).

4.2.4. Inflation (INF)

'The average percentage change in the cost of acquiring average consumer goods and services' (WDI, 2021).

4.2.5. UNE

Unemployment occurs when a person who is actively searching for employment is unable to find work (WDI, 2021).

5. Empirical analysis

Table 1 shows pairwise correlations among the variables of institutional quality, AC, and FDI inflow. No values above 0.70 or 0.80 were reported, which means no problem in estimation.

Table 2 represents the 'Hausman specification' test results. Based on the *p*-value of 0.0, the model is a fixed effect.

Table 3 represents the moderating role of AC between institutional quality and FDI inflow. CC showed a positive, significant relationship with FDI inflow. With the moderating role of AC, the relationship between FDI inflow and CC is found to be positive and significant. GE and FDI inflow had a negative, insignificant relationship, which, similarly, after the moderating effect of AC it is found positive and significant. Moreover, the relationship between PSAV and FDI inflow was negative and insignificant,

Table 1. Matrix of correlations.

Variables	FDI	CC	GE	PSAV	LRQ	RL	LVAC	INF	GFCF	UNE
FDI	1.000									
CC	0.397	1.000								
GE	0.038	0.061	1.000							
PSAV	−0.102	0.176	−0.126	1.000						
RQ	0.062	0.038	0.68	−0.207	1.000					
RL	0.007	0.512	0.430	0.201	0.496	1.000				
VAC	−0.311	0.401	0.145	0.036	0.302	0.468	1.000			
INF	0.145	0.196	−0.229	0.039	−0.196	−0.025	−0.008	1.000		
GFCF	−0.007	−0.259	0.125	−0.226	0.242	−0.009	−0.026	0.026	1.000	
UNE	−0.120	−0.339	0.123	−0.127	0.121	−0.153	−0.082	−0.420	−0.045	1.000

Source: Author calculations.

Table 2. Hausman (1978) specification test.

	Coef.
Chi-squared test value	31.062
p-value	0

Source: Author calculations.

whereas, after the moderation effect, the relationship is positive but insignificant. RQ had a positive and significant relationship with FDI inflow; after the moderation role of AC it is found to be positive and significant. VAC had reported a positive, significant relationship with FDI inflow; after the moderating role of AC, it is changed to negative and insignificant. Inflation had shown a positive relationship with FDI inflow, while unemployment had shown a negative and significant relationship with FDI inflow. Similarly, the last column of the table represents the moderating role of AC between FDI and institutional quality, which is positive and significant: 'AC moderates the existing relationship between FDI inflow and institutional quality', as per the hypothesis.

5.1. Robustness

To check the robustness of the results and confirm the moderating role of AC between institutional quality and FDI inflow, this study changed the measurement of institutional quality. To check the results' robustness, we incorporated the method introduced by Leamer (1983), a common and popular practice to change the measure of a variable. As used by (Chen & Jiang, 2021), economic freedom index was adopted as an alternative measurement of institutional quality. Table 4 presents the results after the change, which did not change, that is, were in line with previous results. This study had used institutional quality measurements from WDI. The economic freedom index has a positive and significant relationship with FDI inflow in developing countries. Overall, the results show that AC plays a positive moderating role between FDI inflow and EF. Inflation has a negative and significant relationship with FDI inflow in developing countries. Similarly, GFCF has a positive, significant relationship with FDI.

5.1.2. Sub-sample regression based on income level

Table 5 represents the regression results of the subsample based on income level. This study divides the sample according to the World Bank classification of low- and middle-income countries. The regression result shows that AC plays a positive and

Table 3. The moderating role of AC between institutional quality and FDI.

variables	(1) FDI	(2) FDI	(3) FDI	(4) FDI	(5) FDI	(6) FDI	overall FDI	overall FDI
AC	0.0808***	0.0466*	0.082***	0.0703***	0.0701***	0.0803**	0.0530*	
	(0.0243)	(0.0260)	(0.0239)	(0.0253)	(0.0238)	(0.0350)	(0.0295)	
OIQ							0.2711	0.391***
							(0.204)	(0.117)
CC	0.6087**							
	(0.282)							
GE		−0.1621						
		(0.349)						
PSAV			0.0917					
			(0.172)					
RQ				0.4901*				
				(0.290)				
RL					0.3890			
					(0.326)			
VAC						0.7281*		
						(0.390)		
AC*CC	0.0533*							
	(0.0315)							
AC*GE		0.1142**						
		(0.0531)						
AC*PSAV			0.0267					
			(0.0240)					
AC*RQ				0.0682*				
				(0.0425)				
AC*RL					0.0944**			
					(0.0408)			
AC*VAC						−0.0580		
						(0.0527)		
AC*OIQ							0.0445*	
							(0.0272)	
Inf	−0.0064	−0.0068	−0.0081	−0.0039	−0.0049	−0.028***	−0.0143**	−0.0131**
	(0.0053)	(0.0054)	(0.0052)	(0.0051)	(0.0054)	(0.0078)	(0.0067)	(0.0063)
GFCF	2.336***	2.371***	2.271***	2.114***	2.480***	0.171***	0.0947***	0.0854***
	(0.243)	(0.245)	(0.242)	(0.2371)	(0.2440)	(0.0480)	(0.0093)	(0.0082)
UNE	−0.396***	−0.422***	−0.448***	−0.405***	−0.360***	−0.873***	−0.0530***	−0.0226*
	(0.101)	(0.102)	(0.0974)	(0.0956)	(0.103)	(0.123)	(0.0139)	(0.0120)
Constant	15.00***	14.90***	14.74***	15.16***	14.46***	22.75***	19.28***	19.09***
	(0.852)	(0.860)	(0.874)	(0.854)	(0.857)	(0.305)	(0.377)	(0.313)
N	510	510	510	510	510	346	490	703
R^2	0.52	0.66	0.28	0.31	0.53	0.49	0.39	0.53

Standard errors in parentheses.
***p<.01, **p<.05, *p<.10.
Source: Author calculations.

significant moderating role between institutions and FDI in low-income countries. In middle-income countries, the sign of RL changes after regression with the moderating role of AC, but is statistically insignificant.

6. Evidence from BRICS + Pakistan

This section of the study checks the moderating role of AC for typical countries; for this purpose, the study takes BRICS + Pakistan as a sample. BRICS + P are some of the world's largest developing economies from various geographic locations, and attract enormous FDI inflow. The results of pooled mean regression (PMG) are as follows.

Table 4. Changes in the measurement of institutional quality (economic freedom index).

Variables	FDI
EFI	0.2401*
	(0.140)
AC	4.91e-05
	(3.57e-05)
AC*EFI	1.70e-05*
	(9.05e-06)
INF	−0.0130***
	(0.0041)
GFCF	0.0045*
	(0.0027)
Constant	21.87***
	(0.597)
N	840
R^2	0.53

Standard errors in parentheses.
***p < 0.01, **p < 0.05, *p < 0.1.
Source: Author calculations.

Table 6 presents the cross-sectional dependency (CD) test, a common procedure for estimation of panel data. The most common CD tests for panel data are the Breusch and Pagan (1980) LM test, Pesaran et al. (2004) scaled LM test, and Pesaran et al. (2004) CD test; all three reject the null hypotheses of zero dependence for all variables in the study, including interaction terms.

Table 7 represents the panel unit root test (Fisher ADF). Checking unit root is a common procedure for time series or panel data. The null hypothesis for the unit root test is 'H_0 = unit root', against alternative hypothesis 'H_1: stationary'. The results show that some variables are stationary at level and others at first difference.

Table 8 represent pooled mean regression (PMG) for moderating effect. There are two panels: panel A represents long-run moderating estimates of PMG and panel B, short-run estimates. In the long run all coefficients are positive except VAC. A unit increase in control of corruption results a 0.112% increase in FDI inflow. This result is significant at *p*-value of 0.05. GE and regulatory quality is also found positive and significant. PSAV and RL are found positive but insignificant, and VAC negative and insignificant. For control variables, inflation is found negative and insignificant in the long run. GFCF gave mixed results: with some variables it is found positive and with others negative. The moderating role of AC between institutional quality and FDI is positive but insignificant. In the long run, the moderating role of AC between FDI and RL and between FDI and VAC is positive and significant. A 1% increase in RL will result in 0.126 FDI inflow. Similarly, a unit increase in VAC will increase FDI inflow by 0.196. Inflation and GFCF in the short run is found positive. Unemployment has a negative relationship with FDI inflow. In the last column of the table, overall results for the moderating role between FDI and institutional quality are reported. The results are similar for all BRICS-P countries.

6.1. Discussion and summary

AC was treated as a firm-level phenomenon initially, but management and economics research advanced this phenomenon to the country and regional level. This study ascertained the moderating role of AC between institutional quality and FDI inflow.

Table 5. Subsample regression results based on income level.

	Middle-income								Low-income							
variables	(1) FDI	(2) FDI	(3) FDI	(4) FDI	(5) FDI	(6) FDI	overall FDI	overall FDI	(1) FDI	(2) FDI	(3) FDI	(4) FDI	(5) FDI	(6) FDI	overall FDI	Overall FDI
AC	0.2110***	0.1876***	−0.0502	0.2442***	0.2213***	0.2321***	0.1524***		1.6781**	0.9910*	1.1111***	−0.6880	2.9015***	1.9464***	0.3021**	
	(0.0372)	(0.0362)	(0.0469)	(0.0359)	(0.0364)	(0.0381)	(0.0420)		(0.7752)	(0.5461)	(0.3410)	(0.4330)	(0.9518)	(0.4970)	(0.1511)	
OIQ							1.056***	0.288*							−1.94***	0.0607
							(0.258)	(0.148)							(0.497)	(0.336)
CC	0.211***								−8.121**							
	(0.0372)								(3.885)							
GE		0.796**								−5.05***						
		(0.317)								(1.172)						
PSAV			−0.574*								−5.758**					
			(0.308)								(2.708)					
RQ				2.312***								2.924*				
				(0.338)								(1.512)				
RL					0.670*								−12.3***			
					(0.360)								(3.972)			
VAC						0.739**								−11.8***		
						(0.356)								(2.707)		
AC*OIQ							0.0705*								0.335***	
							(0.0376)								(0.125)	
AC*CC	0.0310								1.828							
	(0.0546)								(1.082)							
AC*GE		−0.0539								0.635						
		(0.0535)								(0.698)						
AC*PSAV			0.121***								1.155*					
			(0.0458)								(0.806)					
AC*RQ				0.261***								−1.63***				
				(0.0525)								(0.629)				
AC*RL					−0.0369								2.072*			
					(0.0552)								(1.097)			
AC*VAC						0.112**								2.214***		
						(0.0534)								(0.723)		
Inf	−0.0211	−0.0004	−0.0028	−0.2610***	−0.0157**	−0.0196**	−0.0096***	−0.0128**	−0.0253	0.0023	−0.0791*	−0.0009	0.0207	−0.0092	−0.0012	0.0091
	(0.016)	(0.0057)	(0.0055)	(0.0525)	(0.0073)	(0.0072)	(0.0035)	(0.0057)	(0.0360)	(0.0330)	(0.0429)	(0.0403)	(0.0447)	(0.0365)	(0.0097)	(0.0231)
GFCF	0.0072**	0.0728***	0.0982***	0.0747***	0.01210***	0.0119***	0.0021	0.0104***	0.0829***	0.0824***	0.00362	0.125***	0.0183*	0.0096	0.0074	0.1021***
	(0.0033)	(0.0089)	(0.0096)	(0.0086)	(0.0034)	(0.0034)	(0.0026)	(0.0029)	(0.0194)	(0.0166)	(0.00781)	(0.0272)	(0.0097)	(0.0075)	(0.0059)	(0.0239)
UNE	−0.0771***	−0.042***	−0.042***	−0.0401***	−0.0710***	−0.074***	−0.0380	−0.0687***	−0.0613	−0.0809	−0.0806	0.0127	0.0291	−0.0280	−0.087***	0.0440*
	(0.0132)	(0.0127)	(0.0146)	(0.0123)	(0.0133)	(0.0133)	(0.0498)	(0.0134)	(0.0524)	(0.0488)	(0.0652)	(0.0388)	(0.0712)	(0.0598)	(0.0133)	(0.0254)
Constant	20.8600***	19.0312***	20.0712***	18.5912***	20.8421***	20.73***	20.5545***	21.9023***	11.4076***	13.7589***	16.6809***	18.55***	6.4450*	11.0010***	19.901***	16.7212***
	(0.2851)	(0.3521)	(0.3541)	(0.3470)	(0.2735)	(0.285)	(0.2410)	(0.1181)	(2.8261)	(1.7858)	(1.2391)	(1.4586)	(3.6304)	(2.0000)	(0.3771)	(0.7071)
N	682	571	571	571	537	537	910	682	35	35	34	31	30	30	84	120
R^2	0.63	0.32	0.58	0.32	0.43	0.53	0.23	0.529	0.751	0.79	0.617	0.55	0.66	0.74	0.41	0.52

Source: Author calculations.

Table 6. Cross-sectional dependency test.

	Breusch–Pagan LM	Pesaran scaled LM	Bias-corrected scaled LM	Pesaran CD
FDI	114.6684	17.1014	16.9435	10.2121
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ACAP	138.5810	21.4673	21.3094	5.9127
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
INF	33.8479	2.3457	2.1879	4.5959
	(0.0036)	(0.0190)	(0.0287)	(0.0000)
GFCF	64.2974	7.9051	7.7472	4.3306
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
UNE	47.1130	4.7676	4.6097	0.60591
	(0.0000)	(0.0000)	(0.0000)	(0.5446)
ACAP*CC	153.6201	24.2131	24.0552	11.9369
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ACAP*GE	90.7377	12.7323	12.5744	5.9079
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ACAP*PSAV	242.7752	40.4905	40.3326	15.5349
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ACAP*RQ	229.9263	38.1446	37.9867	14.7948
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ACAP*RL	99.5613	14.3433	14.1854	−2.3982
	(0.0000)	(0.0000)	(0.0000)	(0.0165)
ACAP*VAC	85.6118	11.7965	11.63855	−1.9240
	(0.0000)	(0.0000)	(0.0000)	(0.0544)

(*p*-value in parentheses).
Source: Author calculations.

Table 7. Panel unit root test (Fisher test).

		Level		
Variable	Intercept Fisher ADF	*p*-value	Intercept and Trend Fisher ADF	*p*-value
FDI_B	30.0675	0.0008	13.8401	0.1804
ACAP	23.1871	0.0101	18.9451	0.0410
INF	1.82039	0.9860	4.3479	0.8245
GFCF	12.2371	0.2695	11.4084	0.3266
UNE	19.1905	19.1905	26.9580	0.0007
CC	21.3034	0.0461	15.1267	0.2346
GE	16.7639	0.1587	3.07736	0.9950
PSAV	10.5428	0.5685	15.0338	0.2396
RQ	14.3239	0.2805	15.9769	0.1923
RL	6.5092	0.8883	9.9962	0.6163
VAC	15.1563	0.2330	20.6516	0.0557
		1st Difference		
FDI_B	13.2511	0.2100	27.1319	0.0025
LACAP	14.6683	0.1446	20.1626	0.0278
INF	13.5467	0.0944	12.1149	0.1461
LGFCF	15.4083	0.1179	32.2211	0.0004
UNE	27.8725	0.0005	5.2675	0.5100
CC	14.2952	0.2823	15.7707	0.2020
GE	13.8433	0.3108	20.7768	0.0537
PSAV	21.8372	0.0394	17.9571	0.1170
RQ	19.0876	0.0864	10.2460	0.5944
RL	20.0235	0.0666	18.1472	0.1113
VAC	21.7141	0.0409	15.6023	0.2101

Source: Author calculations.

FDI-led growth depends upon the recipient country's absorption level. Suppose the country has an adequate level of AC to benefit more from FDI. The incorporation of developing countries has received attention because developing countries can improve their economic and AC level through attracting FDI. In this study, the Hausman

Table 8. Pooled mean group regression moderating effect.

Panel A: Long-run estimates							
	1	2	3	4	5	6	Overall
ACAP	2.8009***	1.3531***	1.15350**	1.5253***	1.2907***	1.1705***	
	(0.4053)	(0.0640)	(0.0455)	(0.1168)	(0.0247)	(0.0414)	
ACAP*OIQ							0.0261**
							(0.0120)
ACAP*CC	0.1115**						
	(0.0545)						
ACAP*GE		0.0873***					
		(0.0208)					
ACAP*PSAV			0.0012				
			(0.0039)				
ACAP*RQ				0.0094**			
				(0.0053)			
ACAP*RL					0.0041		
					(0.0152)		
ACAP*VAC						−0.0114	
						(0.0168)	
INF	−0.4591**	−0.3966**	−0.3852***	−0.4647***	−0.4291***	−0.4296***	0.3121**
	(0.2438)	(0.1259)	(0.0639)	(0.1274)	(0.0492)	(0.0570)	(0.1507)
GFCF	−0.7839	1.1961*	−0.2932	0.9918	−0.1325	0.0619	2.4753***
	(0.8886)	0.6620	(0.3435)	(0.6410)	(0.2671)	(0.3245)	(0.4522)
UNE	0.1219	0.6781***	2.1665***	0.6695***	1.8276**	2.04869***	0.0977
	(0.1373)	(0.1664)	(0.1323)	(0.1467)	(0.1031)	(0.1092)	(0.1379)
Panel B- Short-run estimates							
COINTEQ01	−0.3292**	−0.4588**	−0.3231	−0.44149***	−0.37915	−0.3395	−0.597***
	(0.1761)	(0.1978)	(0.2442)	(0.1775)	(0.2783)	(0.2476)	(0.1420)
D(LOG_PACP)	0.0068	−0.4063	0.0277	−0.1028	−0.0629	−0.2252	
	(0.5003)	(0.5309)	(0.5777)	(0.4963)	(0.6671)	(0.6858)	
ACAP*OIQ							−0.0055
							(0.0067)
ACAP*CC	0.0105						
	(0.0281)						
ACAP*GE		−0.0081					
		(0.0375)					
ACAP*PSAV			0.0033				
			(0.0099)				
ACAP*RQ				0.0015			
				(0.0083)			
ACAP*RL					0.1258*		
					(0.0457)		
ACAP*VAC						0.1954*	
						(0.1184)	
INF	0.0791	0.1386*	0.1029	0.1369*	0.0912	0.1749	−0.0671
	0.0579	(0.0606)	(0.0810)	(0.0514)	(0.1005)	(0.1067)	(0.0483)
GFCF	1.7481	2.4677	2.7206	2.1548	2.7973*	2.6866	0.9774
	(2.2024)	(2.0792)	(1.9223)	(2.0571)	(1.9306)	(2.1447)	(2.2388)
UNE	0.3812	−0.13145	−0.2454	−0.01831	−0.3884	−0.3155***	0.2336
	(0.3412)	(0.1109)	(0.1591)	(0.1555)	(0.2132)	(0.1190)	(0.2720)
Constant	−1.9402	−4.0955**	−12.9846	−4.2184*	−12.4602	−12.5276	5.3859***
	(1.5269)	(1.7724)	(9.0596)	(1.5242)	(8.8024)	(8.9568)	(1.4414)
N	114	114	114	114	114	114	114
Mean dep var	0.087	0.086781	0.086781	0.086781	0.086781	0.086781	0.086781
S.E.	0.395	0.376966	0.408098	0.390852	0.398769	0.372046	0.374167
Sum sq resid	12.472	10.37353	12.15773	11.15187	11.60824	10.10451	10.36004

Notes: Standard errors in parentheses.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.
Source: Author calculations.

specifications test showed that only VAC had a negative (though insignificant) association with FDI inflow. As mentioned by Sabir et al. (2019), VAC in developing countries is not as strong as in developed countries. The remaining five dimensions

showed a positive relationship with FDI inflow; thus, the results support that AC moderates the relationship between FDI and institutional quality.

This study changed the FDI inflow measure to FDI inflow as percentage of GDP and found positive moderation. Only GE reported negative (insignificant) results with the interaction term. This result supports the hypothesis. The result is somehow supporting the insignificant results (Danquah et al., 2018). Meanwhile, this study also used EFI (economic freedom index) as an alternative measure of institutional quality. The results are positive and significant, which establish that the moderating role of AC between FDI inflow and institutional quality is right. It will not alter with the change in the measurement of institutional quality dimensions.

Similarly, to confirm the relationship, this study classified the sample according to the World Bank classification of low- and middle-income countries and ran the regression. RLE was found negative but insignificant in low-income countries; CC showed a negative relationship with FDI inflow in developing countries. After incorporating the interaction term of AC, a positive, significant moderating role with FDI inflow was seen. In middle-income countries, CC shows an insignificant negative relationship with FDI. The other side RL was negative before the interaction of AC and positive and significant after it. Hence, all the institutional quality dimensions show a positive moderating role between AC and institutional quality. It supports the proposed hypothesis H3, including sub-hypotheses. The slight changes in results are due to technique and data problems. This study's overall results thus indicate a positive, significant moderating role of AC between FDI inflow and institutional quality dimensions.

7. Conclusion

This study checked the moderating role of AC between FDI and institutional quality. To measure institutional quality, it used data from worldwide governance indicators (Kaufman, 1996). Previous studies had used institutional quality measures with different economic variables, but not all six dimensions. This study used all six dimensions of institutional quality in addition to economic freedom index as an institutional quality variable. The result found that AC plays a positive moderating role between institutional quality and FDI inflow in developing countries. The results of this study supports Sultana and Turkina (2020), Fernald et al. (2017), and Ologbo and Chukwuekezie (2013). To check the robustness of the results, this study changed the measures of the variables. The overall results show that AC moderates the existing relationship between FDI and institutional quality. The AC of a developing country is lower than that of a developed country; however, it is understood that developing countries absorb new knowledge about production, managerial practices, and technology from FDI from developed countries. To increase production, it is necessary to upgrade it by incorporating and upgrading technology and managerial know-how.

7.1. Policy recommendations and future research direction

The policy suggestions are specifically applicable to low-income and middle-income countries, as these states practice FDI-led economic growth in addition to

institutionally managed economic growth. In these countries, quality of institutions also improved FDI-led economic growth. In low-income countries particularly, FDI-led economic growth was described as very robust, and institutional quality further improved it. In low-income countries, there is massive scope for development of institutional quality. Therefore, these countries can start by improving their institutional quality, which will enable them to grow their economies, attract FDI, and enhance the FDI-induced economic growth, and thus ensure prosperity at home.

Some future research prospects are as follows. First, FDI is a multi-dimensional economic factor and with extensive literature on it. This study checked its relation with institutions and ACAP; further research may examine different government systems and their role in FDI attraction. ACAP at individual level has been well studied, but ACAP at national level is an emerging topic. Therefore, future research needs to be done at regional level. This study was carried out for developing countries; future studies could be done on developed countries. FDI enhances economic prosperity by adding to employment; knowledge spillovers can improve the performance of local industries and enhance purchasing power, helping local market demand be fulfilled by local products and reducing the import bill and balance of payments. FDI is the easiest way to gain a presence in international markets, compared to exporting to a country and paying tariffs and taxes. Previous studies have checked many aspects of FDI's effect on the destination economy, but future studies should study the impact of FDI on destination countries awareness regrading FDI.

Data availability statement

The data used in this manuscript are on World Bank (WDI).

Disclosure statement

No potential conflict of interest was reported by the authors.

References

Abreo, C., Bustillo, R., & Rodriguez, C. (2021). The role of institutional quality in the international trade of a Latin American country: Evidence from Colombian export performance. *Journal of Economic Structures*, *10*(1), 1–21. https://doi.org/10.1186/s40008-021-00253-5

Ahlquist, J. S. (2006). Economic policy, institutions, and capital flows: Portfolio and direct investment flows in developing countries. *International Studies Quarterly*, *50*(3), 681–704. https://doi.org/10.1111/j.1468-2478.2006.00420.x

Ali, M., Ali, I., Al-Maimani, K. A., & Park, K. (2018). The effect of organizational structure on absorptive capacity in single and dual learning modes. *Journal of Innovation & Knowledge*, *3*(3), 108–114. https://doi.org/10.1016/j.jik.2017.03.007

Aziz, O. G. (2018). Institutional quality and FDI inflows in Arab economies. *Finance Research Letters*, *25*, 111–123. https://doi.org/10.1016/j.frl.2017.10.026

Azman-Saini, W. N. W., Law, S. H., & Ahmad, A. H. (2010). FDI and economic growth: New evidence on the role of financial markets. *Economics Letters*, *107*(2), 211–213. https://doi.org/10.1016/j.econlet.2010.01.027

Barro, R. J., & Sala-i-Martin, X. (1997). Technological diffusion, convergence and growth. *Journal of Economic Growth*, *2*(1), 1–26. https://doi.org/10.1023/A:1009746629269

Bezuidenhout, H. (2009). A regional perspective on aid and FDI in Southern Africa. *International Advances in Economic Research*, *15*(3), 310–321. https://doi.org/10.1007/s11294-009-9232-9

Blalock, G., & Simon, D. H. (2009). Do all firms benefit equally from downstream FDI? The moderating effect of local suppliers' capabilities on productivity gains. *Journal of International Business Studies*, *40*(7), 1095–1112.

Blomström, M., & Kokko, A. (2003). The economics of foreign direct investment incentives. *In Foreign direct investment in the real and financial sector of industrial countries* (pp. 37–60). Springer.

Blomström, M., Lipsey, R. E., & Zejan, M. (1994). *What explains developing country growth? NBER Working Papers 4132*. National Bureau for Economic Research.

Borensztein, E., De Gregorio, J., & Lee, J.-W. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics*, *45*(1), 115–135. https://doi.org/10.1016/S0022-1996(97)00033-0

Breusch, T. S., & Pagan, A. R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. *The Review of Economic Studies*, *47*(1), 239–253.

Burns, A., Kida, M., Lim, J. J., Mohapatra, S., & Stocker, M. (2014). Unconventional monetary policy normalization in high-income countries: Implications for emerging market capital flows and crisis risks. Policy Research Working Paper, No. 6830. The World Bank.

Butkiewicz, J. L., & Yanikkaya, H. (2006). Institutional quality and economic growth: Maintenance of the rule of law or democratic institutions, or both? *Economic Modelling*, *23*(4), 648–661. https://doi.org/10.1016/j.econmod.2006.03.004

Chaudhary, S. (2019). Implications of strategic flexibility in small firms: The moderating role of absorptive capacity. *South Asian Journal of Business Studies*, *8*(3), 370–386. 10.1108/SAJBS-10-2018-0104

Chen, F., & Jiang, G. (2021). Investigating the impact of institutional quality on FDI: Are there promotional effects in economic integration regions? *Sustainability*, *13*(20), 11309. https://doi.org/10.3390/su132011309

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, *35*(1), 128–152. https://doi.org/10.2307/2393553

Danquah, M., Ouattara, B., & Quartey, P. (2018). Technology transfer and national efficiency: Does absorptive capacity matter? *African Development Review*, *30*(2), 162–174. https://doi.org/10.1111/1467-8268.12321

Djeflat, A, Maghtech – CLERSE (CNRS 8019), & University of Lille, France. (2015). Absorptive capacity and demand for innovation as driving engines for emerging innovation systems: Comparing GCC and Maghreb countries. *International Journal of Innovation and Knowledge Management in Middle East and North Africa*, *4*(1), 14–27. https://doi.org/10.47556/J.IJIKMMENA.4.1.2015.2

Dunning, J., & Narula, R. (2003). *Foreign direct investment and governments: Catalysts for economic restructuring*. Routledge.

Edquist, C. (Ed.). (1997). *Systems of innovation: Technologies, institutions, and organizations*. Psychology Press.

Fernald, K. D. S., Pennings, H. P. G., van den Bosch, J. F., Commandeur, H. R., & Claassen, E. (2017). The moderating role of absorptive capacity and the differential effects of acquisitions and alliances on Big Pharma firms' innovation performance. *PloS One*, *12*(2), e0172488. https://doi.org/10.1371/journal.pone.0172488

Freeman, C. (1992). Formal scientific and technical institutions in the national system of innovation. In *National systems of innovation: Towards a theory of innovation and interactive learning* (pp169–187). Pinter Publishers.

Gani, A. (2007). Governance and foreign direct investment links: Evidence from panel data estimations. *Applied Economics Letters*, *14*(10), 753–756. https://doi.org/10.1080/13504850600592598

García, F., Avella, L., & Fernández, E. (2012). Learning from exporting: The moderating effect of technological capabilities. *International Business Review*, *21*(6), 1099–1111. https://doi.org/10.1016/j.ibusrev.2011.12.001

Gonzalez-Campo, C. H. (2015). Measurement of knowledge absorptive capacity: An estimated indicator for the manufacturing and service sector in Colombia. *Journal Globalization*, *9*(2), 16–42. https://doi.org/10.3232/GCG.2015.V9.N2.01

Grossman, G. M., & Helpman, E. (1991). Quality ladders in the theory of growth. *The Review of Economic Studies*, *58*(1), 43–61. https://doi.org/10.2307/2298044

Guimaraes, T. (2016). Absorptive capacity as moderator for company innovation success. *International Journal of the Academic Business World*, *10*(2), 1–18.

Hale & Long. (2007). Is There Evidence of FDI Spillover on Chinese Firms' Productivity and Innovation? *Yale University Economic Growth Center Discussion Paper*(934).

Hausman, J. A. (1978). Specification tests in econometrics. *Econometrica: Journal of the Econometric Society*, *46*(6), 1251–1271. https://doi.org/10.2307/1913827

Herzer, D., Klasen, S., Nowak-Lehmann, & D., F. (2008). In search of FDI-led growth in developing countries: The way forward. *Economic Modelling*, *25*(5), 793–810. https://doi.org/10.1016/j.econmod.2007.11.005

Jiménez, A. (2010). Does political risk affect the scope of the expansion abroad? Evidence from Spanish MNEs. *International Business Review*, *19*(6), 619–633. https://doi.org/10.1016/j.ibusrev.2010.03.004

Jude, C., & Levieuge, G. (2015). Growth effect of FDI in developing economies: The role of institutional quality. Working Papers 559, Banque de France.

Kaufmann, et al. (1999). Governance matters. *Available at SSRN 188568*.

Khan, Z., Lew, Y. K., & Marinova, S. (2019). Exploitative and exploratory innovations in emerging economies: The role of realized absorptive capacity and learning intent. *International Business Review*, *28*(3), 499–512. https://doi.org/10.1016/j.ibusrev.2018.11.007

Kim, L. (1995). Absorptive capacity and industrial growth: A conceptual framework and Korea's experience. In *Social capability and long-term economic growth* (pp. 266–287). Springer.

Kim, C., Zhan, W., & Erramilli, K. (2011). Resources and performance of international joint ventures: The moderating role of absorptive capacity. *Journal of Asia Business Studies*, *5*(2), 145–160. https://doi.org/10.1108/15587891111152311

Kohlbacher, M., Weitlaner, D., Hollosi, A., Grünwald, S., & Grahsl, H. (2013). Innovation in clusters: Effects of absorptive capacity and environmental moderators. *Competitiveness Review: An International Business Journal*, *23*(3), 199–217. https://doi.org/10.1108/10595421311319807

Kurul, Z., & Yalta, A. Y. (2017). Relationship between institutional factors and FDI flows in developing countries: New evidence from dynamic panel estimation. *Economies*, *5*(2), 17. https://doi.org/10.3390/economies5020017

Kusek, P., & Silva, A. (2018). What investors want: Perceptions and experiences of multinational corporations in developing countries. Policy Research Working Paper No. 8386. The World Bank.

Lau, A. K. W., & Lo, W. (2015). Regional innovation system, absorptive capacity and innovation performance: An empirical study. *Technological Forecasting and Social Change*, *92*(C), 99–114. https://doi.org/10.1016/j.techfore.2014.11.005

Leamer, E. E. (1983). Let's take the con out of econometrics. *The American Economic Review*, *73*(1), 31–43.

Lew, Y. K., & Liu, Y. (2016). The contribution of inward FDI to Chinese regional innovation: the moderating effect of absorptive capacity on knowledge spillover. *European Journal of International Management*, *10*(3), 284–313.

Mahroum, S. et al. (2008). *Innovation by adoption: measuring and mapping absorptive capacity in UK nations and regions*: National Endowment for Science, Technology and the Arts.

Marquis, C., & Raynard, M. (2015). Institutional strategies in emerging markets. *Academy of Management Annals*, *9*(1), 291–335. https://doi.org/10.5465/19416520.2015.1014661

Miguélez, E., & Moreno, R. (2015). Knowledge flows and the absorptive capacity of regions. *Research Policy*, *44*(4), 833–848.
Mowery, D. C., Oxley, J. E., & Silverman, B. S. (1996). Strategic alliances and interfirm knowledge transfer. *Strategic Management Journal*, *17*(S2), 77–91. https://doi.org/10.1002/smj.4250171108
Murovec, N., & Prodan, I. (2009). Absorptive capacity, its determinants, and influence on innovation output: Cross-cultural validation of the structural model. *Technovation*, *29*(12), 859–872. https://doi.org/10.1016/j.technovation.2009.05.010
Noor, N. A. M., & Aljanabi, A. Q. R. A. (2016). Moderating role of absorptive capacity between entrepreneurial orientation and technological innovation capabilities. *International Review of Management and Marketing*, *6*(4), 704–710.
North, D. C. (1991). Institutions. *Journal of Economic Perspectives*, *5*(1), 97–112. https://doi.org/10.1257/jep.5.1.97
Ologbo, A. C., & Chukwuekezie, C. S. (2013). *Organizational learning capacity and organizational effectiveness: The moderating role of absorptive capacity* [Paper presentation].Paper Presented at the International Conference on Information and Social Science.,
Pesaran, M. H., Schuermann, T., & Weiner, S. M. (2004). Modeling regional interdependencies using a global error-correcting macroeconometric model. *Journal of Business & Economic Statistics*, *22*(2), 129–162. https://www.jstor.org/stable/1392171
Proeger, T. (2020). Knowledge spillovers and absorptive capacity—Institutional evidence from the "German Mittelstand". *Journal of the Knowledge Economy*, *11*(1), 211–238. https://doi.org/10.1007/s13132-018-0539-8
Rahimi, A. (2014). *The influence of absorptive capacity and technology park services on the relationship between social capital and technology transfer performance* [Doctoral dissertation].
Rodrik, D. (2000). Institutions for high-quality growth: What they are and how to acquire them. *Studies in Comparative International Development*, *35*(3), 3–31. https://doi.org/10.1007/BF02699764
Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy*, *98*(5, Part 2), S71–S102. https://doi.org/10.1086/261725
Sabir, S., Rafique, A., & Abbas, K. (2019). Institutions and FDI: Evidence from developed and developing countries. *Financial Innovation*, *5*(1), 8.
Samaroudi, M., Echavarria, K. R., & Perry, L. (2020). Heritage in lockdown: Digital provision of memory institutions in the UK and US of America during the COVID-19 pandemic. *Museum Management and Curatorship*, *35*(4), 337–361. https://doi.org/10.1080/09647775.2020.1810483
Shan, W., Zhang, C., & Wang, J. (2018). Internal social network, absorptive capacity and innovation: Evidence from new ventures in China. *Sustainability*, *10*(4), 1094. https://doi.org/10.3390/su10041094
Sultana, N., & Turkina, E. (2020). Foreign direct investment, technological advancement, and absorptive capacity: A network analysis. *International Business Review*, *29*(2), 101668. https://doi.org/10.1016/j.ibusrev.2020.101668
Vu, D. H., & Ho, T. T. (2020). Provincial foreign direct investment absorptive capacity of Vietnam. *Entrepreneurial Business and Economics Review*, *8*(2), 7–26. https://doi.org/10.15678/EBER.2020.080201
Wei, S.-J. (2000). How taxing is corruption on international investors? *Review of Economics and Statistics*, *82*(1), 1–11. https://doi.org/10.1162/003465300558533
Wu, J., Li, S., & Samsell, D. (2012). Why some countries trade more, some trade less, some trade almost nothing: The effect of the governance environment on trade flows. *International Business Review*, *21*(2), 225–238. https://doi.org/10.1016/j.ibusrev.2011.02.007
Yakubu, I. N. (2020). Institutional quality and foreign direct investment in Ghana: A bounds-testing cointegration approach. *Review of International Business and Strategy*, *30*(1), 109–122. 10.1108/RIBS-08-2019-0107

Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *The Academy of Management Review*, *27*(2), 185–203. https://doi.org/10.2307/4134351

Zhu, N., Zhang, D., Wang, W., Li, X., Yang, B., Song, J., Zhao, X., Huang, B., Shi, W., Lu, R., Niu, P., Zhan, F., Ma, X., Wang, D., Xu, W., Wu, G., Gao, G. F., Tan, W, & China Novel Coronavirus Investigating and Research Team (2020). A novel coronavirus from patients with pneumonia in China, 2019. *The New England Journal of Medicine*, *382*(8), 727–733. https://doi.org/10.1056/NEJMoa2001017

Appendix

'Albania, Algeria, Angola, Antigua and Barbuda, Argentina, Armenia, Azerbaijan, Bahamas, Bangladesh, Belarus, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Central African Republic, Chad, Chile, China, Colombia, Comoros, Congo, Dem. Rep., Congo, Rep., Costa Rica, Cote d'Ivoire, Croatia, Dominica, Dominican Republic, Ecuador, Egypt, Arab Rep., El Salvador, Equatorial Guinea, Eritrea, Fiji, Gabon, Georgia, Ghana, Grenada, Guatemala, Guinea, Haiti, Honduras, India, Indonesia, Jordan, Kazakhstan, Kenya, Korea, Rep., Lao PDR, Latvia, Lebanon, Lesotho, Liberia, Libya, Lithuania, Macedonia FYR, Madagascar, Malawi, Malaysia, Maldives, Mali, Mauritius, Mexico, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Panama, Paraguay, Peru, Philippines, Romania, Russian Federation, Samoa, Senegal, Seychelles, Sierra Leone, Solomon Islands, South Africa, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Sudan, Swaziland, Tajikistan, Tanzania, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, Uruguay, Venezuela RB, Vietnam, Zambia'.